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THE PAYMENT SYSTEM AND THE CONCEPTS SUPPLY AND DEMAND

(English edition of ´Betalningssystemet och begreppen utbud och efterfrågan´, Nov. 2000).

John-Erik Janson
2003

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PART 2.
THE CONCEPTS SUPPLY AND DEMAND.

APPENDIX

PREFACE.

I have read and carried out research in political economy for30 years following my economist examination at the Gothenburg School of Economics in1964 (about 10 working years effective working time). Earlier in1973 I wrote ´Kvantitetsteorin, utkast till en studie` (The Quantity Theory, draft for a study). The paper was then distributed to economists and scientific libraries in the Nordic countries. I now find some 30 years later that my conclusions then keep up to a very great extent, which can hardly be said about many works on political economy which have won great approval. I hope therefore that I shall be able to publish the work largely unchanged after minor adjustments.

My new work deals with the key role that the payment system plays in the national economy and with the basic elements of this economy. Both works present a critical examination of parts of the now dominant theory building, which I find indefensible. This has such great defects, suffers of such great system faults that I find it surprising that these faults and defects have not been critizised earlier. Especially this criticism is true for the demand concept and the view of the role of the bank system in the price building process. I find it obvious that SEK 1.000 in notes direct from the central bank or via the bank system is purchasing power and potential demand exactly as much as SEK 1.000 in income and expenses for Ludvig Svenson´s curtain factory (which is often used as an example) and in both cases the SEK 1.000 note continues to make purchasing power and create espenses, as long as it has not been withdrawn from the market. I find also that the commercial banks and the bank system do not at all play the key role that the economists have given them, they play on the contrary a very modest role, while what other economists have called ´cash-holders´ or ´cash-managers´ exert a great influence both on potential purchasing power and its use as transactions and payments in the payment system, even if this influence is very regular and foreseeable.

The theory building to-day is characterized by its dualism, the division in money theory and common price theory. This may have a pedagogical value, as have different methods and explanation systems on macro- and micro levels. But it is wrong to presume that different forces influence different levels in the society. Of course the same forces work in all economics, they are of monistic character. Compare with Keynes´ critics in ´The General Theory´, p.292. [(1).]

I am of course aware of possible lacks and gaps in my propositions, but this is valid for all systems in the economics published up to now. As I now approaches the end of my life, I have not been able to do the work as cast in one piece and as free from detail faults, as I would have wished. I would have preferred to be able to work on it for another 1 - 2 years before publication. But I am quite convinced about the absolute main part of my theories having the future before them. I think that many will be surprised how much of them that will hold their ground, if they really give them a critical and impartial study. For those who are firmly fixed in current conventions, they are surely indigestible, and I meet sometimes people who regard me as a fool, which does not worry me.[(2).] Bearing in mind all contradictions and non-conformity with reality in the current theory building, I can take such reactions with composure. The defects in my propositions are of rather little consequence compared with the basic system faults in the dominant theory buildings. I have anyway received so many positive comments that I feel rather comfortable. The time is now also much more mature than it was in the seventies, when I wrote my earlier work. The economics is now characterized by greater realism than 25 years ago. To take only one example. In the sixties and the seventies the policy of the economists and the authorities seemed to a great extent to mean limiting the credit volume in the society. It is indeed ironical that all these attempts to influence the inflation development have failed, while to-day, when all credit restrictions have disappeared in our internationalized society, we have managed to reach a relative price stability.

But even Milton Friedman and his followers have failed; their theories are characterized by dualism, contradictions, and lack of conformity with facts. The idea that the theories of the economists often have been airy and without contact with reality, is also shown by themselves sometimes admitting that they do not understand each other. As Friedman wrote in polemic with James Tobin in ´Milton Friedman´s Monetary Framework´, p. 143: "Much of the rest of Tobin´s criticism of my article leaves me utterly baffled. We seem to be talking at cross-purposes - I disagree far less with the substance of what he says than with the views that he attributes to me - which repeatedly seem to me in clear and present conflict with what I have written. And, no doubt, he has the same difficulty with my remarks (see also Tobin 1970, Friedman 1970c)."

Even among the economists there are these insights of having failed. Daniel Bell and Irving Kristol wrote already in 1981 in ´The Crisis in Economic Theory´, 228: "Today, the failure of economics to provide either reliable guides to policy or a credible picture of reality is painfully clear. The result has been an unprecedented - and exciting - crisis in economic theory as economists have been forced to reexamine their basic assumptions in an attempt to account for the apparent failure of their discipline."

Peter E Drecker writes on p. 5: "- - -What makes the present ´crisis of economics´ a genuine ´scientific revolution´ is our inability to go back to the economic world view which Keynes overtuned

Notes: See after chapter 1.

Mark H. Willes,93: "- - - The conventional method in *40 years* has not produced one model that captures what happens when policy changes - *and it is absolutely incapable of doing so* - - -." See also 81,85, and 87.

Paul Davidson, 151: "There appears to be a crisis in economic theory. The tides of events in the last decade has diminished the stature of economists of both neoclassical-Keynesian and monetarist persuasion in the eyes of the public, and the corpus of orthodox neoclassical theory is a shambles.- - -"

Irving Kristol, 202: "On the other hand, the existence of a ´crisis in economic theory´ is attested to by the fact that this body of *undisputed* theory is shrinking before our very eyes, not growing. More and more of the intellectual energy of economists, these days, goes into the *dis*establishment of what our university textbooks still proclaim with serene confidence. Almost everything - almost every concept, every theorem, every methodology - in economics today has become fair game for controversy."

The most important reason for the failure of the economists is, I think, their negligence to go to the fundamentals of the concepts demand and supply. All these proud theory buildings are worth nor more than the premises they build upon. I think it is necessary for the economists to realize that we cannot create a theory building cast in one piece, if we do not start with the deductive base of the economics and if we dare not recognize the absolute passive role of the price in the price building process and also dare to recognize that what determines the expenses of the society also determines its income, that the causal relation is never the reversed. Not until then all pieces begin to fall in place. Not until then the dualism, the contradictions, and the lack of conformity with the facts disappear. We can also make a comparison between the existing theory building and the phlogiston theory in chemistry, where at combustion a mystic material was emitted from the burning object, resembling the thinking of the economists that demand is emitted from the produced and offered goods and services. We Swedes have no reason to boast, as even Scheele embraced that theory.

My new work comprises in principle two different parts. Part II contains an examination of the foundations of economics and in what relation present theory buildings stand to these. I have in the latter case chosen to examine in the first place Milton Friedman`s theory building as it is summarized in ´Milton Friedman´s Monetary Framework´, because this is characterized by a certain realism that is missing in most other cases. The reason for my taking on the payment system in Part 1 is among others that a familiar knowledge of its way of function is a necessary precondition for understanding the basic elements, as the concepts demand and supply are intimately connected with the functioning of the payment system.

The fact that the work is now available in English, will, I hope, contribute to increase the interest for a debate. I am very thankful for all comments, I will also answere questions, e.g. via mail and E-mail. Because, for different reasons, it has not been possible for me to have my work investigated in a normal scientific process, there are of course some detail faults in it, which I hope some of my colleagues will point out to me. I invite therefore the economists to take part in the final elaboration of this work with building up a more durable economic theory than the predominant deficient system of to-day. I hope that at least some younger economists will consider what an extremely good opportunity they have to make a scientific contribution by giving a finely touch of my arguments and by a formally more complete theory building supported by a comprehensive empirical and statistic working up. The sketch I have drawn will surely be reflected in the economic theory of the future.

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Gothenburg, December 2003

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PREFACE

I have read and carried out research in national economy during a 30 year period after my economist examination at the School of Economics in Gothenburg 1964 (about 10 working years effective working time). I have earlier in the year 1973 written ´Kvantitetsteorin, utkast till en studie`. This was then sent out to economists and scientific libraries in the Nordic countries. So here 30 years later, I have found that my conclusions then h old to the very great part, which we cannot say about many works within the national economy that have won great approval. I hope therefore now that it would be able for me to give out the work to a great estent unchanged performance after a certain smaller working up.

My new work deals about the key role, as the payment system plays in the national economy and about the basic element of this economy. Both works means a critical examination of parts of the now predominant theory building, which I find indefensible. This has so great defects, suffers of so great system faults that I find it surprising that these have not been critizised earlier. Especially this holds for the demand concept and the view of the role of the bank system in the price building process. I seem it is obvious that 1.000 kr. in notes direct from the central bank or via the bank system is purchasing power and potential demand exactly as much as 1.000 kr. in income and expenses for Ludvig Svenson´s curtain factory (which is often used as example) and in both cases the 1.000 kr. note continue to make purchasing power and create espenses, as long as it has not been withdrawn from the market. I find also that the commercial banks and the bank system do not at all play the key role that the economists have given them, but on the contrary play a very modest role, while against it what other economists have called ´cash-holders´ or ´cash-managers´ exert a very great influence both on potential purchasing power and its use as transactions and payments in the payment system, even if this influence is very regular and foreseeable.

The theory building to-day is stamped by its dualism, the division in money theory and common price theory. This may have a pedagogical value as different methods and explanation system on macro- and micro level. But it is wrong, if we suppose that it is different forces that influence different levels in the society. It is of course so that it is the same forces that are working in the whole economics, they are of monistic character. Compare with Keynes´critic in ´The General Theory´, p.292. (1).

Of course I am aware of that there can be lacks and gaps in my propositions, but this hold for all up to now published systems in the national economy. As I now approaches the end of life, it has not been possible for me to do the work as cast in one piece and so free from detail faults, as I would have wished. I would have preferred that I had got it worked up in further 1 - 2 years, before I had got it published. But I am quite convinced about that the absolute main part of my theories have the future before them. I think that many will be surprised or how much of them that hold, if they really make a critical going through and scrutinize them impartially. For them who sit firmly in current conventions, they are surely indigestible, and I meet sometimes persons that look at me as a fool, which I take with calm.(2). With a thought of all contradictions and lack of agreements with reality in the current theory building, I can take such reactions with protected composure. The defects in my propositions mean rather little compared with the basic system faults in dominant theory buildings. I have in all cases got so much positive comments that I feel rather easy. Time is now also much more mature than it was in the 70th, when I wrote my earlier work. Economics is now stamped by more realism than what it was 25 years ago. To take only one example. In the 60th and the 70th the policy of the economists and the authorities to a great extent seemed to consist of limiting the volume of the credit in the society. It is indeed ironical that all these attempts to influence the inflation development have failed, while we to-day, when all credit restrictions have disappeared in our internationalized society, have managed to reach a relative price stability.

But even Milton Friedman and his followers have failed, their theories are stamped by dualism, inner contradictions, and lack of conformity with facts. That the theories of the economists have often been airy and without contact with reality, is also shown by that they sometimes admit themselves that they do not understand each others. As Friedman writes in a polemic with James Tobin in ´Milton Friedman´s Monetary Framework´, p. 143: "Much of the rest of Tobin´s criticism of my article leaves me utterly baffled. We seem to be talking at cross-purposes- I disagree far less with the substance of what he says than with the substance of what he says than with the views that he attributes to me - which repeatedly seem to me in clear and present conflict with what I have written. And, no doubt, he has the

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The most important reason to the failure of the economists is, I think that they have not went to the bottom with the concepts demand and supply. All these proud theory buildings are worth nor more than the premises they build upon. I think it is necessary for the economists to realize that we cannot create a theory building cast in one piece, if we do not dare to recognize the absolute passive role of the price in the price building process and the quantity equation, and also dare to recognize that what determines the expenses of the society also determines its income, that the causal relation is never the reversed. First then all pieces begin to fall in place. First then the dualism , the contradictions, and the lack of agreement with the facts disappear. We can do a comparison with the phlogiston theory within the chemistry, where at combustion a mystic material was emitted from the burning thing, resembling of how the economists are thinking that demand is emitted from the produced and offered goods and services. We Swedes have no reason of boasting, as even Scheele comprised that theory.

My new work comprises in principle two different parts. Part II contains an examination of the basis of the economy and in which relation present theory buildings stand to these. I have in the latter case chosen to examine at the first place Milton Friedman`s theory building as it is summarized in ´Milton Friedman´s Monetary Framework´, because this is stamped by a certain realism that is missing in another cases. That I before in part I has treated the payment system, occurs among others on that a familiar knowledge of its way of function is a necessary condition for understanding the basic elements, as the concepts demand and supply are intimately connected with how the payment system is functioning.

That the work is now available in English, does not of course mean that the work with the questions I have brought up to date cease, not even from my side. I hope contributing to rise the interest for a debate. I am very thankful for all comments, I answere likely questions, e.g. via mail and E-mail. Because it of different reasons has not been possible for me to get my work investigated in a normal scientific process, there are of course some detail faults in it, which I hope some of my colleagues will account for me. I invite therefore the economists to take part in the final elaboration of this work with building up a more durable economic theory than the predominant deficient system of to-day. I hope that at least some younger economists will consider what an extremely opportunity they have to give a scientific contribution by finely polishing of my arguments and by a formally seen more complete theory building supported by a comprehensive empirical and statistic working up. The sketch I have drawn will surely be reflected in the economic theory of the future.

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PART 1. THE PAYMENT SYSTEM.

CHAPTER 1.
THE DEVELOPMENT OF THE ECONOMY, PAYMENT METHODS, AND PAYMENT SYSTEMS.

a. The Development of the Economy and Payment Methods.

In primitive society or in its initial stages man lives as a collector or a hunter, later on in the development as a cattle-breeder or a farmer, initially perhaps without much contact to people outside his own family or group. He or she lives in a decidedly self-supporting subsistence. As the family groups widen to relations and clans, the barter trade becomes still more spread. One changes e.g. fish or corn against berries, meat, or fur. Gradually a specialization sets in. He who had learnt to tan skins changes against bronze axes or with the one that has learnt to turn and to burn clay-pots. The possibilities for such exchanges are not yet especially good. The individual family's need for lether or clay-pots is very limited, especially as life is mostly a struggle for survival. It is also difficult to make a correct evaluation of the change objects, the contacts to other parties are limited, as are the transport possibilities. To keep and safeguard the change objects can also be a problem. (1). A swap of a commodity presupposes also that both parties have something that the other party wants or can use at another exchange.

At an early stage people discover that certain more durable products are very useful exchange objects. To this category belong ornaments and precious metals. People also learn that anyone who has a supply of such or other easily realized durable products can increase his standard by being able to change against other commodities or increase his safety by storing them for future purchases.

But even metals such as gold, silver, or copper had their limitations as means of exchange. The difficulties in determining amount and purity, to prevent cheating and to transfer the metals were great obstacles. Therefore there arose a need of standardization. People began to punch coins that could serve as money. During the Antique this became a task for the king or the state. Already in Roman time coins played an important role and were used for an increasingly large part of the trade. By punching coins another important aspect was achieved, that of standardization of one or more value units. Since a couple of thousand years ago, coins of gold, silver or copper or alloys of these metals have been dominating in trade along with extensive barter. The coins have been able to keep their value, because that could not drop lower than the price of the metals they were made of.

But already at an early stage the coins show themselves to have a greater purchase value than the value of the inherent metals. The owners are often prepared to give a little more in exchange for the coins mostly for convenience and cost saving reasons. The coin makers discover soon that the coin punching can become a tax object, because the coin value can be set at a greater value than the value of the used metal. The owners also sometimes try to increase the value of their holding of the coins by hole-punching and scraping. And at least for small coins the coin makers could use iron, tin and nickel, the metal value of which represented only a smaller part of the nominal value of the coins.

Early economists like Adam Smith and David Ricardo gave coins like other commodities a value that was based on the production cost. But already during the last part of the 19th century economists like Jevons and Walras and others could show that the only value of interest within the money theory was the exchange value, and that this was determined nearly entirely independently of the production cost. If there was a relationship, this then lay in that the long-term production cost adopted itself to the price. (2). The value theory of the earlier classic economics, as it was presented by Smith and Ricardo and others, was very flawed or even quite mistaken.

Already at an early stage the phenomenon called money value deterioration or inflation or more seldom its counterpart deflation appears. Inflation occurs already in the early flood-cultures in China and the Middle East before the beginning of our chronology. This risk became still greater, when notes began to be used produced of paper or textile materials. Payment items similar to notes were issued in China already in the 7th century A.D. and real notes in the 10th century.. During Medieval time business- and banking houses mostly n Italy, Germany and Flanders began to issue bills and promissory notes that were a sort of bank notes with coverage in coins and metals, mostly gold and silver. Otherwise the world's earliest bank notes are said to have been issued by the Palmstruch's Bank of Sweden in 1661. They were valid in the holder´s name and not transferable. (3). ´Riksens ständers bank' (The bank of the national assembly) began 1701 to issue negotiable notes to be transferred in writing. However rather soon they acquired the same character as the forerunners. They became legal payment means against the state in 1726 and in 1745 also against single persons. As a result of inflation they became inconvertible in 1745, the withdrawal of these against silver coins was resumed in 1777 after depreciation. After a new crisis in the beginning of the 19th century the notes became again inconvertible until the coin realization in 1834. Notes were also issued after 1831 by private banks in Sweden, at first with self-assumed right, but later legally. According to the law from 1897 ´Riksbanken´ (the Swedish Central Bank) has exclusive right to issue bank notes.

In the 19th century and until the nineteen thirties different types of metallic monetary standards dominated. Countries such as India and China had a silver monetary standard and in USA gold and silver long fought for supremacy over the dollar. In USA and certain other countries attempts were made to base the monetary standard on both metals, but when they did not regulate the redemption value to include both an amount of gold *and* an amount of silver but decided it to include an amount of gold *or* an amount of silver. many crisis occured, when the over-valued metal forced out the under-valued, quite in accordance with Gresham´s law. In Europe and USA the gold monetary standard dominated from the eighteen nineties. The role of silver henceforth became to represent a part of the coin circulation but without redemption right and mostly to a higher price than the metal value. During certain periods, foremost during the First World War, some countries occasionally left the gold standard and assumed a paper note standard without redemption right. These periods were nearly entirely characterized by inflation, as the governments used the right to issue notes as a source of taxation of notes and bonds in order to finance the warfare. In 1931 Great Britain was compelled by state financial and social economic reasons to leave the gold monetary standard and most other countries followed. A link to gold was still maintained, as many currencies were tied to the dollar that was paid in gold at transactions between the central banks. This so-called gold change standard was however abolished in the seventies. Nowadays gold is only one of many assets that are intended to guarantee the value of the notes. It is also used at transactions between the central banks, even if it nowadays seldom is an object for regular transports.

From January 1st 1999 the exchange values of the currencies of eleven EU-countries were fixed against each other and on the 1st of January 2002, the individual currencies disappeared in these countries Note issuing and interest rates are since then determined by EMU's central bank in Frankfurt, Germany.

Notes are still playing an important role in the national economy, but in the last century a strong competition from check and giro payments and from payment cards (account cards) arose. Check payments occured in Great Britain already in the 18th century and the check system was completely established in Europe in the beginning of the 20th century, when different giro systems also were established. The first payment card was issued already during the First World War, but the payment cards got a breakthrough first in the sixties and the seventies. In the last decades the payment patterns have been characterized by extensive automation, electronization and computerization..I will return to modern payment methods in the following chapters.

b. Distribution, Payments, Transactions, and Payment Systems.

The national and social economy is usually divided in sectors for production, distribution, and consumption. Here I will deal with the distribution sector.

The distribution or the allotment of goods and services can be of three types, self-supporting, exchanges, and one-sided transactions, i.e. a party gives without getting something instead and the other party gets or takes. An important area is also exchanging or financing transactions whose utmost aim is to make possible and facilitate production and distribution of goods and services. Monetary and financial transactions can also be one-sided or two-sided.

One-sided transactions are gifts, inheritances, testaments, income-, wealth-, and real estate taxes, employment taxes, duties, export fees, commodity taxes, transfers, group contributions, scholarships, penalties, fines, compensations for loss or damage, confiscation, stealing, fraud, robberies, burglaries, slave work, and so on. Someone may perhaps object that the individual certainly gets something in exchange for the taxes he or she pays. Of course the individual can as a rule count on receiving some service from the society. But paying taxes does not mean that a debt from society to the individual arises, he or she has no claim on society for a certain amount of money. This means that tax payments must be regarded as one-sided transactions..

To two-sided transactions belong changes of goods and / or services against goods and / or services, changes of goods and / or services against money, and monetary and financial transactions, i.e. change of claims against money or other claims, or changing, change of money against other money. The concepts ´payment´ and ´transaction´ mean as a rule the same thing and are used in the literature as alternatives. The concept ´payment´ has however often a more restrictive meaning, as changing transactions are often excluded in this context.

Furthermore we can differentiate between the domestic payment system that comprises payments and transactions in domestic currency, within the country or abroad, and the foreign payment systems that comprise payments and transactions in foreign currencies abroad or domestic. I deal here only with the value changes of the domestic currency that in my opinion occur in principle independently of transactions in other currencies. On the other hand the value of the domestic currency can of course be influenced indirectly, if commerce in foreign currency increases or decreases the scope for making payments in domestic currency. If payments in foreign currencies were not done, the scope for making payments in domestic currency would be less, in the same way as the scope for making payments for goods and services would be less, if monetary and financial

transactions demanded more scope. To this comes the curency commerce but it will be considered to fall outside the scope of this study..

Belonging to the payment system are the [4] mechanisms by which money or other means of payment are transmitted or transferred between the actors of the national economy, both regarding their own payments and when they serve as a link between two other parties. These mechanisms include institutions that render payment service, the money, and rules and payment instructions, instruments, and means of assistance.

The main features of the distribution are rendered in diagram 1A.

c. Different Types of Payments and Transactions.

For a payment to be considered fulfilled, the following preconditions need to be met:

1) Two parties who are clearly disparate, by law or by practice,

2) that a certain amount of money (means of payment) is handed over, transmitted, or in some other way transacted between the two parties or their representatives including adequate information or agreement on a set-off (barter - a commodity or a service is rendered in exhange),

3) that the parties agree that a payment has been made for a certain amount or that a bank or a payment institute has registered that this has occured and has informed the parties or their agents or the payment institute about this.

Observe that this does not include the issue whether a certain statement of debt has ceased or not which is a considerably more far-reaching and complicated issue, mainly of juridical nature. If one party considers that a debt is SEK 600 and not SEK 500, as the other party maintains, both parties can still agree that a payment of SEK 500 has been made, e.g. via bank giro.

The payment system has three big actors, the central bank, the bank system outside the central bank and the economy of the society outside the bank system that principally comprises the public, the enterprises and the public administrations. [5] That we differ between the bank system and the rest of the economy can be motivated by several reasons. The most important one is that these markets have two different basic functions. The market outside the bank system has as its main task to produce and distribute goods and services for consumption and investment, while the bank system has to main task to supply and administer money and claims to enable and facilitate the activities of the other sectors.

The economy outside the bank system is highly affected. by the fact that most of the ´products´ of the banks, deposits, loans, bonds, and money market instruments can loose their value due to money value changes. The problem is simpler for the banks, because their ´products´ both increase and decrease in real value. Gains and losses take out each other. On the other hand most of their ´products´, cannot change nominally against each other on account of money value changes. They follow all of them the price of the monetary unit (except losses of substance), they are all expressed in it.

One 100 crown note corresponds always in value to 100 crowns deposited in a bank account. A 10.000 dollars bond is equivalent in value to the 10.000 dollars that have been paid for it, e.g. from a check account. A granted loan of SEK 5.128 corresponds to the SEK 5.128 that have been deposited in the debtor´s postal account. At these transactions a value of x money units against another value of x money units is exchanged. Even if the price level is doubled, decreasing he real value of SEK 5.128 to SEK 2.564 kronor, the same is valid for the real value of the loan. All these assets follow the value of the money unit exactly. This is of course self-evident, but it can sometimes be important not to forget some truisms,

This said even if bonds and claims with a firm nominal rate of interest often are subject to small and short-range rate changes due to interest changes. When the bond interest rate gradually or perhaps rather soon returns to an earlier level, the rate changes have taken out each other. While the common price level can be changed no matter how much, the ´price level´ for the bonds returns to the point of departure. The bond interest rate and the rates for separate bonds use to circulates lightly around a long-term horizontal level.

This is on the contrary not valid for stocks or shares in investment funds or enterprises. These are not claims but parts of a company, parts of a real capital. So even if the stock or the investment fund share is one of the ´products´ of the bank system, its price can change in line with the changes in the common price level, unlike bonds and other claims, even if the value of the share of course is also affected by the real value change of the company. The line has to be drawn between debenture loans (claim) and preference shares (real capital).[6]

Even enterprises in the bank sector can, however, to a lesser extent take part in production and distribution of goods and services, in the first place services. Also these enterprises have their administration costs, their expenses for salaries, premises, and material. Even these companies can possess shares and real estates. We could in principle refer this part to the economy outside the bank system. This would be a problem, if this sector had a great volume. But now it is not so but only a smaller estimating problem.

The division of the payment system and the payment transactions in their major components is shown in diagram 1B. An arrow within a certain sector signifies a payment within the sector. An arrow that passes the boarder of the sector between the

public, the enterprises, and the public administrations on one side and the bank sector on the other and then goes back to the earlier sector, signifies payments within the economy outside the bank sector but via the.bank sector. An arrow that begins in the bank sector and passes to the economy outside denotes thus the bank sector´s payments to this, and an arrow that goes in the opposite direction denotes thus the payments to the bank sector from the economy outside.

In my study I deal mainly with the payment system for the economy outside the bank system, but thus including the payments that go via or to the bank system. There are many studies of the internal payment system between the banks or of the payment system in its entirety, where the emphasis is put on the role of the bank system. Few objections can as a rule be made against these as such. On the other hand there are few or no studies that aim to create a borderline between the payments for the economy outside the bank system and the internal payments within the bank system. I try to do this, because I will maintain that this borderline is one of the most fundamental ones within the national economy. It is remarkable that no more attempts have been made to try to isolate the payments within or to and from the economy outside the bank system, as it would be obvious that it is in this narrower sector that almost all of the price formation process occurs, supply of and demand for goods and services are realized, and inflation, deflation and business cycle processes take place. The transactions in the bank sector are of course important too, but they mostly aim to make possible and facilitate purchases and payments for the economy outside. They are of second hand character and have importance for the price formation process primarily to that degree that they widen or decrease the scope for the sector outside the bank system. I will however to some extent deal with the inner payment system of the banks when I later on take up the role of the money and the automation within the payment system.

d. The Actors of the Payment System.

The central bank is responsible for the production (sometimes by use of its own printing office and mint) and the distribution of notes and coins, and it has the responsibility for upholding their value, safety, and stability. It has as a rule exclusive rights to this activity that is the most pronounced and unrestricted monopoly of the economics and the market.

The central bank has functions as the bank of the state and the bank of the banks and handles deposit accounts, day-to-day loans and other mostly short-term loans. These functions are carried out in Sweden mostly via the so called ´RIX-systemet´ (the RIX-system). The central bank also possesses, buys and sells bonds, ´statsskuldssedlar´ (treasury discount notes), certificates and other money market instruments and takes part in the interest setting in these markets through its general money policy, its recommendations and instructions or by holding, purchases, and sales. It establishes a code of conduct for commercial banks, other banks, credit and payment institutes and supervises together with the bank inspection board office (in Sweden ´Kungliga bank- och fondinspektionen´) that laws and rules are followed. The central bank is also in charge of the reserves of gold and foreign currencies and supervises the currency trade and surplus and deficits in the balance of trade, the balance of current payments, and the balance of payments. It realizes changes of exchange rates or takes measures to influence the value of its own currency. (7).

On many issues there is a co-operation and co-ordination with the finance department, EU-bodies and international institutions in the commerce-, currency-, and finance areas. Even if the standing of the central bank versus the governments and the bank system varies somewhat between different countries, most functions are common. An exception represent e.g. discount houses in Great Britain which often act as an intermediary between The Bank of England and the bank system in general, but their activities are tightly controlled by the central bank and other authorities charged with supervision of the bank system.

In this as in the following sections I give mainly examples from Sweden. They should however show clearly enough the division in principle that is the aim of the exemplification. It would be possible to give examples of foreign payment systems, actors, types of money (means of payment), types of claims or other facts or phenomenons, without changing the presumptions to an extent worth mentioning. In many cases it is merely the term that needs to be changed.(5).

To the banks I count enterprises that have as their main purpose to collect, lend, renew, manage and / or distribute money and / or claims. To that category belong the commercial banks, the savings banks, ´Postbanken´ (the Postal Bank), credit- and savings societies, the finance companies, mortgage societies and -banks, co-operative societies and banks, and government- and state loan institutes. So far this agrees, I suppose, with the traditional principles of division.

But I include into the bank sector also (8) payment institutes such as ´Postgirot´ (the Postal Giro), ´Bankgirot´ (the Bank Giro), ´Cassa Nova´ (the Swedish state´s part of the Postal Giro), ´RIX-systemet´ (an instrument for the transactions between the banks and ´Riksbanken´) and the so called data-clearing between the banks, card institutes such as American Express, Eurocard, and Visa, the customer card function at enterprises as ICA, KF, Ikea, or Statoil, ´Fondbörsen´ (the stock exchange), with brokers and their firms, ´Värdepapperscentralen´ (VPC, center for registration of securities), share-, interest-, and mixed investment funds, insurance- and

pensions funds, ´ATP-fonderna´ (the Swedish Government pension funds), life- and capital insurance companies including ´AMF´ (the insurance of the labour market), Forex and other currency dealers and -brokers. And I count there also Riksgäldskontoret (the National Debt Office) and other bodies for government borrowing and also the government in its capacity as tax- and duty authority and as supplier of common transfers such as pensions and ´barnbidrag´ (children´s allowances), because these functions can be said to be of life- and capital insurance character. They are not compensations for goods and services. Of course one can maintain that e.g. supply of account cards and life insurances are services, but the part of the money and capital generating in these cases are so dominating that these companies ought be assigned to the same group as banks and others. This is also justified by the capital amounts of life- and capital insurances as a rule following the changes of the common money unit. A life insurance of SEK 100.000 has always this value (exception: insurances with dividends or value-guaranties), even if bonus, returns, interests and fees are added or deducted, but these are in the short run as a rule much smaller than the capital amounts.

Furthermore payments of government subsidies to e.g. farming and regions perhaps ought to be considered to belong to this sector as well as foreign aid. Transfers of more individual character belong on the contrary to another group. To this group belong in Sweden e.g. ´sjukpenning´ (sickness benefits), compensation for care of sick children, parent´s allowance, housing allowance, income support and social allowance, ´bidragsförskott´ (advance of child benefit allowance), and unemployment benefit. Partly they are difficult to separate from other government and local authorities expenses. Partly they demand a large administrative apparatus with high expenses for salaries, premises, and material. These forms of allowances being compensation for lost wages can also justify that sickness benefits and unemployment benefits belong there. These expenses are also generally included in public consumption. The more general (not so personal) transfers are also characterized by being either paid out equally to large groups of people or by being founded on paid-up premiums or fees in the same way as life- or capital insurance companies charges.

This wider definition of the bank system I thus consider justified by all these companies dealing with and treating ´products´, money or claims, the price of which mainly follows the development of the common price unit (exception: shares, fractional scripts, and currencies). If the money value is halved, the value of these ´products´ is also reduced ceteris paribus to the same extent (exception as above). All these companies and institutions have mainly the task to mediate and manage money and claims, but they do not mostly trade with goods and services that change in price.

Therefore when I henceforth use the term ´the bank system´ and I do not directly state another definition, I mean the bank sector in accordance with above delimitation. I shall further on return to other essential differences between the bank sector and the economics outside, but for the present it may be enough.

The third large group of actors in the payment system is the remaining market, the economy outside the bank system, the public, the enterprises, and the public administration. The German economist Erich von Schneider used the term ´Nichtbanken´ for the economics outside the bank system, See e.g. Éinführung in die Wirtschaftstheorie´, III, e.g. p. 11.

To the public I count private individuals, households, estates of deceased persons, non-profit associations and none-commercial foundations.

To the enterprises I count ´aktiebolag´ (limited companies, stock corporations), ´kommanditbolag´ (partnership companies), GMBH, ´handelsbolag´ (partnerships, trading corporations), ´enkla bolag´ (partnerships), private person´s enterprises, ´ekonomiska föreningar´ (incorporated associations), ´partsrederier´ (joint-ownership shipping companies), commercial foundations, mutual companies and certain companies without real owner (such as e.g. certain savings banks and mortgage institutions, even if just these belong to the bank sector), government and community public enterprises and joint stock companies. To the enterprises in this division I do not however count those that have earlier been included in the bank sector.

To public administrations I count states and their nationwide and provincial administrations (e.g. ´länsstyrelserna´ [county administrative boards] in Sweden). Furthermore, I include therein interstate, international, and supranational organs. To the public administrations I count also primary municipalities (including the church communities in Sweden, as long as they have taxing-power) and the secondary communities as the Swedish ´landsting´ (county councils) and the Anglo-Saxon counties, furthermore different local authority federations. Here I also include remaining organs pertaining to public law, common land, public foundations and freestanding institutions that carry on a more extensive activity, as e.g. the Swedish universities. To the administrations in this sector I do not however count those that earlier have been included in the bank sector (and of course not the central bank).

The government can consequently belong to all the three important actors in the economics and the payment system.

The central bank function is one of the most important tasks of the community. [(9).] To the government´s part of the bank system belongs of course its ownership part of commercial banks such as Nordea and Götabanken (earlier) and the wholly-

owned Postbanken and Postgirot (earlier) with Cassa Nova and SCR (the Government Group Accounting) and there belongs also ´Postverket´ (the General Post Office), to the extent that it handles money.. (Postgirot has recently been sold to Nordea). There belong also the RIX-system and ´Riksgäldskontoret´ that manage the state debt and certain deposit accounts. There belong also loan departments such as SBAB (the government´s housing loan company), ´Investeringsbanken´ (the investment bank) and ´Studiemedelsnämnden´ (the student grant aid), and the state pension funds such as the ATP-funds. There belong also shares of institutes for special credits such as ´AB Industrikredit´ (Industrial Credit Ltd) and ´Svensk Exportkredit´ (Swedish Export Credit) and others. (10). Furthermore I thus consider that the tax and duty administrations belong to the bank sector in the wide sense of the word like those government administrations that pay out the common transfers such as child allowance, pensions, and subsidies to farming, regions and foreign aid. The stock exchange, ´OM-börsen´ (exchange for options and others), and VPC have of course some common juridical functions, but are owned by private interested parties, even if the government is one of the owners.

Since the taxes and the duties have been delivered as income to the government administration and the municipalities, the expenses are of a wholly different character. They do not differ to any extent worth mentioning from the expenses that the public and the enterprises have and are often payments for goods and services, for public or private consumption and for public investments. (11).

The division for the part of the government can be seen as in diagram 1C. Here as in many other cases I choose preferably examples from Swedish material. But even if the nature, content, scope and limitations of the institutions and the transactions differ between different countries, there should be no problem to draw a line between these two groups, between the government's part of the bank system and that which belongs to the public sector outside, which I thus include in the concept of public administrations.

What and who lies behind a purchase, a payment? In companies it can vary very much. Every enterprise has a payment structure, implicite and / or declared in documents. The manager and / or the executive staff decide on important expenses or investments, often after consultation with the board. In certain cases it can be the annual meeting of share-holders or important share-holders that make the decisions. The main guidelines are drawn up in budgets or plans several years ahead which different departments and cost sectors must follow. Personnel departments hire personnel and determine their salaries (often after consultation with or in negociation with local trade unions). Sale departments try to increase the revenue by bonus systems, advertising, sponsoring etc. Purchasing departments try to press the buying costs and are responsible for a large part of orders, purchase contracts and even payments. Project leaders are responsible for different projects and make purchases for these. But in most cases the accounting (economy) department is responsible for and handles most out-payments. In most cases it is a treasurer or a cashier, who with the help of clerks or chancery clerks, is responsible for payment of the great bulk of incoming invoices, wage- and salary specifications and cash expenses in accordance with the company´s routines for checking of invoices and vouchers. Often a certain individual can be considered to have the main responsibility for this task in a greater or lesser area and therefore also can be charged, if something goes wrong.

Public administrations or institutions have often a written decision- and delegation list that specifies the officers who have the right and the responsibility to attest and order vouchers for expenses, and for the expenses being kept in line with set budgets and plans.

Even if we maintain that it is the treasurer´s or the cashier´s payment that eventually determines the size of the purchase, this does not mean that he or she is as important when expenses are concerned as e.g. the managing director, the board, or the purchasing director. These people who determine the applicable guidelines have of course most influence. If we therefore will use the terms ´kassaförvaltare´ or ´kassahållare´ (cash-manager or cash-holder), it is as an imagined representative for the company or the administration that includes all those who have had influence over a certain expense. We would even have used the word ´inköpare´ (buyer). But at the same time it is however true that if the cashier or the clerk makes a deduction of 2 % off the invoice for a miscalculation, it is eventually he or she who determines the magnitude of the outpayment. Besides the treasurer or the cashier contrary to the buyer has an overall grasp of both income and expenses, even if his functions of course will be regarded as being a part of the economy (accounting) department.. The treasurer, cashier, or clerk will also be responsible for all other transactions.

A special situation sets in, when an invoicing service company takes over the control and the payments of the invoices. In that case it is this company´s cashier or payment function that has taken over the cash-holder´s role, even if this is done according to instructions from the company that charges or is charged. But the volume payments of goods and services is not affected and there will hardly be any other changes, even if a transaction between the two companies is often added.

For single private persons it is simple - they are responsible themselves for their purchases and economic transactions - they are their own cash-holders, with exception of children and legally incompetent persons who have limited rights. In families the picture is somewhat different. In many cases the expenses are handled by those who are

responsible for the household, whether this is done by a housewife, a housekeeper, a valet, or other employee, by those who earn the family income or by another member of the household. In the West it has become increasingly common that both husband and wife not only earn and share the income and expenses of the family but also share the purchasing work and the outpayments. Guardians and executors are responsible for the rights of legally incompetent persons not being ignored even in connection with purchases and expenses. In volontary organizations the cashier is responsible for the control of the expenses and sometimes also for the purchases, while an auditor controls the accounting.

In diagram 1D I have tried to show how the purchase work and the endeavors of the enterprise or the administration to be able to pay these expenses eventually matures in a payment.

Even if the routines for expenses and outpayments vary strongly between different companies, administrations, households or single persons, they all have great power and importance just in their capacity of buyer and / or cash-holder. Irrespective of the decisions about expenses lies on a higher or a lower level, it is the transfer of money that is decisive. If it is money that streams through the payment system of the society, it is the buyers and the cash-holders who manage the taps.

The difference between the cashier´s expenses and income in connection with payments is that the expenses down to the smallest penny are the result of an active action, while the income arrives to the cashiers without any action of theirs at the transfer itself with exception perhaps of signing the receipt.[12] The income includes partly unsafe factors and it lies to a great part outside their control. The income has indirect importance, as it is a precondition for the expenses. It can also be expressed so that the revenues of earlier periods determine to a large extent the expenses of the present. But for the expenses being paid, the enterprise, the administration or the single person must be money liquid, i.e. have a supply of money. It does not help the cash-holder, even if he administers great revenues, if he cannot pay his expenses. On the other hand he can take in in principle unlimited amounts, even if the cash box is empty.

The society´s expenses are also its income. This is of course correct. But then certain economists glide and use the concepts income or revenue in contexts they do not belong to. What they do is to give the concept income an independent, of other variables independent character that it does not own. It is important to remember that income always arises through the expenses of the cash-holders. Even if the expenses of the public are equal to its income, the expenses are determined by the independent dispositions of the cash-holders, while the income reaches the cash-holders, even if these behave more or less passively. If the cash-holders decrease their expenses, other cash-holders´ income is also decreased. And even if these protested and wished to preserve their income level, they cannot accomplish this. Those who sit at the cash taps of the society, thus determine not only the expense level of the society but also its income level. There is equality between expenses and income at point of time or in period 1, but there is definitely no equality between the income in period or at point of time 1 and the expenses in period or at point of time 2.

It can be discussed what term we should use for those who buy and pay for the goods and services and other expenses for the public, the enterprises, and the public administrations (and of course also receive their income). In order to avoid the long and troublesome expression ´the cash-holders (kassahållare in Swedish) of the public, the enterprises, and the public administrations´, I shall mainly use the term ´cash-holder´, conscious of the bank system also having their cash-holders, who are not included. We might also use the term cash-manager, because it emphasizes the active role he or she plays. But I will however mainly use the term cash-holder, because the term shall include even those, who have not such great influence on the purchases, such as treasures, cashiers, and clerks. All cash-holders are not as we know active cash-managers, many purchases and payments are surely done by force of habit. We said earlier that we could have used the word ´buyer´, but this is less correct, because the amount of the purchase is not definitely determined, before the payment is done. It is also less suitable, because a large part of the expenses does not regard purchases but a monetary or financial transaction. Furthermore all revenues have to be added. The concept and the term cash-holder (kassahållare) is also long established within economics. Among others the concept and term are used by those who have described the importance of cash balances and the people behind them for the demand of the society (the cash balance approach). Some economists use the expression [13]´ ´administer of cash balances´ or ´cash transacter´. This we can of course do, the meaning is the same. But I prefer the shorter word ´cash-holder´.

Notes, chapter 1.:

1. David King ´Banking and Money´, pages. 2 - 5.

2. Walras-Jaffe ´Elements of Pure Economics´, 399: "Nor is there any value of costs of production, which, having itself been determined, determines in turn the selling prices of products. The selling prices of products are determined in the market for products by reason of their utility and their quantity. There are no other conditions to consider, for these are the necessary and sufficient conditions. It does not matter whether the products cost more or less to produce than their selling prices. If they cost more, so much the worse for the entrepreneur - it is his loss. If they cost less, so much the better for the

entrepreneur - it is his gain. It is not the cost of the productive services that determines the selling price of the product, but rather the other way round. - - -"

3. J.S.G.Wilson ´Banking Policy and Structure´, 9: "- - - In London, goldsmith bankers were probably developing the use of the bank note at about the same time as the cheque, but the first bank notes actually issued in Europe were issued in 1661 by the Bank of Stockholm (which later became the Bank of Sweden). - - -"

Lars-Erik Thunholm ´Svenskt kreditväsen´, 1989 (LET89), 19.

4. Bruce J. Summers ´The Payment System ´ (Paul Van den Bergh), 29: "Included in the payment system are the mechanisms by which ´fiat money´ is transferred among economic actors when they settle their own payment obligations or when they act as intermediaries for third parties by providing payment services. These mechanisms include the institutions providing payment services, the various instruments used to convey payment instructions, the means of transferring those instructions (including communications channels), and the contractual relationships between the parties concerned."

5. Friedman-Schwartz ´Monetary Statistics of the United States´ (F-SII), 58: "The ´public´ of the United States, ideally defined, excludes the monetary authorities and all banks, whether operated by private individuals, partnerships, corporations, states, counties, municipalities, and government agencies resident in the United States and its possessions. - - -"

6. LET89, 73: "På marknaden upptagna *förlagslån* intar en mellanställning mellan eget och främmande kapital. - - -".("In the market emitted debenture loans occupy a middle position between own and foreign capital.- - -")

7. LET89, 18. BS 164, 129.

8. Martin Andersson ´Kontroll av bankernas betalningssystem´ (MA), 78 -101.

9. Riksrevisionsverket ´Utveckling av statens betalningssystem´, 21 - 26. MA, 92 - 99.

10.LET89, 145 ff.

11. F-S II, 564: "We include item 2 in our estimates of the public's currency holdings because we regard these as balances held by the federal government in its role as one of the agencies cooperating in the production and distribution of goods and services - a role comparable to that played by states and municipalities - rather than in its role as the ultimate monetary authority. - - -"

12. Morris A. Copeland ´A Study of Moneyflows in the United States´, 337: "- - -Most transactors have somewhat more discretion to increase or decrease their total ordinary expenditures than they have to change their total ordinary receipts. Demand for the most part has primacy over supply, because their is a wider range of discretion on the demand side."

13. Ib, 7: "Commons thought of a transaction as ´two wills acting on each other´. Accepting this conception for the moment we may say that each moneyflows transaction implies two parties - a payer and a recipient. It will be convenient to refer to the parties as transactors. Indeed, we shall think of our economy as made up of a great number of transactors that are continually entering into moneyflows transactions with one another and of the moneyflows transactions as playing a major role in organizing our society into an economy; for it is through these transactions that the detailed market ajustments of production and distribution are made from day to day."

Notes to the Preface.

1. John Maynard Keynes ´The General Theory of Employment, Interest and Money´, 292: "So long as economists are concerned with what is called the Theory of Value, they have been accustomed to teach that prices are governed by the conditions of supply and demand; and in particular, changes in marginal cost and the elasticity of short-period supply have played a prominent part. But when they pass in volume II, or more often in a separate treatise, to the Theory of Money and Prices, we hear no more of these homely but intelligible concepts and move into a world where prices are governed by the quantity of money, by its income-velocity, by the velocity of circulation relatively to the volume of transactions, by hoarding, by forced saving, by inflation and deflation *et hoc genus omne* ; and little or no attempt is made to relate these vaguer phrases to our former notions of the elasticities of supply and demand. - - -"

2. Irving Fisher ´Booms and Depressions´, 143: "Twenty-one hundred years after Pythagoras, and a century after Copernicus, Galileo was still afraid to tell people that the earth was round, not for fear of religious persecution (as commonly supposed) but for fear of public ridicule."

CHAPTER 2.
MEANS OF PAYMENT, DIFFERENT TYPES.

a. Different Types of Payment Systems.

Payment systems can be described as technical, legal, and institutional systems within which payments are initiated, effected, and settled.(1).

We can thus distinguish between different types of payment systems. The most primitive and original system is that of the natural economy, where goods and services were changed against other goods and services. This still is to a great extent the case in the developing countries, where people are short of cash. In the industrial countries it still exists in the companies' bookkeeping in the settlement of internal deliveries and counter-purchases of goods and services. The barter system of the natural economy had already before our calendar time developed into a system, where different products functioned as exchange- and payment means. This was particularly true for precious metals such as gold, silver, and copper.

Next came the coin system, which was the predominant during the greater part of our history and which was still vital during the later part of the 1900th century, but which received the death-blow when the gold standard was abolished in the beginning of the nineteen thirties. The gold standard built mostly on a combination of coins in gold and other metals and bank notes that were payable in gold. The right of redemption changed also from time to time. Often a combination of silver and gold constituted the basis for the currency, bimetallism. After the gold standard had been abolished in most countries, a so called gold exchange standard was established by tying currencies to the US dollar that still was redeemable in gold in transactions between the central banks. But in the nineteen seventies USA abolished entirely the right to redeem. Yet gold is still used as a guarantee for the currency and as payment means between different central banks, even if it as a rule is no more a subject to regular transports. But as early as in the 19th century there existed also different check systems in the payment system and from the beginning of the 20th century also different giro systems. (2). In England checks were used as early as in the beginning or in the middle of the 18th century. (3).

From the nineteen thirties the paper standard is totally dominating. The coins are still there, but their value has no relationship whatsoever with the value of the metals they are made of. In terms of value they are wholly subordinated the notes and they play a quantitatively very small role. The present payment system (a paper note system) in e.g. Sweden can be said to consist of the following part systems:

I. A system for offset and barter transactions, which is entirely dependent on the paper note system, the price level of the former being constantly adapted to the price level of the latter.

II. A system for bank notes and coins.

III. A system for check- and giro transactions mostly used by the economy outside the bank system. To this system belongs also the money that can be said to be subordinated to the check- and giro payment means, e.g. account cards, bank checks, and money orders. The system III corresponds often to the so-called low value systems. Examples of such are (mainly) the British BACS and the Swedish ´Postgirot` and ´Bankgirot´. (4).

IV. System for transactions and clearing in the bank system including central banks and clearing institutes. Examples of such systems are the American FEDWIRE (the payment system for the twelve FRB-banks and their bank- and institution customers) and the British CHAPS. In Sweden we have e.g. the bank clearing and the RIX-system. The turnover in the RIX-system is as a rule more than 30 times that of the bank giro.

The paper systems, especially those under IV, are nowadays to a great extent automated and electronized.

Also in Sweden notes and coins still play an important role, especially with private persons, households, and small enterprises, and regarding numbers of transactions. On the other hand the relative volume counted in money has strongly declined. Barter transactions are left only to a less extent for counter deliveries etc.

b. Payment means, general.

There are thus different types of money (means of payment).. Most common are bank notes and coins, check- and giro accounts, account cards, bank checks and money orders. Common for them all is that they mean a claim on the central bank or on the bank system.

Bank notes and coins are a claim on the central bank, even if they no longer are honoured by exchange into another value. All other monies (means of payment) have originated from changes of claims on the central bank to claims on the bank system.(5). For other means of payment to have a value it is necessary that they at any time during office (banking) hours can be honoured in bank notes and coins, they must be fully convertible in central bank money. If the check lacks coverage in a check account, it is worthless. If the bank mismanages, the account can also be valueless. All above kinds of money can in their own form be used in order to effect payments, they have money liquidity (payment liquidity). They have of course also long-term liquidity, common liquidity. I will later return to some other objects that sometimes are called money, and will then explain why they cannot be looked upon as regular money.

Generally one distinguishes between the roles of money as payment medium and as claim or cash. Good money belongs to both these categories. This is always the case for a valid note or a valid coin. But the check, the giro remittance, the account card or the bank check that are all payment (money) mediums, must in order to be valid have coverage in a claim on a bank or a payment institute. If they have not, they are not either valid money. But a credit balance in a check account, giro account, or a card account is valid money, even if the owner for the moment lacks useful forms. It is thus a credit balance in an account that is the essential quality of this money.

Cash payments mean that the transactions are conducted directly between the parties, check- and card payments that they are conducted partly directly between them as well as payments by bank checks or money orders. Otherwise the transactions are conducted via banks and / or payment institutes. The transaction time at the purchase itself can be very short for bank notes, coins, checks, or payment cards. It is yet always strongly dependent on office hours. Kirkman calculates in´Electronic Funds Transfer System´(p. 12 and 153) the required time for a cash payment to 30 seconds, by credit card to 75 seconds, and by check to 90 seconds. By automation he estimates that the time can be decreased to between 15 and 30 seconds. Giro payments cannot as is well known be effected at the time of purchase itself. Lempinen-Lilja estimates that the total cost at a check payment amounts to 180 % and at a card payment to between 180 - 365 % of the total cost of a cash payment, but that this cost can be reduced very considerably by electronic payments (Payment Systems and the Central Bank, p. 46 - 50).

There are risks with all kinds of money. Bank notes can be stolen or lost. Checks can be handed over as payment without coverage; giro payments can be misdirected or lost by fraud. Account cards and bank checks can get into wrong hands. The risks can be decreased by watermarks and by insertion of metal threads, by checking against identity cards, by crossing of checks, by check guarantee cards, by standards for measures and stamping of cards and checks, by special quality papers and sophisticated colour printing methods, by holograms, by identity controle of signatures, by personal codes (e.g. PIN codes, personal identification numbers) or card codes, by controle numbers, by use of magnet tape, micro-chips or micro-processors, and by digital certificates and encryption. On a whole it can be said that money of to-day meets highly standards of safety.[6].

Bank notes and coins render no interest with the exception of periods of common price decrease, e.g. the years 1930 - 32, when bank notes and coins like everything else the value of which was expressed in money units, rendered a factural interest corresponding to the money value increase, as the banknotes and coins acquired a greater buying power. Check and giro accounts give, as a rule, no interest either, but sometimes there is a small compensation. For check and giro accounts the user, partly within the credit frame and partly for every used amount, pays instead credits interest. Furthermore check and giro accounts are often associated with fees, at least for withdrawals at alien banks or for transfers to persons and enterprises that lack such accounts. Common account cards are also as a rule associated with fees, at least in connection with credits. Company account cards, e.g. those issued by ICA, Ikea, Konsum and others render, however, often a rather decent interest rate for deposited money. Giro accounts such as ´Nordeas personkonton´ (personal accounts) render a small interest rate as do the ´sparbanksgiro´ of the savings banks and the ´privatgiro´ of the commercial banks. This does not change the principal difference between check and giro means on one side and savings on the other, but can of course represent an assessment problem. ´Postanvisningar´ (money orders) and traveler´s checks are often expensive ways of payment, while bank checks and ´postremissväxlar´ (cashier´s checks) are sometimes free of charge as a service from the bank. A bank check or a cashier´s check means also an interest-free debt (float) for the issuing bank, even if this as a rule will not be long-term.

A more detailed account of what different payments involve, is given in Appendix 1, where I describe schematically the process of a payment transaction. Every such process with the exception of bank note- and coin payments consists of a number of part transactions.

c. Banknotes and Coins, Check and Giro Means.

Bank notes and coins have long played the role as the most common and most used money. They are often called cash, but the usage is not quite unequivocal. Most people include into the cash concept received checks, cashier´s checks, bank checks, and similar remittances. To the extent that I use the term, I mean only bank notes and coins. The use of bank notes and coins is often limited to the sectors for private persons, households and small enterprises and administrations.

The check has on the other hand mostly been used by larger companies and administrations and dominated earlier in their money volume. In Sweden the check is, however, since long declining, and this decline has intensified in the last few decades, since fees, mostly because of the extensive administrative work they cause, have increasingly penalized the use of checks by high fees. But the decline has also occured because of the progress of the giro systems and the account cards and the automatization of the payment systems. In the dominating Swedish retail company group ICA the check payments now amount to only approx. 3 % of the total volume.

The use of checks is yet still widespread in countries such as USA, Great Britain, France, and Denmark, while it is comparatively insignificant in countries like Germany, Switzerland, the Benelux Countries, Norway, Finland, and Japan. In these latter countries like in Sweden it is instead different giro systems that have a dominating position. In Germany they use the term ´Giralgeld´. Giro payments have had a considerably smaller share of business in countries such as USA and Great Britain, partly because the postal giro has not been able to play an important role in these countries. Yet The National Giro in Great Britain answered for about 99 % of the payments of government benefits. Now the picture is changing also in these countries by the automatization causing often the giro systems or clearing to replace the earlier use of checks.

The advance of the giro has been accentuated by the introduction of standing payments (autogiro) and direct debits. Standing payment means a deduction of a determined amount off the account at a certain point of time every period and direct debet means a deduction off the account of an amount calculated by the seller for a period of time. The bank or the giro institute, of course with the permission of the account owner, makes both deductions.

´Bankgirot´ and especially ´Postgirot´ in Sweden are of great importance. The postal giro started already in the nineteen twenties and has shown a stable growth corresponding to the decline of the check system. The bank giro was started in the beginning of the nineteen sixties, perhaps to some extent due to the commercial banks realizing that the decline of the check system could not be stopped. Around 1960 ´Personkontot´ (the private person account), ´Sparbanksgirot´ (the savings bank´s giro), and ´Privatkontot´ (the commercial bank´s giro) also emerged. The payments within the business life and the public administrations in Sweden are nowadays entirely dominated by bank giro and postal giro payments. According to the statistics of ´Riksbanken the check payments in the Swedish society amounted to SEK 675 billion (in Great Britain and Sweden milliards) in 1992, while the giro payments at the same time amounted to SEK 5.640 billion, of which the bank giro turned over 1.870 and the postal giro 3.770 billion [7].

From the beginning the boarder between the check and the giro payments was very distinct. A check was handed over or sent to the seller. It was drawn on a separate check account and could be entered in the books directly, while a giro payment remittance was sent or left to a giro institute, which at the receiver end could be entered in the books first after he received the notice from the giro institute. But by the introduction of common accounts for checks and bank giro remittances, by crediting the other type of money, by the introduction of account cards, and by the automatization of the systems the boarder between check and giro payments has become less distinct. [8].

Common accounts for checks and giro were introduced by the German savings banks already in the nineteen twenties for wage- and transaction accounts. We can therefore alternatively talk about check and giro accounts instead of making a distinction. A more detailed statement of what bank notes, checks, and giro payments involve is as previously stated given in Appendix 1.

Within the bank- and payment systems the automatization foremost by computers and computerized telephone transfers, is far advanced. By coding of checks their character has changed to more resemble payment cards. But the most important quality of the check and giro systems, accounts from which check and giro payments can be made according to a formulized routine and where transfers can be made directly from the accounts of other persons or enterprises, has not changed. On the other hand the automatization can mean a higher speed. It has yet to be pointed out that the centralization in the Swedish bank giro and ´Bankomat´-system´ (cash dispenser system) has not advanced as far as in ´Postgirot´. Between the commercial banks the central clearing is mainly between different bank groups, while the transactions between the single offices are mostly cleared within the bank group.

Check and giro payments are made not only from accounts with a credit balance but also from accounts with credits up to a certain amount or from combined accounts. But volume payments (volume credits x velocity) are as a rule much smaller than volume payments on the basis of credit balances. The reason is to some extent that the costs for using the credits are much higher. The possessors must pay interest partly on the whole credit amount and partly on the withdrawn credit amount. This means that the account owners use preferably their balances, because the interest loss or cost then will be lower. First when the balance is exhausted, the credit is made use of. This occurs automatically in most cases, because the accounting regularly covers the same account. The credit volume of check and bank giro accounts is as a rule much lower than the balances. A part of these accounts lack credit e.g. all ´Postgiro´ accounts in Sweden. But also when the positive balance and the granted credit frame are equal on average the difference in transaction volume can be considerable. The credits in check and giro accounts constitute a measurement problem, in so far as they cannot be equalized with other check and giro means on account of their lower velocity but must be counted for themselves.

It can be discussed how much extra payment capacity the credits create. If we suppose that the credit is turned over 4 times a year, e.g. at the end of each quarter, 3 cash payments have in reality occured, because the credit amount is paid at the end of the quarter but at the same time a new quarter credit is given. At the end of the fourth quarter the credit granted at the beginning of the year is paid for in

reality. If we suppose that the credit is turned over 12 times a year at the end of each month, so in practice 11 cash payments occur, because the credit is paid at the end of the month, but at the same time a new monthly credit is given. At the end of the twelfth month the credit granted at the beginning of the year is in reality paid for. Irrespective of credit length the credits have then involved no additional money, but on the other hand an amount equivalent to the payment of a quarter credit respective a month credit have been postponed 9 respective 11 months. If no turn over or installment has occured during the loan time, the volume turned over will be very small, namely equal to the granted credit that thus is turned over once. But even if a credit is granted, the claim, the demand, is eventually for the balance in money.

We also need to differ between common accounts with check credit, where the credit is used to cover temporary deficits and e.g. building credits and such credits, where the credit aspect is the essential. A building credit is characterized, as we know, by the credit amount successively being made use of until the credit limit is reached, when the letter of credit is lifted and replaced by a mortgage loan or perhaps a new temporary credit. If the original amount is withdrawn during a period of one year, the loan amount can thus be very high, but the turnover speed very low - only once a year And if the withdrawals are not made as a direct transfer to other persons´ or enterprises´ accounts, but to other accounts of the loan owner, no money contribution at all has been made by the letter of credit beyond the measured volumes of money. And even if the credit is used for check payments directly from the account, the payments volume is thus very small in relation to the total credit volume..

d. Savings and Long-Term Deposits.

Some economists regard savings and long-term deposits as money (means of payment). I think that this is wrong, for many reasons. Savings have not normally the attributes that money has.

The handling of bank notes and coins has support in laws and rules that say that they are common money. They are standardized and commonly accepted. They have durability and low cost per transaction and are comfortable and safe for both transaction parties.

Check and giro means can also be directly used for payments, even if at least giro transfers as a rule take a couple of days to realize .They have also support in laws and rules that state that they are common money. They are also standardized and commonly accepted. They involve a low cost per transaction and are comfortable and safe for both parties.

What is it then that determines the difference between check and giro means on one side and savings and long-term deposits on the other? (10).

The economists have often drawn the line between deposits at sight and long-term deposits that have to be cancelled. It is evident of course that deposits that must be cancelled cannot be regarded as money, at least not before they are at the deposit owner's disposal.(11). But not all deposits at sight permit check and giro payments. Not even the fact that interest is granted, is any good determination basis for savings. Even if the most check and giro accounts do not grant or have not granted interest, check and giro accounts can still sometimes be interest bearing. No, the most important distinction of money is probably that it permits routine transfers. Friedman-Schwartz say in ´Monetary Statistics of the United States´ , p. 80: "- - - The distinction between demand and time deposits at commercial banks, at least since 1933, has typically been that demand deposits were, and time deposits were not, transferable by check.- - -". Here the authors thus draw the line in the same way as I do, even if they use the term ´demand deposits´.(12). That they do not include giro payments, depends on these being a late phenomenon at least in the USA, where checks then dominated entirely. The official statistics and the bank statistics do not either give account of deposits by checks only but most often also of demand deposits. But the check deposits are probably mostly the main part of the latter and the volume of this can therefore be regarded as a good approximation of the volume of the former. The covariance between their numbers is probably very large. That this is so, is also shown by the parallel development of the volume ´demand deposits´ and the volume bank notes and coins outside the bank system. The quota between them is enormously stable and can stay unchanged for decades. This is clear among others from the material that Friedman-Schwartz report in their book after page 58.

For check and giro payments there are separate payment systems with special rules, forms, and standardized routines that highly facilitate the payments and control. This makes it possible to reduce the time, the work required and the cost for making transactions to the least possible. It also helps to create enough information, first of all for the receiver but also for the payer and the mediator, and makes payments safer, more comfortable and more commonly accepted.(13). All this results in the paying party nearly always using the check- and giro means. First when this means is exhausted, he or she will try to use other means. This behaviour is supported by the fact that he or she who makes use of savings looses interest. And to the extent that a person or a company pays after withdrawing savings, he or she does this as a rule first after having transformed them into money. In such a case it is an internal transfer that has preceded the payment in bank notes or check and giro means. Payment with savings cannot be regarded as such in another way than by a withdrawal from the customer´s own savings account and by deposit into another person´s account outside the check- and giro

system. In cases where the bank debits the payer´s savings account and credits his check and giro account, no payment has been effected, only an internal transfer between the accounts of the payer. Good money means then a combination of attributes, no notice time, no or low interest, and a carefully designed, easy, comfortable and cheap routine-like system for making payments and informing about transactions.

As savings accounts have not normally been used for payments, there is mostly no well-established routine with special rules and forms for payments. If the transfer is done from a savings account without check or giro, the receiver is not normally informed about the transfer until the time, when the receiver normally gets a statement of accounts, sometimes perhaps only at the turn of the quarter or of the year. And then it does not clearly show who has made the payment and for what reason. There arises thus an information- and control problem. [14]. If a direct transfer between savings accounts is not done according to routine, it means increased work load and increased costs, both for the payer, for the bank and for the receiver. None of the parties has as a rule any interest of irregular ways of paying to gain ground.

Check and giro accounts have a further attribute in contrast to not only savings accounts but also in contrast to e.g. card accounts. They permit payments from other persons´ accounts by simple standard methods. On the other hand no payments take place from the accounts of an outsider directly to another person´s account for payment cards. For payments from a payment card account to be effected, means must first be transferred from a check and giro account (exception: the credits of the bank or the account institute). The former account does not live a life of its own, it is quite dependent on the latter. Thus e.g. the card account often demands another transaction for a payment to be effected. It has a lower degree of payment capacity.

Especially important that payments are done according to simple, fixed routines, it is of course, when the payments are periodically recurrent, which is the case e.g. for standing orders or autogiro. But even for direct debits and for many other recurrent payments, the simple process and the regular reporting is a precondition. ´Standing orders´ and ´direct debits´ have been established as standard in e.g. Great Britain and Sweden since the nineteen sixties. It lies in the interest of all parties, the payers´, the payment institutes´, and the receivers´ that such automatized methods can be used.[15].

In normal conditions or during inflation periods there is no reason to make use of savings for payments. Why should one use something that is more inconvenient and which decreases one's interest income instead of using money that does not mean an extra cost? During a deflation period many would certainly use savings for payments, but those who most need to do that have as a rule no savings. [16]. If it were so that the money had not the decisive role that the advocates of the quantity theory maintain it has, why does not the national economy use its assets in savings- and capital accounts during a deflation. These assets are as we know usually larger than the check and giro means volume. If the price level had decreased by 10 %, it would on account of that amount have been a child´s play to increase the payments by 10 % by using the former. But this never happens. The lack of money often strains the liquidity of the bank system to such an extent that it does not accept lower deposits and savings volume without in turn decreasing the loans. All experience shows that savings still less than otherwise can be used as money during a deflation period. And the banks seldom accept that the depositor gets interest on accounts that are used as transaction accounts. Instead there is often a certain hoarding of money and an increase of savings during deflation periods that further decrease the money liquidity. That this is so is also shown by the fact that the close relationship between the volume money, the transaction volume, and the price level is much weaker between the savings volume, the transaction volume, and the price level. In many cases the savings volume can even develop in the opposite direction against the two other variables. [17]. The money is thus always the bottleneck that determines demand and transaction volume.

If it were so that savings could be used for payments in other ways than by transfer to check and giro means, and the savings thus could partly take over the role of the check and giro means, then the volume of the check and giro means would be able to drop without jeopardizing the cash-holders ability to pay. We would often be able to establish this in changes in the quota between check and giro means and bank notes and coins. But statistic material gives no support for this. The cash-holders keep mostly the quota on an unchanged level for decades and during periods of changing business activity (except during the final stage of hyperinflation, when check and giro means disappear before the bank notes), which also shows that savings cannot serve as a substitute. Of course also disregarding the statistical effects that arise by hoarding.

Particularly in less developed countries with poorly developed payment systems it occurs however that no difference is made between check and giro means on one side and savings and long-term deposits on the other, and that what are called savings accounts are used for payments. This applied to a great extent for the bank systems during earlier periods. As the personnel costs earlier played a smaller role, it was not so expensive for payers, banks, and receivers to use not formalized ways of payment, as it is nowadays. The statistics earlier were also often defective and did not clearly distinguish between different types of accounts. Shearer records in ´The Income Velocity of Money in Canada´, p. 414 that the

cash-holders were permitted to draw checks on all personal savings deposits right up to the year 1967. But in spite of these making 53 % of all deposits, they answered for only 4,5 % of all checks in larger towns, while the demand deposits answered for the rest, in spite of its volume being smaller. The velocity (turnover rate) was only 1,86 for personal savings deposits against 88,3 for demand deposits. This discrepancy would certainly have been still greater, if owner's withdrawals that surely are proportionally more from savings accounts than from check and giro means could have been discounted. From the year 1967 the banks in Canada distinguished between personal savings deposits that could be and such that could not be used for check payments. But for reasons of self-preservation most countries and bank systems avoid to allow savings accounts to be used for payments, provided routine payment methods can be used. And the more long-term an account is, the lesser the use will be in relation to the volume of the savings and the lower the velocity. The banks have also often stressed the difference between check and giro means and other deposits, because the former have put greater demand on the cash reserves.

The picture is, however, complicated by the existence also to-day of accounts that have partial savings functions, also rendering interest, which allow payments, and where this is made possible by special rules, routines, and forms. Three examples of this are the in Sweden in the nineteen sixties introduced ´Personkontot´ at ´Nordea´ (former ´PK-banken´), the savings- banks´ ´Sparbanksgirot´, and the commercial banks´ ´Privatgirot´. These accounts that are wages and pensions accounts but also payment accounts, render sometimes a low interest return resulting in their also attracting savings. But these accounts differ from common savings accounts by having standardized routines and forms and therefore making payments possible nearly as easily as the cheque and giro means, both from and into the accounts. They differ from check and giro means free of interest by a higher volume per krona turnover and lower velocity, perhaps depending on how high the interest return is set. If we have common accounts for e.g. wages and pensions and for transactions, the velocity will become lower than for isolated transaction accounts. If these accounts attract savings to different extents, the result will be that the velocity will vary. One can say that an extra measuring problem has arisen since we must divide the volume money and its transaction volume into different part volumes that then must be made comparable in order for us to arrive at total sums for the whole society.

At an asessment of the payment streams in Sweden before the year 1960 this does not create any problem. Nordbanken´s Personkonto, Sparbanks-girot, and the commercial banks´ Privatgirot did not exist before 1960, neither the common ´Bankgirot´. Direct bank transfers from other accounts that occurred at the side of the check- and giro systems will not have created any great volume. There is very good statistics for these years before 1960 for the volume bank notes and coins, both outside ´Riksbanken´ and outside the commercial banks, as well as for the balance on postal giro. and check accounts and for the transaction volume and the velocity at Postgirot´. Sweden before 1960 can be seen as a good example of how at least the volume check and giro means develops, when deficiencies in bank routines and statistics are not distorting the picture.

To the same group of accounts as the mentioned Swedish ones belong also the interest-rendering forms of deposits that have been developed in USA during the nineteen seventies and nineteen eighties and which make payments possible. To these belong ´NOW´(Negociated Order of Withdrawal),´ Super-NOW´ and Share-drafts (of Credit Unions). For the first time since 1933, when interest was forbidden for demand deposits, USA's payment means thus comprise interest-rendering means, even if the velocity of this is probably lower than for check and giro means in general.[(18).]

It happens yet also nowadays that certain other accounts can be used for check and giro payments. It does not change the principal difference between check and giro means on one side and savings and long-term deposits on the other, but it means, as we said, extra assessment problems. This is also true for Sweden of to-day, where transfers via the bank giro in certain cases can be made from usual bank accounts, which can distort the statistics. Now the deviation is, however, not so great as it can seem at first. It concerns mostly payments by standardized transfers according to a determined routine from accounts available without notice and if interest is granted, it is often low and often combined with fees. If a person has both short-term and long-term accounts, it is evident that the short-termed ones will be used for payments. Even if these accounts contain some savings, their volume would probably develop very much in parallel with the volume check and giro means in the cases where the volumes can be isolated and evaluated separately. Most account owners have both short-term and long-term accounts, the short-termed ones that are used correspond to the demand deposits in the Anglo-Saxon countries and consist probably to the greater part of means that can be called check and giro means. A condition for a bank account to be described as check and giro means is, however, that an outsider can transfer means directly to or get means transferred from the account, that this is done according to the rules, routines, and forms that have been created in order to make standardized transfers possible and that the account is subject to a continuous, often daily report system.

During the latest decades the difference between check and giro means on one side and savings on the other has been even more accentuated, because the banks in their cost-cutting compaigns now try to guide all payments to the regular money and

then mostly to different giro systems with a high degree of automation. This is achieved among others by high, in certain cases prohibitive fees. Some transactions, e.g. ´postanvisningar´ (a type of money orders used in Sweden) have nearly ceased to exist.

The border line between check and giro means and other deposits has however on the other hand become less clear through the continued automatization and the electronic applications that can permit formalized routines for a great number of accounts. Thanks to the precision that the computer technology and the computer accounting make possible, it will be less resource and cost exacting to record payments from non-transaction accounts. Automatic payments act in the same direction. According to Kirkman (Electronic Funds Transfers´, p. 151) EFT-transfers in Great Britain can be made even from savings and time deposits. Another example of this is that commercial banks in USA since the 1st of Nov. 1978 have permitted customers to make automatic transfers from savings accounts to cover overdrafts on transaction accounts. (19). Also in Sweden the banks now permit payments from accounts of non-transaction character, if this can be done by automatic routines. But the great part of these transfers is however normally made via a transaction account. Payments from these are still the absolute main rule, which both the cash holders and the bank system prefer.

But the fact that banks and institutions do not keep the borderline clear, does not change the cash-holders´ dispositions in order to reach a satisfactory money liquidity and profitability. That two types of means are put together in the same account, does not mean a principal difference in that respect, only an measurement problem. The same is true for the case, when savings on account of deposit restrictions have occasionally streamed into check and giro accounts. So can also be the case in connection with bank crises, when the cash-holders are keen to be able to withdraw their savings quickly and will not be bound by periods of notice or other withdrawal restrictions. This is accentuated further, if there is deflation and the bank notes therefore render a real interest compensation.

It should be noted that when I distinguish between check and giro means and other deposits, this is valid for deposits in the economics outside the bank system, its payments, and its money liquidity. For the bank system other laws are valid that make the borderline floating and of small importance. In this case we can of course talk about direct bank transfers from different accounts in connection with payments and transactions that as we know mostly are effected through different clearing systems.

Savings and other long-term deposits are of course liquid means. But normally they are not used for payments, they have no money liquidity. On the other hand they have importance for the payment system as a reserve. Most cash-holders have separate transaction accounts in contrast to savings and other accounts, which latter function as a buffer and answer for the liquidity in the somewhat longer run. The cash-holders adjust continuously the volume of money and savings to each other, so that they answer to their demand for money liquidity and earning power. Direct transfers from savings accounts are no alternative for them. Instead they handle any need for extra money, by making a transfer from savings accounts to check and giro means. An individual can increase his payment means in this way, but the demand for profitability puts tight limits to his ability to increase his money liquidity. This is valid in still higher degree for the society as a whole, because all statistics shows that the cash-holders almost never expand (or contract) the quota between the volume check and giro means and the volume notes and coins. *The volume check and giro means becomes therefore a measure not only of the cash-holders ability to use these means but also of their ability to make use of savings for payments.* This is accentuated by the fact that the cash-holders who have a good common liquidity also as a rule have good money liquidity. They have no need to use savings for payments. Those on the other hand who have bad money liquidity have as a rule bad common liquidity. They have mostly no savings to make use of.

That the cash-holders look at check and giro means on one hand and savings and long-term deposits on the other in entirely different ways, is also shown by the quotas that the cash-holders keep of them in relation to bank notes and coins. While the quota between check and giro means and bank notes and coins is very stable and can stay unchanged for decades, the quota between savings and long-term deposits and bank notes and coins shows changes. It is also stable but not so pronounced as the other quota. It can change, if the preference for savings is changed, e.g. due to interest- and tax changes.

e. Bank Checks, Money Orders and so on.

I have earlier distinguished between payments for goods and services and financial and monetary transactions. How shall we then consider bank checks such as e.g. bank (banker´s) drafts, bills, B/D, B/Dft, money orders, cashier´s checks (drafts), remittance checks, traveler´s checks and other such remittances that are not tied to a certain account? Shall we consider the purchase of the bank check or money order as a monetary or change transaction and the handing over or the transfer as the real payment? Or shall we consider already the purchase as the real payment? It is the purchase that puts demand on the money. The handing over of the bank check or money order puta no further demand on the money. The most correct way of looking upon it is therefore probably to consider the purchase, the first transaction, as the real payment and the handing over only as a sequential transaction.

This money has a strongly limited utility. It is hardly accounted for in separate accounts, at least not in accounts to which outsiders can make payments. The holder can e.g. change traveler´s checks in a bank without having been used for purchases. This is true also for other bank checks and money orders. Only to a restricted extent are they used for purchase of goods and services and only to a restricted extent are they objects of an extra turnover. In USA travellor´s checks are however often used for payments at visits and purchases in another state. But they are seldom used for a further payment. They are no basis for further circulation. They are mostly only an extra link at payments in bank notes or check and giro means. The bank check or money order has very limited payment ability.

That the bank check, money order or cashier´s draft cannot be considered as independent money is not due to the payment medium, the used form, but to the fact that they, as I said, are not paid from the owner's independent accounts, to which it is possible to make the owner's or from outside coming payments. It is the check account respective giro account that makes the usual check or giro remittance into perfect secondary money. If a bank check or a money order is drawn from a giro account, it is still a giro payment. Apart from the most convertible of all money, the bank notes and the coins, it takes thus a combination of payment account and payment medium to create such independent money. The value of a check or a giro remittance is dependent on the existence of a positive balance in a check or giro account, convertible in central bank money. For the bank check or the money order there does not even exist an account.

f. Account Cards.

To pay with account cards is a quickly growing way of making payments.(20). They have many names: Charge cards, spending cards, payment cards, transaction cards, account cards, debit cards, credit cards, plastic cards, bank cards, T & E-cards, store cards, etc. The so- called cash cards are on the contrary no account cards. The first account card, a credit card, was introduced by the Mobil chain, which then was called General Petroleum Corporation, in 1914. (21). In Europe Diner´s Club and American Express were introduced in the nineteen fifties in Great Britain.

The terminology on account cards and payment cards is very vague in Sweden. This has mostly historic reasons and the card issuer's strategies. Björkholm & Johnsson use in ´Betalning med kontokort´ (Payment by account cards), p. 12 ff., the collective name ´kontokort´ (account card) (except for cash cards) and sub-divide these into ´bankkort´ (bank cards), ´betalkort´ (payment cards), and ´kreditkort´ (credit cards). But also the bank cards and the credit cards are used for payments, all three types can be cards with credits, and all three are issued by the banks. (23). Besides also ´uttagskorten´ (cards for dispensing machines), certain customer cards and certain other types of cards are tied to an account without being payment cards. Terms like payment card, spending card or charge card cover and define more clearly the concept. To pay with it is what these cards are mostly intended for. In Norway they use the term ´betalingskort´ and in Denmark the term ´betalningskort´ (payment card) as a collective term for cards to pay with, which is a much better term than the Swedish one, ´kontokort´. (23). But as the term ´kontokort´ (account card) seems to be so common as a collective term here in Sweden I have to use it.

Some of the most important account cards and card issuing companies to be found on the Swedish market are the bank owned cards and institutes Visa (with Visa Sweden) and the group around Master Card (with Euro Card). (24). These cards including routines are usually called open systems, because the sales enterprises behind these have agreements with a bank, a redeemer (cashier) that represents all card issuers within the actual system with a common trademark (brand). Even the banks´ own cards such as the Swedish ´Bankkort´ , ´Köpkort ´, or ´Sparbankskort´ can be said to belong to open systems, because many banks are co-operating as cashiers also of other cards in the system and these banks are also co-operating in different service companies such as the Swedish commercial banks´ ´Servo´ and ´Cekab´ and the savings banks´ ´Babs´. (25). Cooperating banks and card issuers with a common trademark have often a common rule system. They also co-operate in trademark associations. The commercial banks´ test with common cashing in Servo was, however, stopped for competition reasons. On the other hand the savings banks´ comparable co-operation in Babs was permitted. Redeemers in Sweden are the four big bank systems ´Skandinaviska Enskilda banken´, ´Handelsbanken´, ´Nordea´, and ´Föreningssparbanken´, and the smaller ´Öatgöta Enskilda Bank´.

On the contrary the international cards and companies American Express and Diners´ Club are closed systems, because in these cases agreements are concluded directly between the card company and the sales companies. (26). Cards issued by single companies (and chains of companies), (customer cards), like the cards of ICA and Ikea and the petrol companies in Sweden belong also in most cases to the closed systems category, because there are no separate cashiers in these cases. It happens however also that a sales company co-operate with a card issuer, like ´Vivo´s´ co-operation with Visa and KF´s cooperation with the savings banks.

The banks´ finance companies and independent finance companies are also sometimes card issuers. Such a case is the credit card Finax that is issued by a separate finance company.(27). There are also account cards that only function in a totally

electronic environment. To these belong VISA´s ´Electron´ and Master Card´s ´Mœstro´.

Account cards are used mainly in the retail trade and the service sector. They are valid for an amount that is limited to the credit balance of an account (check, giro-, card account) or a granted credit valid for a certain time and / or a certain amount. The account cards are as a rule supplied by banks and card institutes (including multiple stores with own account cards), the credit cards after the holder has been approved in a solvency test and a credit frame has eventually been determined. Most account cards that function as payment cards are associated with rather high fees and interest charges. Firm cards accounts are often an exception. These render often interest on account surplus. In Sweden firm (customer) cards are mostly used by the big retail trade chains ICA, Konsum, Ikea, and the petrol companies. The credit cards are as a rule objects of high interest charges, mostly both on the used credit amount and on the credit limit, in the latter case with a lower rate.

Certain personal cards for identification, authorization and account withdrawals can be said to be in aid for using payment cards, but cannot alone be used for payments. Personal cards can be divided into: A. Identification cards, B. Cash dispenser cards. C -E. Payment (spending) cards. A and B do not function as money but only as an aid at payments. C - E function as money but also as identification and at withdrawals of cash.

A. Identification cards can be divided into:
a. Common cards, e.g. driving licences, passports, the Swedish Postverket´s identity cards, etc.
b. Cards for customers intended for identification in shops and service points and /or for receiving discounts.

These cards can in their turn be divided into cards with or without photos, with or without possibility of optical reading, with or without magnetic tape, chip and / or microprocessor as well as different combinations of these. A special type of cards for identification is the so called cheque guarantee card.

B. Cash dispenser cards, called ´automatkort´ or ´bankomatkort´ in Sweden, are used for withdrawals of cash in automatic dispensers (´bankomater´, cash dispensing machines), but cannot normally be used for payments. [28]. In Sweden in 1996 there were about 2.800 Bankomat and Minuten dispensers. They were also used for account balance control, statement about latest entries, in certain cases for transfers between the owner's accounts, and for requisition of forms, however not in Sweden. Payments can also be effected from so called ´ATMs ´(Automated Teller Machines) developed from cash dispensers, but these can rather be described as small terminals. Instead withdrawals by dispensing machines can often be made by payment cards. Cash dispenser cards make the account withdrawals extra easy and cheap.

C, D, and E. Payment (Spending) cards can be divided into store (customer) cards and common payment cards.

C. Store cards (firm cards, selective cards) are account cards that are valid in certain multiple chain stores, certain shops or service points, or in certain branch outlets.[29].

D,E. Common payment cards are payment cards that are valid in different shops or service points (mostly in so called open systems). In the year 1994 there were between 500 and 600 millions common account cards in the world, thereof about 8 million in Sweden.

The cards C, D, and E can also be divided into:

a. Cards without credit (debit cards), where payments are always drawn from an account balance.

b. Cards with time limited credit (e.g. a month), as a rule up to a certain amount. Accrued debt to the credit card company is furthermore to be settled within a certain number of days, e.g. 10, after the end of the limited time period (credit card).

c. Cards with a more extensive credit up to a certain amount, sometimes with an installment plan (credit card).[30].

In many cases there is of course a combination with a credit frame beyond the account balance.

Nowadays a great part of the card payments are effected automatically. The account cards are as a rule coded with the help of optic codes, magnetic tapes, or chips, or different combinations thereof and can be read, controlled, and registed in card readers (verifiers), registers, and / or computers. The material can then be dealt with as paper forms or be collected on magnetic tapes, cassettes, or diskettes, which in their turn can be sent by post, messenger, telephone, or computer to a bank or payment institute, or also the material can be transferred there online directly at the time of purchase. [31].

This can be done in different ways in shops and service points:
I. By paper handling, as single deeds,
II. " " " , in packets (batch),
III. By magnetic tape, disc or cassette accounting, batch wise by messenger or by post,
IV. By computer or terminal and accounting, off-line, batch wise by telephone and / or computer,
V. By computer or terminal and accounting, on-line, directly by telephone and / or computer in real time.

The spending cards C, D, and E can also be divided into:

C. Cards not connected to separate accounts, where every separate purchase amount is drawn from common check and giro accounts and where accounting is done together with the statements of account that also include all other account changes. .

D. Cards with special accounts, where the purchases are drawn from these and accounting is

done separate by the bank or the card institute. These accounts cannot however in principle have means transferred from other person´s accounts but only from the owner´s own ones (with the exception of certain credits that the bank or the card institute can effect, e.g. corrections and interest payments). The transactions under D are finished off for every period with a transfer from a check or a giro account (or a cash payment). This can be done in different ways: Through debits with the amounts the bank or the card institute calculates (with the permission of the account holder) (direct debits) or through a common payment by the account holder himself, after receipt of notice or invoice.

E. Besides these accounts under C or D we could at least in theory think of independent card accounts to which means can be transferred from other persons, which transactions would be concluded with accounting by the bank or the card institute.

Other persons and enterprises cannot thus as a rule effect payments directly to other persons' card accounts, even if these are accounted for separately. The ability of an account to function as an independent type of money is first of all dependent on payments from outside being possible to the account in question. If not, the account constitutes only an extra element at the use of check and giro accounts. Up to this moment I have not found any card account that permits such transfers, but theoretically it is certainly fully possible. If so, the account functions in the same way as a check and giro account and ought to be an object for measuring, when we shall determine the volume money.

On the other hand card accounts that, to function, must be supplied with means from the owner's check and giro means are no independent money. An owner's payment must in principle always be made into them, before the accounts can be taken in use and then payments must be made continuously to keep them alive. For payments of goods and services, it will thus mean more transactions, than if payment is effected directly from a check or giro account. Payment cards and their accounts have thus as a rule a restricted money liquidity. (32). The difference between the payment cards under C and D on one hand and E on the other is fundamental.

g. Cash Cards.

Cash (memory) cards are cards that are equipped with a memory function and are valid for a certain amount until this is spent. In France a cash card with memory and magnetic tape was introduced already in 1983.

These cards have many different names: cash cards, memory cards, micro (circuit) cards, IC-cards, active cards, smart cards, chip cards, store value cards, prepaid cards, etc.(33). They have often a built-in chip or a micro-processor that is loaded with certain data such as amount and statements on the company or companies where the card is valid. There are also cards with optical and / or magnetic tape reading or in combination with these and microchips. There are also cards equipped with holographic technique and laser cards that however still are at the experimental stage.

Björkholm and Johansson use the term ´förbetalda kort´ (prepaid cards) for what usually is called ´kontantkort´ (cash cards). (34). The word prepaid cards is not good. Other cards are not paid as a rule; there are no after-paid or directly paid cards, if we disregard fees. Payments in advance are also as we know an assumption for most debit cards. On the other hand one cannot effect cash payments by ordinary payment cards. A terminology problem is also that the cash cards can imply being a type of payment cards.

Now the terminology is not clear-cut. Sometimes a memory card means a payment card with a built-in chip, micro-processor, or magnetic tape in contrast to cards that lack such equipment, quite independent of the card being connected to an account with personal data or not. But since it is the fact that the card can be used independently of such an account, that it can be used in about the same way as cash that is the fundamental difference against other payment cards, I maintain my distinction, quite irrespective of other interpretations. That a cash card is equipped with magnetic tape or micro-processor or any other memory function does not make any difference from a money-theorethical point-of-view. Also common payment cards are in most cases equipped with chips or magnetic tape without being cash cards. Instead the connection or non-connection to an account is of decisive importance. That the cash cards in its memory function also must include statements about amount limit follows from that. Now there are however cash cards that can be equipped with personal data, e.g. a PIN-code (Personal Identification Numbers), in which case there is a limited protection, if the card gets into the wrong hands, but this does not change the character of the card with an amount limit that is independent of an account connection. There are also combination cards, that in part function as common payment cards, but which can also be loaded with an amount for cash purchases.

Cash cards are to a certain extent exceptions from the rule that payment cards are unoriginal money, because they, like bank notes and coins, do not demand an owner's account and yet function in an independent way.. And while bank checks and money orders are in most cases changed into other money, before an amount is used for payments, the cash cards are certainly used for payments. But even for these cards the precondition is that they must be loaded by means from a check and giro account or be bought by cash and thus means an extra element, an extra link in the payment chain. The disadvantage with the cash cards is the limited amounts they are valid for and that the amount is lost, if the card is lost. It can as a rule not be blocked for

withdrawals as account cards can be, since it is valid independent of personal data and accounts. The cash cards can primarily be compared with bank checks and money orders that can hardly be regarded as independent money.

The cash card that thus is valid independently of a connected account for a certain limited amount can as a rule be bought from the company (or its places of business), which supply the goods and services that the card is valid for. But the cards can also be sold by banks or independent service enterprises of the ´Pressbyrån´ type (press agency retail shops in Sweden selling news-papers, etc.) or by tobacco or fruit shops. It can of course also in some cases be bought on credit. The card can in most cases be recharged several times, after the original amount has been spent, on the owner´s request or by himself in certain automatic machines. To read the card, electronic registers or other special devices are necessary; they can however be comparatively simple. As a rule the card is valid for small amounts and can replace cash for purchases in automatic machines, retail shops, or service establishments. Its validity is as a rule limited to certain company chains such as telephone-, energy- or parking companies, but there are also cards that can be used for smaller purchases in ordinary retail shops. The Swedish banks have lately worked hard to introduce such cards on the market.

A special type of cash card would bus, train, or tram tickets represent, which can be valid for a period of time or for a certain amount. They can be used either for manual reading and stamping or for optical reading. registering and control in a simple device. Tests are being run now where common cash cards are used as payment by stamping device control on buses (e.g. the Swedish Local Traffic Association and the banks behind the Cash-card in Alingsås). [35]. But other traffic cards or tickets can hardly be considered real money. They can be compared with vouchers and balances in one's favour.

h. Automatization of the Payment System

The payment systems of the leading economies have changed radically in the last decades. This applies particularly to two tendencies that have manifested themselves, partly the fast development of different payment cards, partly the transition to electronic or other automatic payment transfers. [36]. The latter means transfer in an electronic (or automatic) way of an amount from a check, giro or separate card account (or after a cash payment) to the account of another person or another enterprise or administration. It is usually called EFT, electronic funds transfer. The terms EPOS, electronic registration at the point of sale and EFTPOS, electronic transfer of money at the point of sale are also used.[37].

The automatization has primarily been employed by the central banks´, the clearing institutes ´, and the interior systems of the banks that usually are called ´high value transfer systems´, but it has also been applied in the payment systems for the parties outside the banks, ´the low value systems´.

Examples of high value systems are the American Fedwire (the payment system for the twelve FRB-banks and their bank- and institution customers) and CHIPS (The Clearing House Interbank Payment System). [38]. Other examples are the Japanese BOJ-NET (The Bank of Japan Financial Network), the Swiss SIC (Swiss Interbank Clearing System), and the English CHAPS (Clearing House Automated Payment System) and CCCC (Chech and Credit Clearing Company Ltd), which have replaced in 1985 Bankers Clearing House, London). [39]. These institutes have an enormous turnover and transfer primarily payments for securities (shares, bonds, and money market instruments) and other capital transfers, big currency transactions, and the bank system´s and the money institutions´ settlement of interior claims and debts including a part of interregional and international payments. Among others the high value institutes have very extensive transfers of very short credits, overnight- and intraday (daylight) credits. The latter are thus granted for a few hours. In Sweden the term ´dagslån´ (day-loan) is mostly used. Especially BOJ-NET has an extensive transfer of very short time amounts, which is made easier by deals being made four times a day, at 9.00, 13.00, 15.00, and 17.00 hours Tokyo time. Another example of very short loans are those that British banks take in The London Discount Market Associations (LDMAs) discount houses, e.g. call money that is usually paid during the afternoon the following day or money at short notice money that is usually paid within 2 weeks. [40].

The total turnover in the year 1992 in Fedwire was US $ 797 billion and in CHIPS US $ 942 billion per day. They are responsible for about 80 % of the total transaction volume in USA. More than 70 % of the users and 99 % of the volume in Fedwire are nowadays electronically connected. To make the transfers easier special institutes at central and regional level, so called ACHs (automated clearing houses).have been created In USA there are more than 30, most of them at regional level. [41]. In Western Europé there is as a rule only one ACH in every country for most or all banks. In BOJ-NET the total turnover was about US $ 1.200 billion per day in 1992. For safety reasons BOJ-NET is duplicated.

Fedwire and CHIPS together turned over in 1992 in 3,4 days as much as USA's GNP in one year, BOJ-NET in 2,6 to 2,8 days as much as Japan´s GNP in one year.[42]. The efficiency of the high value system has also increased dramatically, the velocity for the accounts in the 12 FRB-banks (average daily payments to average daily reserve balances) has increased from 1 in the year 1960 to more than 60 in the year 1992. These are, however, changes that among others are due to the big increase of very short credits (e.g. over-night and intraday credits) in the

high value systems and to the arrival of a lot of new types of money market instruments which has no correspondence in the low value systems.

The high value systems dominate regarding turnover sums but are responsible for an insignificant part of the number of transactions. Japan´s and USA´s high value systems are responsible each for 0,1 % of the number of transactions in their respective countries but as much as 75,7 respective 95,0 % of the cashless turnover in 1992. (43).

In Great Britain the electronic handling of payments and transactions in the bank sector and outside is mainly a result of the introduction of new systems, BACS (Bankers´ Automated Clearing Services) 1971 for the major number of payments and CHAPS in 1984, a typical high value system for the high amount payments. CHAPS effected in 1985 2,2 million transactions to the amount of £ 2.355 billion and BACS 835 million transactions to the amount of £ 250 billion. (44). These systems have to a great degree replaced the very complicated, labour demanding and expensive systems that to a great extent were dependent on paper handling of checks and giro transfers. Especially the check handling comprised a great number of intermediate links within the bank system. But due mainly to the arrival of BACS and CHAPS, Great Britain has reached a modern clearing and giro system.

In small countries there is often no clear division between low and high value systems. The Swiss SIC tries to combine both and answers also for a large part of the country's low value transfers, even if there is also a payment service via PTT (Post Telegraph Communication System), which still in the nineteen eighties was operating on paper basis, even if PTT cooperates with and uses SIC for a part of the transactions of the institute. There existed also at least earlier a MINI-SIC with payment transactions on tape. (45).

While the average transaction amount in 1992 in Fedwire was 2,9, in CHIPS 6,1, and in BOJ-NET 33,4 million US $, it was 0,4 millions US $ in SIC. (46). It has however to be pointed out that the transactions even in low value systems often comprise very high amounts, millions of US $ and more.

There are also automated clearing centers in all other western European countries, which represent all or nearly all banks. (47). Such a system is the Swedish ´RIX-systemet´ and the banks´ data-clearing, which co-operate in addition to the banks and ´Bankgirocentralen´(BGC) also with the Stock Exchange, ´Värdepapperscentralen´ (VPC) and OM- (the option market). (48). There is also a settlement and transaction system for payments between the Nordic countries, which effect a settlement of accounts once a day. (49). Following the establishment of the common European central bank (EMU) and a common European currency (EURO) the payment systems will surely undergo more changes and become still more automated, Among others a new and quicker payment system called Target has been introduced at the same time as the EURO for large amount payments. As a result of the common currency, payments and transactions will become very much easier and cheaper, which will result in considerably increased transaction volumes across the old borders.

To some extent there are also separate systems for transfers and payments for stocks, bonds and other securities for the banks and their customers. An example is the American Fedwire Securities Transfer that acts as intermediary for payments for Treasury bills, other federal securities and some mortgage- protected securities. Entries are made into the banks´ accounts at the institute, in which case no further demand for money is put at a transaction, under the assumption that the account shows a positive balance.

It is also probable that the automation and the electronization will increase further and comprise still more areas and payment categories. Kirkman foresees e.g. in Électronic Funds Transfer Systems´ a fast expansion of the British payment systems CHAPS and BACS and a strong decrease in the traditional clearing of checks and giro transfers in CCCC.

Clearly the fast development in the computer area is a precondition for (and perhaps also to some part an effect of) the automatization of payments. Clearing and payment institutes and banking system have in cooperation with data manufacturers, who developed technology and hardware, and system builders and program makers, who developed the software, built systems that now can take care of an enormous amount of data without functional problems of any significance. Not least important has the development in the tele-communications area been.(50). The Nordic countries have e.g. developed a public data-net, DATEK, where the on-line switching time is fractions of seconds, the transmission speed is high, and the safety is well satisfied. (51). It is however not long since the exchange between the Nordic data clearing systems was done by an exchange of data on magnetic tape. In the British system BACSTEL created in 1983, half inch magnetic tapes accounted for 80 % of the input volume, but even 5 ½ inch cassettes and 8 inch disks were used. The British electronic system Teletran introduced by British Telecom and created in 1985 was partly based on magnetic tape as indata. (52). NTT (Nippon Telegraph and Telephone Corporation) in Japan on the other hand operates BOJ-NET with a communication system that is based on digital transmission.

There is also a development in progress, where data and tele-communication functions are combined to create entirely new services. Data, text, sound, and images do not any longer need different application systems. There is talk about Computer Telephony Integration (CTI).(53). This can of course also in time affect the payment service.

Otherwise the communication systems build mostly on modems transmitting digital

information to analogue signals that can be sent via the telecommunication network to the receiver who can transmit them via his own modems and gates to his own computers. This can also be done with coded messages, often required for safety reasons. By so-called multiplex equipment and dedicated circuits the volume of work can increase considerably at increased speed. Further steps are networks of strategically situated communication nodes and multiple paths. (54). Transmissions can be effected by ground telecommunication network, by microwaves, or by satellite. Broadband technology seems to be developing very fast.

A fast development has also taken place in the international payment system, where SWIFT (The Society for Worldwide Interbank Financial Telecommunications) has brought about important progress, in the are of transfers between banks and enterprises of different countries. (55). UN has established rules for international payment transactions (UN Model Law for International Credit Transfers) after deliberations between the Group of Ten (the 10 leading countries in the payment- and capital market).(56).

The automation has of course been facilitated by the progress of the account cards and the cash cards, irrespective of their operative equipment either with codes for optic reading, magnetic tape, chips or micro-processor. A common optic code is the so-called EAN-code (European Article Number), a standardized bar code, mostly used in shops for reading number, name. and price of the commodity.

The automation can be effected in different ways. Instead of paper handling a coded account card can be read and controlled automatically against a register, whereafter registered data can be stored on a magnetic tape, a tape cassette, or a diskette (off-line registration). These can then be sent by post or by messenger or at a determined or not determined point of time be transferred to the computer of the bank or the card institute. But registration can also be effected to the terminal of the bank or the card institute directly at the purchase (in real time, on-line registration). Of the Nordic countries Denmark had come farthest towards a EFTPOS-system for all branches within the retail trade, Norway regarding the petrol business. (57).

The account cards and the cash cards are increasingly developing towards becoming combination cards with optic reading, magnetic tape, and / or microchips. Visa has e.g. issued a Super Smart Memory Card, equipped with magnetic tapes and mini-calculator. (58). Also precoded checks, e.g. provided with magnetic tapes, promote of course the automatization. Examples of this are MICR (Magnetic Inc Character Recognition) in USA and Great Britain and OCR (Optical Character Recognition) in other countries. (59). Another development is the so called ´cheque truncation´, which means that the common check ceases to be treated as such at some link in the chain and the check data are transformed into an electronic document.

Due to the codes the access control is made easier than by speech-, photo-, or signature control of a presented identification document.(60). The access control is also made easier by standardization of cards and checks or by using so-called check guarantee cards. An example is the so-called Eurocheque that among others is used in the Nordic countries together with a Eurocheque guarantee card. Already in 1986 more than 24 million of cheque guarantee cards were in use in Great Britain. (61). Another example is the use of personal secret identification numbers (PINs, Personal Identification Numbers) usually a four-figure safety code.(62).

We can assume that new techniques will further promote automatization. A large number of tests with different variants and combinations of cards, procedures, and equipment is in progress.(63). One example of this is different variants of solutions used by Danish petrol chains. Another way is laser canning, which is being tested.

In many cases it is now, as I said, possible to load an amount into the cash card. According to experts this will be possible before long in an ordinary bank automaton. But, as we said, even if the cards can be used independently of accounts in the payment system, they are dependent on these for original amounts or for being loaded by additional amounts.

Factors pointed earlier towards cash cards being used even more extensively not only compared with cash but also compared with common payment cards.(64). They had a break-through with telephone companies and parking enterprises. But the success for mobile telephones had the effect that the market for telephone cards almost collapsed.
´Föreningssparbanken´ and ´Nordea´ in Sweden launched in 1996 a cash card for purchases in common shops. ´Nordea´s test with cash cards in Uppsala and a couple of other towns has however not been successful. The study of the Swedish Retail and Wholesale Trade Research Institute has shown that the cards have not succeeded to obtain more than 1 % of the turnover in the participating shops and that every purchase with a cash card in a shop will be SEK 0,80 more expensive and every purchase in a kiosk will be SEK 2,30 more expensive than a cash purchase (May 1997). (65).

The electronics do not either change the character of the account cards or the cash cards as a type of money. It is still the question of secondary money, even if the registration and the handling in other respects can be effected faster than by paper handling. And the ultimate settlement for used cards must still be done by check and giro transactions (even if these now also can be effected via computer) or by cash.

There are also tests going on with payments from so called ATMs (Automated Teller Machines) that have been developed out of the so called CDMs

(Cash Dispensing Machines) (´Bankomater´ in Sweden) which, as we know, are now widespread [66] They have long been used for different tasks, besides withdrawals in cash, for statements about balances and latest entries. Transfers between different owner's accounts and transactions to a bank have also sometimes been possible. The development has gone farthest in USA, where already a great part of the ATM-transactions are transfers to other person´s accounts, i.e. regular payments. One perhaps somewhat unexpected development has come about by the break-through of the CDMs. The public uses more cash than earlier. [67]. This is also due to the public to such great extent using bank notes in petrol- and other automatic machines.

Besides the ´bankomats´ there are often in or in connection to Swedish bank offices automatons that are open during office time and / or certain hours, when the bank is closed, where the customer can carry out some bank errands such as e.g. deposits of money, ckanging, deposits of cashes or transfers between his own accounts. It is possible that these will also be used for regular payments (thus corresponding to ATMs above). The banks´ own terminals for their own internal and external activities have of course an entirely different importance, but do not concern this area.

Another trend is the development of customer terminals (home- and place of business banking), where the customer himself can effect bank services via his own or the company´s computer or / and TV, and where the customers thus are in direct connection with the bank or the payment institute via modem and telephone. Especially in France this development has gone very far with several million Minitel devices. [68]. The home terminals are a digital extension and further development of the so called ´telebanksnätet´ (network of the telebank)´, where the customer had been connected with the bank via his usual telephone (push-button telephone with AXE-switch), at the time an analogue system.

In companies and administrations there are likewise place of business terminals for contacts with the bank for transactions that the company or the administration itself takes the initiative to on the basis of its own bookkeeping, custody, current account, factoring, and factory control These are thus tasks beyond those that are effected by electronic registers that enter or carry through payments from the customers in shops and service points. There is a tendency for these terminals to be used for further purposes. Since a few years ago these networks can effect payments to the accounts of other persons and enterprises. Often the automatic payment process is a part of a wider context. If the stock accounting, the purchase- and sales bookkeeping, and the transcript and handling of invoices have been computerized, it is quite natural that also the payment of invoices will eventually be computerized.

These terminals have of course also an important task in connecting the computers and the bookkeeping between the places of business and their head office, but this affects in the first place the statements in the different own accounts of a company or an administration and means seldom payment functions.

Through the introduction of and the fast extension of Internet the public has got excessive access to home terminals. These are not least used for payments. This is valid both for the banks´ transaction accounts and for the ´Postgirots´ (The Postal Giro´s) ´ePostgiro´.

Now an extensive activity is going on with organized sale, liability accounting, and payments via Internet. Among others the Swedish SE-bank has such a system since 1996.[69]. As from January 1998 also ´Handelsbanken´, ´Föreningssparbanken´, and ´Postgirot´ take part in this activity. The individual consumer can thus himself take the initiative to buy and pay via his computer or Webb-TV and Internet. The fact that the customer must state his account number which can be exploited by unauthorized persons has hitherto been a problem. The banks experiment however with an international safety system, SET (Safe Electronic Transactions). Instead for the current procedure of sending the account number in text en clair, the SET-transaction is protected by three links. In the first link both the purchaser and the sale company have a so called digital certificate that identifies them to each other. Further the account information is enciphered in two links, with a public and a private code key. Control checks are done both at the purchaser's and the seller's end and their respective banks'.

Tests are also going on with so-called virtual shops, where computer users can shop and also pay from their accounts via Internet. In Sweden there are among others ´Posten´s´ (Swedish Mail's) market place ´Torget´ (the Square) and ´Telia´s´ (the telephone company´s) ´Passagen´. The latter had already in May 1998 more than 90.000 participants, 6,5 million visitors per month, 215 content suppliers and 77 shops. In USA the sales via Internet amounted to in one year, 1997 - 1998, US $ 2 billion , an amount that is expected to be doubled every year for the next few years.[70].

Shall we therefore consider these home- and place of business terminals as a special means of payment? That will depend on, if they are supported by an owner's separate account (accounts), the credit balance of which and in its own form can directly be used for payments and if it is possible to effect payments directly to this terminal and this account (these accounts) by outsiders. In that case the terminal and its account (accounts) are to be considered as a separate giro account (accounts) and its (their) balance shall then be included in the total volume of the check and giro accounts, if not already done. If on the contrary there is a separate account for the terminal,

but it cannot receive payments directly from other persons, companies, or administrations, the account acquires the same character as an nonindependent card account. For the terminal account be kept alive, it must be supplied with means from check and giro accounts (adjustments and eventual interest from the bank disregarded).

But so far the computer and the terminal are largely only a comfortable and fast way of communicating with the bank or the giro institute to use that or those check- and giro accounts, which the owner or other possessor of the terminal has at the bank or giro institute. A great advantage of home- and place of company terminals is among others that the payment or other tasks often can be effected independent of business hours.

Another attempt that has been launched in South Africa and in some other places, means among others attaining bank services via a mobil telephone with a small computer connected to the Internet. (71). The article author speaks hopefully: "Soon it will be mobile banking, mobile shopping, mobile chatting. - - -". Even the Swedish Telia in co-operation with some banks have conducted tests with voice answer back applications, but this presupposes an electronic identity card that is not yet designed. Also Microsoft and Ericsson have co-operated in this area.

One of the best reasons for expecting the automation and electronization to go on increasing is the time required and the costs for payments and payment systems. As earlier pointed out, a cash payment in retail shops and the service sector is calculated to take 30 seconds, a payment with payment card on paper basis takes 75 seconds, and a check payment 90 seconds. A direct payment, on-line, with a payment card is on the contrary possible to effect in 15 - 30 seconds. (72). But the total payment cost is considerably greater than for the teller work. Kirkman estimates in ´Electronic Funds Transfer Systems´, p. 28 that the cost for an electronic transfer in 1982 was 3 pence, while a equivalent payment in paper (giro or check) costs between 12 and 21 pence. In the big systems, such as e.g. CHAPS the charged cost can decrease from £ 10 - 20 for paper transfer to £ 4 - 8 per automation transfer. (73). This can be compared with the fees of the Swedish banks during the nineteen nineties for customers´ payments in open offices to another person´s account, thus a more personnel demanding form of payments than giro transfers, varying from SEK 15 and up to SEK 50 per payment. These fees are as we know justified by being no more than cost covering.

In a payment system like the earlier British (London Bankers´ Clearing House) the payments, especially by check, could often consist of long chains, where sometimes many parties were involved for the same check, before the payment reached the addressee. It was called ´the clearing circle´. It is evident that this caused loss of time, had a potential for faults and involved high costs. It also led to the amount of money under transfer (the float) being high and causing a lot of problems. (74). Especially this was true for foreign payments and payments to other time zones. Sometimes these time losses of the check system were deliberately used to the benefit of the transmitters. This is called ´cheque kiting´. (75).

The authorities, the central banks, the bank system, and also the public and companies in many countries have since long been worried about the destructive features of the earlier systems. The authorities, the central banks and also the consumer organizations have therefore consciously for a long time endeavoured to automate the payment transactions in order to make them faster, safer, and cheaper. This goes hand in hand with the stronger role of the central banks and their increased interest for the payment systems. Suggestions have come from above about e.g. more automatization and longer intervals between small volume payments in order to decrease the numbers. Consumer- and employers´ organizations have shown great interest for fees, safety, rules, and legislation.(76).

Within the bank systems, also in countries like Great Britain, they seem now to realise that the volume of checks should be limited. This has as we said led to the banks having begun increasingly to charge for payment orders, and this is true especially for check payments, referring to that every activity has to bear its own costs. But also the Swedish postal giro has begun to charge fees. At the same time the banks and the payment institutes have for competition reasons in many cases also begun to grant a low interest rate even on payment accounts such as check and giro means. They and the authorities know however that the users will eventually determine which system and what money that will be used.

A more centralized system, where the number of intermediaries at every payment process is reduced, makes it possible to increase automation An. increasing number of parties can be in direct contact with the clearing institute. The central clearing decreases thereby also the number of follow-on transactions to the payments that are made by parties outside the bank system. The transactions within a bank´s area and between the banks decrease and the transactions with the institute increase. It is however to be pointed out that e.g. the ´Bankgirot´ in Sweden is not so centralized as e.g. the ´Postgirot´ or ´Personkontot´.

How do the new electronic and automated systems affect the parties in the payment process and their payments and transactions? The statistics shows that the velocity has increased for the transactions total. Probably this depends to a great extent on automation and quicker payment methods having made such an increase possible. While the balance of a postal giro account is turned over perhaps 100 times a year, the velocity for cash is probably much less. But it is not certain that the velocity for payments of goods and services has increased, at least not to the same

extent. Payments with payment cards involve transactions between the giro accounts and these card accounts that earlier were effected directly from the giro accounts. Payment by check or via giro instead of payment by bank notes and coins involve two transactions instead of one for the cash-holders and one or two more for the bank or the giro institute. When there are fewer links in-between at check payments, the number of transactions becomes less. But it is probable that these changes mostly affect the bank system, where the possibilities for automation are the greatest. In Great Britain the ascend of the CHAPS ans BACS- systems had probably reduced the transaction time, which earlier had been stated to amount to 6 - 10 days per payment, a very long time by Swedish standards; giro payments here can be effected in 2 - 3 days.

But even if automation also at the economy outside the bank system has increased and consequently the velocity also has increased somewhat, this does not change the basic conditions. Still it is check and giro means (payable credit balances) that will be transferred and still these are scanty and very expensive for the payer / cash-holder. The handling time for payments and transactions in the payment system has admittedly decreased, the giro transfers are faster. Payments by check cannot for natural reasons be made with the help of electronics. On the other hand electronic transfers between banks and payment institutes can of course be effected on the basis of checks, which means a faster process. The speed can be increased further, if the check is coded and provided with magnetic tape or microchips. But the handling time has not decreased to any extent worth mentioning for the handling of notices and invoices in the public and economic life. Invoices have still to be paid within e.g. 10 days or 30 days and means of payment held ready to effect payments at certain points of time with a certain concentration to the turn of the month, when also a lot of wages, salories, and pensions are paid. Still the cash-holders must hold cash of bank notes and check and giro means to meet unexpected and difficult-to-foresee expenses. In certain cases perhaps 1 or 2 days can be saved due to automation, but the average increase in velocity is probably more limited. The state and municipality can perhaps also save in 1 or 2 days at transfers and wage payments, but for the receivers this changes nearly nothing. If a link in a chain increases its velocity, but the next link cannot do this, the total increase will be rather limited.

Neither the cash payments of the households, nor the retail trade, or the service sector (out and in) are probably affected very much. Certainly also many small enterprises in the most developed countries stand in direct connection with a bank or a payment intitute and certainly a check or a giro account at a bank or an institute can be directly debited and the account of the shop or enterprise can be directly credited by the registration of a coded payment card or a coded check at the shop or the enterprise. But partly the automated volume is still small and partly it means to a very great part a data registration first at the end of the day or a remittance of magnetic tape, diskettes, or cassettes, which takes time. Furthermore the difference against earlier paper registration will not be so great for the single customer. He has still a limited amount at his disposal per week, month or other time period and the money must last for the whole period. Even if most people do not live from hand to mouth, it is true that most people consider themselves to have a very restricted amount at disposal during the payment period they are in, until the next wage- or pension remittance arrives.

That payments can be effected faster does not change the character of the giro or check accounts, still it is the account balance that is of primary importance. That the payment from the account is made by computer, a coded card or any other instrument does not change the character of the account either.

An evaluation problem is that the high value- and low value-systems seldom isolate the difference between the transactions of the bank system and the payment of goods and services in the economy outside. Also large enterprises and public institutions sometimes use the high-value systems also for payments of goods and services and likewise small banks, bank offices, and savings- and credit associations sometimes use common postal giro or bank giro for their own and not only for the customers payments. But to the wholly dominating part the high value payments occur between banks and institutes within the bank sector. These transactions have no immediate interest to us, who are studying the payments of goods and services. They are not directly participating in the price formation process. In Fedwire in USA, for instance, companies, administrations, as well as private persons have payment accounts in about 10.000 depositing banks and institutes and not directly at FRB, and in that case the payments are effected quite normally in common check and giro accounts. This is true even though more than 70 % of the users are electronically connected to the banks.[(78)] The same is true for the British economy that the enterprises pay via their accounts in the banks or in BACS that then often make their transfers via CHAPS. In Sweden there is also a rather clear difference between the ´Bankgirot´ on one side and the banks´ internal dataclearing and ´RIX-systemet´ on the other.

That the banks and the other participating institutions use the high value systems for transactions and clearings as a result of payments from parties outside the bank system, does not affect the scope for common payments for goods and services. That is however true for the financial and monetary transactions for the market outside the bank system within the market's own payment system, i.e. mainly within the low value systems. Not because they affect

the buying power and the general price level directly, but because they limit the scope for effecting payments for goods and services.

The part for the state sector of the postal giro payments in Sweden is considerable. In the year 1992 the paying-out amounts totaled SEK 907 billion of the total turnover of the postal giro of SEK 3.770 billion. In contrast, the part of the bank giro was earlier insignificant. This was due to ´Postgirot´ with ´Cassa Nova´ and ´Riksbanken´ until 1992 having a payments monopoly within the sector and towards the public and the enterprises. A large part of the volume of these state transactions is probably tax payments, transfers, granting of means, placing of surples, capital transactions, and deposits of means within the sector itself. Large money sums were however turned over in ´Riksbanken´ formost in the accounts of ´Statsverket´ (the Swedish state´s accounting office) and ´Riksgälden´ (the administration office of the Swedish national debt). Large payments were also transferred by the RRV (´Riksrevisionsverket´, the Swedish National Audit Office). The volume was however considerably decreased, because there was an important so called ´nettning´ (netting) in the consolidated financial statement i.e. it was often only the difference between the outgoing and the in-coming amounts that was transferred , in spite of the fact that the state in principle practices gross accounting. It has also to be pointed out that only units within the state as juridical body that follow so called EA-rules (Economy Administrations rules) that are connected to the state accounting administration and payment system. It means that government companies and public enterprises will be fully comparable with non-government administrations and companies, when they use ´Postgirot´ and ´Bankgirot´. If the government transactions effected by ´Postgirot´ would vary greatly, this would make an estimation of the turnover volume within ´Postgirot´ for the economy outside more difficult. If we suppose that the volume variations had been considerable in the state´s EA-sector, this must have strongly affected ´Postgirot´s´ total turnover. As these (seasonally adjusted) vary very little, we should be able to draw the conclusion that the changes in the total turnover of ´Postgirot´ also rather well reflect the changes for the sector outside the state sector. But there is hardly any statistics available for these volumes and the factors they measure, so this may for the present be considered as a very probable hypothesis.

We should keep in mind that the automatization of the payment system must go side by side with the old paper systems being kept alive. For private persons and small enterprises the automation potential is after all rather limited. Most of these have not the economic and practical potential to have direct connection to a bank or a payment institute. At the bottom of the payment system there is therefore still an important area of use for banknotes and coins. Even if the relative value of the transactions in banknotes will decrease, it is true for the foreseeable future that the number of cash transactions will dominate. Likewise check and especially giro transactions on paper basis will also in the future be effected to a great extent.

But the automatization can also, as I earlier have stated, be introduced partially. It can often be limited to a simple apparatus reading the code of an account card or the apparatus being connected to a simple cash register in a service point as in the Danish Dancard system. In integrated cash automatons the common printer for the cash receipt also functions for the payment card. But the printer can also be part of a more complicated system. Frequently, the shop or the service place has equipment, where the transfers to the central computer can be made at the end of the day, e.g. via a magnetic tape, a diskette, or a cassette. Also in the bank system a transfer of data is often effected on paper basis or from magnetic tape, diskettes, or cassettes to the computers. In the British BACSTEL half inches magnetic tapes were responsible for 80 % of the input volume as recently as in the nineteen eighties . So the processes are far from being totally automated even in the bank system, and the more the public is involved, the more frequent is the use of paper documents and of banknotes and coins. The handling of the Swedish banks' checks is however to-day effected wholly electronically via the banks´ data clearing without delivery of the checks.[79]. But in Sweden and in certain other countries the development versus an EFTPOS-system seems have gone faster than expected in the nineteen eighties , and this seems in the first place to have affected paper document transfers in banks and outside.

The development in this area is going so fast that every attempt to describe and summarize the position tends to fast become out-of-date. This is also true for this chapter of my work that does not claim to be up-to-date in all details. But even if new aspects are added, this does not change the theorethical payment analyses one needs to make, even if it often can affect the ability to assess different factors.

Notes.

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1. See e.g. Martin Andersson ´Kontroll av bankernas betalningssystem´ (MA), p. 20: "Betalningssystem kan beskrivas som de tekniska, legala och institutionella system inom vilka betalningar initieras, genomförs och avvecklas.- - -" ("Payment systems can be described as the technical, legal, and institutional systems in which payments are initiated, effected, and cancelled") (My translation).

2. Patrick Kirkman ´Electronic Funds Transfer Systems´ (PK), 34 ff..

3. PK, 17.

J.S.G.Wilson ´Banking Policy and Structure´ (JW), 8: "At about the same time, there grew up a practice whereby a customer could arrange for the transfer of part of his credit balance to another

part by addressing to the banker an order to this effect. This was the origin of the modern cheque (the earliest known example in England is dated 1670). Moreover, it was only a short step from making a loan in specie (or coin) to allowing customers to borrow by issuing cheques. - - -"

4. MA 31:"När de praktiska betalningssystemen studeras, är det av central betydelse att dela upp systemen i två nivåer, grossistnivån och detaljistnivån (Borio & Van den Bergh 1993). Grossistnivån rör betalningsströmmar mellan bankerna och centralbanken, medan detaljistnivån rör betalningar mellan enskilda individer, företag och bankerna.- - -" ("When the practical payment systems are studied, it is of central importance to divide the systems into two levels, the wholesale level and the retail sale level. (Borio & Van den Bergh 1933). The wholesale level concerns payment streams between the banks and the central bank, while the retail level concerns payments between individuals, enterprises, and the banks.- - -")

5. Hans Hellwig ´Kreditschöpfung und Kreditvermittlung´, 18.

6. ´Elektroniske Betalingssystemer i Norden´ (EBN), 14: "- - - Ny og sikrere teknikk for automatisk identitetskontroll som baserer seg på f.eks. aktive kort, fingeravtrykk, tale- eller signaturkontroll, kommer fortsatt til å testes i forskjellige betalingssystemer. - - -" (New and safer technique for automatic identity control based on e.g. active cards, fingerprints, voice or signature control will be tested in the future in different payment systems.- - -")

EBN, 16: "- - - ISO har utarbeidet standarder for betalingskort. Standardene inneholder fysiske krav til plastkortene som størrelse, tykkelse, materiale og til plassering og innhold i magnetstripen på baksiden av kortet." (ISO has drawn up standards for payment cards. The standards contain physical requirements on the plastic cards as size, thickness, material, and to placement and content in the magnetic strip on the back side of the card.")

Björkholm-Johansson ´Betaling med kontokort´ (B-J), 103 - 105.

7. Statistisk Årsbok, ´Sveriges Riksbank´, 1998, 79 and. 1996, 78.

PK, 34 ff.

8. JW, 158: "- - -but in opening up current accounts to which salary payments could be credited and which could be operated upon either by cheque or giro transfer. - - -"

Eivind Jacobsen m.fl. ´Kommer førbrukerne til kort?´, (EJ), 65: "3.Flere og ulike typer betalingsmidler kan være knyttet opp mot samme konto. Det er f.eks. svært vanlig å ha både sjekkhefte og betalingskort knyttet til samme konto. I mange tilfeller inneholder kortet dessuten en Visa- eller Eurocard-del i tillegg til den elektroniske betalingskortsdelen. Det er heller ikke uvanlig med flere kort knyttet til samme konto, f.eks. ved at ektefeller har hvert sitt kort til samme konto. - - -" (Several and different types of money can be connected to the same account. It is e.g. very usual to have both checkbook and payment card tied to the same account. In many cases the card contains furthermore a Visa or Eurocard part in addition to the electronic part of the payment card. Neither is it unusual to have several cards tied to the same account, e.g. when husband and wife each have a card to the same account.- - -")

9. B-J, 93.

10. David King ´Banking & Money` (DK), 59, 60.

11. Erich von Schneider ´Einfûhrung in die Wirtschaftstheorie´, III, (EvS III), 4: "- - - Termin- und Sparguthaben bei Kreditinstituten, d.h. Guthaben, über die erst nach einer vereinbarten Frist verfûgt werden kann, stellen, weil man sich des Verfûgungsrechtes für eine bestimmte Frist begegen hat, keine Zahlungsmittel dar. - - -"

12. Irving Fisher ´The Purchasing Power of Money´, 33: "- - - Since no other kind of bank deposits will be considered by us, we shall usually refer to ´bank deposits subject to check´ simply as ´bank deposits´. They are also called ´circulating credit´. Bank checks, as we have seen, are merely certificates of rights to draw, i.e. to transfer bank deposits. The checks themselves are not the currency; the bank deposits which they represent are the currency."

13.Bruce J. Summers ´The Payment System ´ (BJ), (Även Blommestein), 16: "- - - To be competitive vis-à-vis currency for purposes of payment, bank deposit may must meet two conditions. First, banks must provide transfer facilities for moving deposit money from account to account that are attractive to their customers. Attributes of an attractive funds transfer service include reliability, speed, low cost, and the provision of good records of transactions. Second, banks must provide conversion facilities that readily allow their customers to make and receive payments using bank deposit money in a variety of forms that are readily convertible with each other and with currency."

14. Compare Riksrevisionsverket ´Utveckling av statens betalningssystem´ (RRV), 14, about information and control problems in the state payment flows.

15. RRV, 83: "Dagens tjänsteutbud omfattar både pappersbaserade och ADB-baserade produkter för både mottagare och användare. Båda produktlinjerna är i hög grad standardiserade för en kostnadseffektiv produktion. Behovsstrukturen idag bygger på enkelhet i produktkoncept och i tillämpning. Just-in-time med avseende på betalnings-information och kraven på ränteeffektiva betalningar från kunders sida har effektivt mötts av att betalnings-tjänsterna effektuerats ankomstdagen (i de fall täckning finns) och informationen har levererats dagen efter till kund." ("The supply of services of to-day comprises both paper based and ADB-based products for both receivers and users. Both product lines are

highly standardized for a cost effective production. The required structure of to-day builds on simplicity in product concept and in application. Just-in-time with regard to information on payments and the requirement for interest-effective payments from customers have been effectively met by the payment services being effected on arrival day (in the cases when there is cover) and the information being delivered the day after to the customer.")

16. MA, 72: "- - - I denna situation framkommer alltså den förtroendeberoende paradoxen, att om ett företag är i stort behov av ett lån får de inget, men om de inte behöver något är det lätt att få." ("- - - In this situation the confidence dependent paradox appears that if an enterprise is in great need of a loan, they will get nothing, but if they does not need a loan, it is easy to get.")

17. Claus Köhler ´Der Geldkreislauf´,162: "Obwohl die Geldversorgung 1951 insgesamt verknappt wurde, stiegen die Preise in Deutschland erheblich an. Die Erklärung hierfür findet sich in Nichtbankenkreislauf. Die Nichtbanken haben nämlich 1951 von den ihnen insgesamt zugeflossenden Mitteln relativ mehr als 1950 als Geldvolymen, also verfügbar, gehalten, wärend erheblich weniger längerfristiger angelegt wurden."

18. JW, 111 ff.

19. JW, 111 and 253.

20. B-J, 11 - 29.

21. PK, 43: "The first credit card is believed to have been issued in the USA in 1914 by the General Petroleum Corporation of California -now Mobil Oil. - - -" See also p, 43 and 44...

22. B-J, 12: "- - - En huvuduppdelning i *bankkort, betalkort* och *kreditkort* börjar nu bli allmänt accepterad och används här i boken. - - -" ("- - -A main division in *bank cards, payment cards* and *credit cards* is now being commonly accepted and is used here in the book.- - -")

B-J, 23: "Först och främst ger *bankerna* och bankerna närstående bolag ut såväl bankkort, kreditkort som betalkort. - - -" ("First and foremost the *banks* and associated companies issue both bank cards, credit cards, and payment cards. - - -")

23. B-J, 39, EBN, 7: "*Betalingskort* er her brukt som fellesbetegnelse for alle kort som brukes ved betalinger. - - -" (´*Payment cards* are here used as common designation for all cards that are used for payments.- - -")

24. B-J, 26-27, 17.

25. B-J, 63, 65.

26. B-J, 17, 23, 28.

27. B-J, 23.

28. PK, 14: "The first cash dispensing machine in the U.K. (and possibly in the world) was installed by Barclays in 1969.- - -" .

29. B-J, 11, 14. EBN, 95: "- - -Konsesjonsordningen omfatter ikke såkalte firmakort, d.v.s. kort som bare benyttes i ett firma og som er utstedt av samme firma. - - -". (The concession area does not comprise so called corporate (chain) cards, e.g. cards that are used only by a company or are issued by the same firm.- - -")

30. B-J, 12 - 13, EBN, 7, PK, 43 ff.

31. EBN, 6 ff., B-J, 11 - 14, 24 - 26.

32. PK, 43: "In the last decade, therefore, credit cards have become an important part of the worldwide payments scene, although they have generally been a means of identification for future billing rather than a method of final settlement by the purchaser. - - -"

PK, 3: "- - - These cards are not strictly speaking a method of payment by the purchaser, as the account has to be paid at a later date, although they are often the equivalent of a form of settlement as far as the retailer is concerned. - - -"

33. PK, 172: "The idea of a plastic card with one or more microprocessors incorporated into it for memory and processing purposes was put forward by a Frenchman, Roland Moreno, in the mid-1970s. Initially there was little enthusiasm for this card, although there has been increasing interest over the last five years. Most writers on the subject describe this card as a memory or chip card, although it is also referred to as a microcircuit or smart card."

EBN, 6 ff., B-J, 82.

34. B-J, 12 - 13, 82.

35. Göteborgs-Posten, June 18, 1998.

36. EBN, 8, PK, 65, BS, 208.

37. PK, 65, 149, EBN 9 - 10, 132.

38. BS, (Even Horii o. Spindler), 73 - 88, 168, 197.

39. PK, 32.

40. DK 61.

41. PK, 72.

42. BS, (Even Horii), 74 ff.

43. BS, (Even Pingitzer), 108.

44. PK, 65, 68.

45. BS, 197 - 202.

46. BS, (Even Horii), 75.

47. PK, 72.

48. MA, 79.

49. EBN, 85.

50. BS, (Sendrovic), 178-196.

51. EBN, 8,25.

52. PK, 171.

53. See e.g. Siemens journal Telcom´, 1/98, P.. 12-13: "The integration of computers and telecommunications, known as CTI for short, brings a completely new quality to international applications. At the same time, a state-of-the-art telephone system offering voice, images and data on a single line is becoming a low-cost and effective weapon in the battle against the competition."

54. BS, (Sendrovic), 178 - 188.

55. PK, 69.

56. BS, (Even Spindler), 165-166.

57. EBN, 97.

58. PK, 177.

59. PK, 20, BS, (Even Pingitzer), 110, EBN, 9.

60. EBN, 122ff., B-J, 98ff.

61. EBN, 86, PK, 29.

62. EBN 34, PK, 159 - 167. About PINs see PK 159, 165.

63. PK, 160.

64. PK, 168,

65. Göteborgs-Posten, May 15, 1997, 46.

66. PK, 138 - 148.

67. BS, (Even Pingitzer), 108, 113.

EJ, 29: "- - - De elektroniske banktjenestene, i form av minibanker, har snarare ført til en eksplosjon i mengden kontanter og bruken av disse.- - -" ("- - -The electronical bank services, in the form of mini-banks, has rather resulted in an explosion of the cash volume and the use of these.- - -")

EJ, 41: - - -"Det har aldri vært mer kontanter i omløp enn i dag. - - -" ("- - -There has never been more cash in circulation than to-day.- - -")

68. PK, 181 - 182, 186.

69. Göteborgs-Posten, Nov.21, 1996 ´SE-banken ger sig ut på Internet´. (The SE-bank enters Internet).

70. Telcom 98/1, 9: "- - - Today´s sales of US $ 2 billion will double each year to soar to some US$ 16 billion by 2002. - - -"

71. Telcom 98/1, 6: "Vodacom, South Africa´s largest mobile phone firm, combines the advantages of mobility and the Internet by offering both on mobile phones - a pioneering example of the integration of networks and services."

72. PK, 153.

73. PK, 81.

74. BS, (Marquardt, Veale o. Price), 142, 145, 153 -154.

75. BS, (Veale o. Price), 153.

76. BS, (Marquardt, Veale o. Price), 127, 171 - 175, PK 131, 202 - 217.

77. Compare also the bankomat system. B-J, 93: "Till skillnad från sparbankernas system består affärsbankernas Bankomat-system av ett antal självständiga, men samverkande *uttagsautomatsystem*. - - -" (Contrary to the savings banks system the commercial banks' Bankomat-system consists of a number of independent, but cooperating systems for automatic cash dispensing.- - -")

78. BS, (Even Horii), 73: "Different payment mechanisms can be distinguished by the businesses they support and the customers they serve, as reflected in the value of the payments processed. As a result of the wide variation in the value of payments, payment mechanisms have become quite highly specialized. Although there is no clear-cut quantitative demarcation between small- and large-value payments, some systems have specialized in handling payments that are typically very large." .

79. MA, 79.

CHAPTER 3.
PAYMENTS AND TRANSACTIONS.

a. Transaction -, Profitability - , Liquidity -, and Solidity motives.

Before I proceed to deal with the payments and transactions of society, I will to some extent cope with the motives for different investments, which control to a great extent these payments.

After Keynes the economists speak of four motives for keeping money, claims, and real capital. Keynes himself uses the terms liquidity-preference and transactions-motive, which latter he divides into an Income-motive, a Business-motive, a Precautionary- motive, and a Speculative-motive.(1). But Keynes includes also in the money long-term deposits and bonds. Other economists have in a more realistic way made the choise into a choise between money and different types of claims and real capital. (2). Keynes´ presentation gives, as do many other economists, the interest a key role. He does this without even discussing the diffuce meaning of the interest and the perhaps most essential aspect of the interest concept, namely the difference between nominal and real interest. Even if Keynes´ presentation is defective, his division and terminology could still form the starting point for an analysis.

But the most essential basis for division is the motive to keep means of payment and the motive to place those in other assets (to buy and not to buy that is the question). The motive to keep money, means of payment, is a transaction motive, to be able to effect payments, to be payment liquid, money liquid.(3). To keep money can also mean that we change a type of money against another type; we do not buy anything in this case. The motive to invest the money in other assets is an earning power (profitability) motive, the need to get returns, a yield. Nearly all human activity has as its aim to produce, to bring about values, to do a good job of work, which we could look at as a manifestation of the ´principle of life´, to be positive, to build up, to create, contrary to the destructive, to knock down, to destroy. It is often meaningless to carry on an activity, if we get out less value than we put in; to be meaningful it must cover all costs and not only that but give a surplus that covers the inherent risks, the possible losses, and the costs for future investments. Private persons and small companies seldom make any profit calculations, but they nearly always control that they get most possible gains out of sale, a purchase or a work done. The terms income motive and business motive cover inadequately these two concepts, the liquidity motive and the profitability motive..

In table 3A I have tried to illustrate the choises the cash-holder faces.

When the choise is between different claims and real capital, e.g. deposits, bonds and commodity stocks, it is about investments with different earning power; it is thus not the question of the fundamental difference between money liquidity and earning power. The choices between different investments are made easier by calculations of yield that estimate different values and alternative costs. (4). Private persons and small companies make seldom any profit calculations, but they see nearly always to that they get most possible gain of a purchase, a sale or a work made.

But like Keynes to include the business motive and thus the efforts that are needed to make an investment in the transaction motive, makes this obviously completely meaningless. This motive, e.g. the choice between bonds or other claims, shares or real capital can be important för the earning-power and the development in the long run; in so far it can perhaps be called a business motive and an income motive, but this is not decisive for the payment ability in the short run.

And does the talk of a speculative motive reflect any reality. Of course there are people who are players by nature or influenced by the environment who take risks and sometimes too great risks. But this is not true for the economy on the whole or even for any significant part of it. For nearly all decision-makers and cash-holders the opposite is true. Even if enterprise is always associated with risks, most companies are controlled by non-speculative motives. They try to escape speculating by forward deals, hedging, foreign exchange deals, interest binding, insurances, and so on.(5). The whole economy builds also on risk limitation, to avoid speculation, e.g. by the companies acts (e.g. the Swedish Companies Act) limiting losses to the company's own capital, by pledges, collaterals and mortgages limiting the risks of the creditor, by insurances covering many inherent risks, and so on.(6). That there are companies specialized in insuring against risks in enterprise transactions and capital investments, taking the risks that the customers will not take, is no more peculiar than the existence of other insurance companies.(7).But foremost the cash-holders act by building up reserves, funds, hidden reserves, capital investment, and so on. (8). Furthermore it is so that the risk assessment is mainly a question of choice between alternatives with different profitability, not the basic choice between payment liquidity and profitability.

Keynes´ third motive, the precautionary motive, is of course considerably stronger than the opposite speculative motive. Most private persons, enterprises, and administrations stress the safety of different investments. A risk assessment is nearly always made. We weigh the profitability against the risks in every single case and even the risks that are associated with poor money liquidity. (9). These two motives, the precautionary and the speculative ones, can never be isolated and neither constitute a key investment motive. They cannot be measured, and they are intimately associated with both the transaction- and the earning power motives.

On the other hand we can perhaps speak about a third or fourth motive besides the transaction- and the earning-power motives. It is not enough for a person or a company to have payment ability for the moment and that the enterprise is rendering a large surplus for the time being. They also have to provide for the liquidity and the earning power in the long run. We could call this for common liquidity and solidity. Common liquidity [10]. means ability to pay during a longer period, and solidity means that we have assets and activities that yield interest or other utilities in the long run. These motives can perhaps be compared with Keynes´ business- and income motives. But this is not a problem in the daily work with satisfying the transaction- and the earning power motives, in choosing between money and other assets that render a surplus. The problem is also less important, because if we meet the need for money liquidity and earning power, then we have also the best conditions for building up the solidity and liquidity in the long run. All good investments, either they are made in money, claims, or real capital satisfy as we know these demands. This means that we in most cases can disregard these demands and concentrate on the two opposite motives, the transaction motive that can be measured in money, and the earning-power motive that the interest is a measure of.

Keynes and other economists, on the contrary, base the money theory on the exchange between different value-preservers, in spite of it being evident that this is an aspect that plays a very small role for the lines of action of the cash-holders as compared with the transaction- and earning-power motives. This is also an aspect that is often satisfied by all the investments made in order to meet these latter motives.

Within that part of the life of man that economics constitutes, we quantify these values in different measures such as money and interest. That the measures sometimes can be bad value-measures and sometimes include inadequate and even destructive elements, is unfortunately a problem we must handle and perhaps avoid by better measures, e.g. life quality instead of physical volume. We can perhaps also create methodes to better measure not only business economic but also social economic use or earning-power. But on the whole people will consider that the measures meet their demands, when measuring different values at handling economic resourses. That the earning-power motive has this immense weight , is as we know shown by the enormous losses, (not only economic but in all levels of life), that single persons and societies have suffered that have tried to disregard or get rid of money and interest as value measurers. These measure the difference in value between different assets, services or investments, between different alternatives at the same point of time (now-value and alternative interest) or at different points of time (discounting and accrued interest). If we shall avoid social economic or private economic losses, we cannot disregard them.

All economic activity is a constant choice between these two needs, between these two motives - to be able to pay and to receive returns on ones assets. [11]. That the money, the means of payment, has such a tremendous importance and such an outstanding role in all developed societies, depends on their being by and large the only assets that can meet the transaction need, to maintain the payment liquidity, without great costs or losses. In more primitive societies they lacked or lack for the most part these possibilities. There a much greater part of the resources of the society must be assigned to creating payment instruments, e.g. for exchange of goods and services against each other. But the most essential loss these societies suffer is that exchanges are not being made, no matter how rational they would have been, if made.[12]. That the transaction motive is so important , we can also see from the possessors being prepared to sacrify an often high interest dividend on the amount they are keeping in payment liquid form, especially if they also suffer losses due to decrease of money value. The choice between to do or not to do a transaction is not only the most basic, it is also the first choice.

Regarding how to satisfy the earning-power motive, there are many options: investments in claims, deposits, bonds, bills, money market instruments, shares, parts of funds and companies, properties, goods and services of different types. Private persons, companies, and administrations endeavor to achieve the best possible proceeds, commercially and often even social-economically, to make the best possible choice between these different assets. Many companies and administrations have also as task to help others to make these choices.

It is the task of the cash-holders to make these choices and to see that money, different claims and real capital are sustained and increased and that expenses, costs, and debts are kept on a lowest possible level and that there is balance between different assets and debts. If a cash-holder gets an influx in banknotes that is greater than what the person normally needs, he probably deposits them in a check or giro account, in the opposite case the cash in banknotes can have to be increased through withdrawal from a bank account. If the surplus of money becomes so great that it is not needed short-term for making payments, the cash-holder perhaps deposits the amount into a savings account or buys bonds. If the liquidity is good long-term, there will perhaps be a case for making a more long-term investment or for reducing a long-term debt. That the volumes of money, savings accounts, and other more short-term assets are balanced against each other, is marked in all statistic material by the parallelism (correlation) in their volume development. This reflects the condition that man´s need and therefore also his expenses change very slowly, which also influences the relative volume of the money, the

claims, and the purchases that are required for these needs to be satisfied.

b. Different Types of Payments.

In the same way as we make a division between different money, we can also make a division between different payments and transactions. We can speak of payments in banknotes and / or coins, by postal giro, by check, by bank giro, by account card, by cash card, or by bank check, money-order or similar money. The borderline between check and bank giro is unclear mostly because check and bank giro payments often are made from the same account. In that case the transactions between them of course disappear But since check and giro payments are in principle very different , and in many cases are made from different accounts, retaining the division can be justified. In the same way there are of course great similarities between postal giro and bank giro, but also certain differences. On postal giro accounts (at least in Sweden) credits are in most cases not granted and unlike bank giro transactions debiting and crediting are always effected centrally. The postal giro and the bank giro have also rather different rule- and form systems. What a single payment or transaction involves in detail is recorded schematically in the earlier mentioned diagrams of Appendix 1.

We can also make a division between 1) owner's payments to own accounts that can be said to form a preparatory transaction, 2) payments to other parties, 3) payments from other parties, and 4) owner's payments from own accounts that can be said to form a concluding transaction but also a preparation for new payments. Payments between own accounts or own transactions in money without accounts are always only monetary transactions, exchange transactions Payments to or from another person (physical or juridical) can be payments for goods and services, financial transactions, or only monetary transactions. Financial and purely monetary transactions can be one-sided or two-sided.

To what category a transaction will be allocated must be dependent on the kind of money the demand of payment liquidity will be put on. The payment by bank check or money-order from a check account puts demand on this account (competes for a common space); such a payment must therefore be regarded as a check account payment. Withdrawals of banknotes from a postal giro account puts demand on this account and must therefore be regarded as a postal giro payment. Payment of banknotes and coins to an account puts stress on the banknote cash and must therefore be regarded as a banknote- and coin payment. In-payment (Crediting) of a received check- or a bank giro remittance to a postal giro account does not put demand on any account but can be termed as a preparation for a postal giro transaction and ought therefore to be allocated to this group of transactions. As long as the check or the bank giro remittance has not been put in and changed to be a part of an account or been converted into cash, it is mostly not useful. Of course it can be turned over an extra time, but this is probably unusual nowadays. The important thing is thus not the used medium but the account with a value in money that the medium charges at the transaction in question and the balance of this. The value of a check, a giro account, or other remittance is wholly depending on the value of the surporting account. On the other hand the value of banknotes and coins is wholly independent of possible account values. Banknotes and coins are fully convertible both as payment mediums and as means of payments.

Regarding payments by account cards we can look at the transactions in two different ways. We can say that the seller takes over the customer´s claim on the bank or the card institute (or increases his debt at an account credit) by presenting the account card and that this is the real payment. The payments from the check and giro account to the card account will then be a monetary follow-on transaction. But we can also see the payment from the customer´s check and giro account as the real payment and the remaining transactions as monetary follow-on transactions. The most essential is that it is the payment from the check and giro account that primarily puts stress on money. That the seller takes over the customer´s claim on the bank / the payment institute or that the transaction increases his debt to a possible account credit, does not stress any demands of money besides the demands that are put on the check and giro account; neither that the shop and the bank / card institute settles any surpluses or deficits.

If the card payments are settled from check or giro accounts, the process will not be different than for other transactions from these accounts. The payment influences the money liquidity, when it is made from the account, irrespective of it being made by a payment card or due to an invoice. When we have paid by card , the amount is drawn at once from one of these check or giro accounts or this is done periodically, e.g. every month. The card payments, as other payments, presuppose positive account balances or a granted credit and a following in-payment to the accounts, even if this in the case of a granted credit can be done subsequently. If the card payment is debited a giro account, it is still a giro payment. There is no reduction of transactions when a payment card has been used in this case. Instead a transaction between the cashier and the issuer of the card is often added.

When the card payments are accounted for separately, a somewhat different situation arises. We have thus got accounts with a balance that goes beyond the balances of the check and giro accounts. But these card accounts differ in a decisive way from cheque and giro accounts. If we disregard corrections and interest and other credits from the card institute, means cannot be supplied into the accounts from outside but only from the possessor´s check and giro

accounts (or by cash). These latter accounts live in a totally different way their own life, which makes them to perfect money. The account cards are on the contrary normally no independent money; these accounts must all the time be fed means in order to stay alive. This is accentuated by the use of banknotes and coins and check and giro means being to a higher extent governed by law rules, while use of account cards can be said to be basically governed by contracts between card editors, card possessors, and selling enterprises.(13).

Now it is in itself theoretically possible that the account card companies can start effecting payments between the accounts of different card owners, but as far as I know this has not yet been done; at least it has only been done to a very restricted extent. If such a change occurs, we must begin to regard these account cards and card accounts as independent money, which in such a case ought to be measured and counted as check and giro means. But as long as an owner's transfer into the account must precede transfers from card accounts, we are far away from this.

Even for the payment cards, which the cash cards are, it is true for obvious reasons that they cannot be fed means from other parties. They can be paid only by a withdrawal from owner's check and giro accounts (or by banknotes). They demand payment liquidity in owner's accounts; in this way they are as little independent as other payment cards. But because they are valid independent of accounts once they have been bought, they stand for their own values, own payment liquidity and can therefore to a higher extent than other payment cards be said to constitute independent money. The importance of this is however highly reduced by their small volume and by their limitation to certain determined and special points of purchase. They have similarities with voucher cards and credit notes that hardly can be regarded as regular means of payment.

To understand easier the role of money we can make a list, a schedule, of different kinds of transactions, which I have done in Table 3B. I start then from the money in Sweden. But the division ought in principle to be equally valid for other countries and other than the Swedish money. It should not be a problem to make the necessary completing in such a case. Often it is probably enough to use other terms. Instead of the term check and giro means one can e.g. use the terms ´credit funds adapted for transfers´ or ´deposits transferable by check and giro´.

Notice that this schedule differs from the division made in Appendix 1. There I distinguished between different payment mediums, I dealt with the outer, mechanical courses. This division stresses on the contrary the payment liquidity, it differentiates between the money in the role it plays for the payment ability of the cash-holders. Then a transfer of a bank check or a common check that is debited the bank giro account is a bank giro payment. It decreases, as we know, the balance of the cash-holder´s bank giro account. It is that balance that is measured statistically and has money-theoretic importance.

Payments are also accounted for in Appendix 2, but in that case it concerns a rough division of different parties within the payment systems, foremost transactions in, from, to, via, or outside the bank system; the main part of these are not payments for goods and services but exchange transactions and financial transactions. That list has mainly its value as an attempt at delimitation between the bank system and the economics outside and between transactions that directly or indirectly affect the cash-holders of the economy and such that do not

My new schedule (Table 3B) is applicable for the market outside the bank system with payments, transactions, payment systems, and money valid for the cash-holders of the public, the enterprises, and the administrations. It includes then of course the payments that are made *via* the bank system and also the payments and credits of the bank system to the cash-holders and their payments to the bank system in all these regular monies. It can on the other hand not be used for the interior payments and transactions of the bank system. That system has as we know other means of payment for this, foremost a number of clearing systems, often of the high-value system type. Banknotes and coins play a small role for the interior payments of the bank system; which means of payment that is used is not important. For the interior payments of the bank system the accounting itself is perhaps the most important. While the volume of money is a bottleneck for the economy outside the bank system, this seems not to be true for the bank system itself. There seems however to exist a relationship between the interior volume payments within the bank system and the volume central bank money that the central bank has put at the disposal of the economy. But how strong or weak this correlation is, we can only speculate about. There exists hitherto no statistic material whatsoever that casts light on this.

In this schedule (table 3B) only payments and money in domestic (in my case Swedish) currency are mentioned. But in principle it is of course possible to take also payments and money in foreign currencies into account (e.g. within Sweden). But even if the accounting would instead refer to transactions within a country irrespective of currency but exclude transactions of domestic currencies in foreign countries, this would probably not affect the volume especially much, because the amounts mostly take out each other. For the part of Sweden this means however somewhat lower amounts, because both export and import businesses are since long conducted mainly in foreign currencies, especially US dollars, sterling, and deutschmarks, and will in the future be conducted also in euro. I mean however that it is most correct to deal with domestic currency only, irrespective of where it is used, because it is the value

changes of the domestic currency we are interested in, not a cluster of currencies within a country, where as a rule the domestic currency is dominating.

It can be discussed how we shall regard payments to or from other bank accounts than check and giro accounts. Postal giro payments, as opposed to bank payments, can as we know never be made to or from other accounts than just postal giro accounts (at least in Sweden).On the other hand bank payments can be done. Here I do not mean the short-termed accounts without (period of) notice rendering low interest, but also sometimes involving fees, for which we can use the bank's special rule- and form system for payments, e.g. wages and pension accounts, and for which accounts the bank continuously and often daily renders statements of account, as opposed to the cash-holder´s savings accounts or long-term accounts, from which payments are seldom made. Even if the banks do not use the terms bank giro and bank giro accounts fot these former ones, it is in fact the question of such accounts and transactions. A measure problem is left in these cases only if these accounts are not counted separately or among the check- and giro accounts but among other bank accounts.

Neither is there a problem, if the withdrawals are done from an account other than check and giro accounts and the customer then makes the payments via his check and giro accounts. No problem either if it concerns deposits from a person´s check and giro account into another person´s savings account or long-termed bank account, because the demands for payment liquidity in that case are put only on the check and giro accounts. The remaining cases are withdrawals from a person´s savings account or long-term account deposited into another person´s account outside the bank giro system. But with knowledge of how the bank system looks at irregular payments and how high fees are charged for such payments at bank visits, we would probably say that these payments have a very low extent. The velocity of such means is probably very low.

c. Importance of Different Types of Money.

The payments in banknotes have still very great extent and this is especially valid for the household sector and small companies. Some persons, also economists, seem to think that the banknotes play a small role nowadays in payments.(14). Statistical data and other statements give, however, no support for this. These economists ought to ask themselves, why the cash-holders would retain such a great share of banknotes in their cash boxes, if these constituted only a small part of their payments, especially in cases where other money can render certain interest. In Sweden the volume check and giro means fell below the volume banknotes and coins outside the bank system during all the nineteen-forties, the nineteen-fifties, and the nineteen-sixties. First in the nineteen-seventies the volume of the former exceeded the volume of the latter due to expansion of the bank giro and ´Nordea's personkonto´ (the personal account of the Nordea bank), even if in Sweden it has been difficult to assess the volume of the bank giro means, because the commercial banks' statistics have not differed between the bank giro and some other bank accounts.

Kirkman estimates in ´Electronic Funds Transfer System´ (p. 5, 9, and 220) that the share of the cash payments of the total numbers of transactions in Great Britain between mid nineteen-eighties to mid nineteen nineties would decrease from about 90 % to about 80 % and that the volume of cash payment would drop by a corresponding extent from about 43 % in 1985. Other economists state however considerably lower numbers. Lempinen-Lilja state that 70 % of all payments and 89 % of all payments in the retail commerce in Finland 1985 were payments by bank-notes and coins.(15).

In the industrial countries as a whole, the cash payments still dominate in numbers in the economy outside the bank system, even if they no longer do it in terms of value. In the developing countries cash payments have however still a very high share even as to volume. But within the bank sector in the industrial countries banknotes and coins play nowadays a very small role except when concerning foreign exchange business.

Banknotes and coins can be used freely within the payment systems both in the bank sector and in the sector of the public, the enterprises, and the administrations. All these compete thus for banknotes and coins. The bank sector as a rule restricts itself to a few percent and the remaining volume is therefore at the disposal to the economics outside. The part of the banks lies also as a rule on the same level year after year. An important reason for this division being so stable, is that the banknotes normally do not render any interest, so all parties try to keep their volume on the lowest possible level for profit reasons. But it also bears witness to the importance of banknotes that the cash-holders are prepared to pay such a high price for them. While long-term bank savings generally render an interest of between 3 and 8 % per year, the banknotes render no interest at all. The exception is deflation years like 1930 - 1932, when the general price fall gave a real interest of some percentage. In the same way it is true that the cash-holders are prepared to pay for payment liquidity since check and giro money render an interest difference of some percentage in relation to savings means. Furthermore, cash-holders are prepared to pay even more during inflation times for holding banknotes and other money compared with real capital, because to the normal interest for bank deposits, the losses by inflation must be added. The market values the money very high and especially this is true for banknotes and coins, which earlier in Sweden used to constitute more than half the volume of the money, even if this volume has decreased since the nineteen-seventies.

That the bank sector can operate vith such a small volume of banknotes for effecting payments to the public, the enterprises, and the administrations and with nearly none for effecting payments within the bank system itself, is because, as we have said earlier, it has its own systems for clearing and transfers within its own sector. Commercial banks and others can use their accounts in the central bank and the ´riksgäld´ (the Swedish administration of the national debt), they can take up day loans or longer loans or make depositions with each other. The bank system can when necessary buy or sell bonds, treasury discounts banknotes or other money market instruments or borrow in the form of repos with valuable documents as securities. Earlier there was also an extensive rediscounting of bills of exchange. A great part of the transactions are effected by clearing between the banks, the credit institutes, the finance companies, the insurance companies, different funds and the central bank (in Sweden in ´Riksbanken´, the ´RIX-system´, and the banks´ data clearing), where deficits are balanced against surplus. Small banks, savings associations, branches and branch offices put in their surplus and can borrow when at deficits from the large bank companies. Brokers´ firms, currency dealers, ´Värdepapperscentralen´ (central Swedish office for registration of value papers), and of course the giro and payment institutions are parties of this system.

If liquidity problems arise within the banking sphere, there are thus a lot of ways to solve them. It is to be observed that by the economists´ ordinary vocabulary the liquidity of the banks in the first term does not mean their ability to effect payments but their loan capacity, even if the capacity in these two cases mostly exists at the same time. And it is this latter capacity that the governments and the central banks have tried to influence. Lending from the banks and especially from the commercial banks was a central question only one or two decades ago; equal central then, as it is irrelevant to-day. It is ironic that all these attempts to limit the lending of the banks did not manage to affect the purchasing power of society during an almost uninterrupted inflation process, while to-day, when all that can be called credit restrictions have disappeared in our internationalized economy, we have succeded to reach a relative price equilibrium.

A precondition for upholding the liquidity of the bank system during a bank crisis is however often that the central bank is prepared to contribute to this in a tough situation. (16). In most countries the central bank also functions as the lender of last resort. It is an important element of most payment systems that a bank with an acceptable earning-power should not have to go bankrupt because of liquidity problems. (17). Often, however, the central bank restricts its engagement to protection of the depositor ´s money. This was often not the case during earlier periods, when every bank crisis easily degenerated into a withdrawal explosion.(18). On the other hand, banks can go bankrupt because of lacking earning-power and insolvency. Such a case was the Swedish bank ´Götabanken´ in the beginning of the nineteen-nineties. ´Götabanken´ had been too careless in its credit giving, regarding adequate collateral and the estimation of risks and profitability of projects. Even in this case the Swedish state protected the money of the depositors by a state bank guarantee.

These inner payments system of the banks seem to function excellently in most modern market societies except during hyperinflation, when even they are destroyed. A reason for the systems as a rule functioning so well, is probably the fact that 90 - 99 % of the ´products´ that the bank system trade (except for small amounts of wages, salaries, and rents, and of properties, shares, funds, and of course foreign currencies) do not change in price by the transactions with the exception of the shortterm fluctuations around a trend value for bonds and other claims with a firm interest rate. They are not changed in relation to each other by inflation or deflation; they all follow the money value. A bond can of course lose in value by substance decrease, but this has nothing to do with the common price development. The interest that as we know is calculated for a period of time, I shall return to later.

The actors of the bank system cannot as a rule protect themselves against inflation by buying real capital. All they can do is to make sure that their own losses on lending and on bonds and money market instruments due to inflation are compensated by losses of the depositors to the bank system on deposited money. They can also somewhat adjust the interest rates so that these include a charge for value losses due to inflation.

But in spite of this payment- and liquidity problems occur in the bank system; these have been dealt with rather fully in literature. The economists have distinguished between different types of risks, e.g. credit or liquidity risks, administrative risks (calculation faults, fraud), legal risks, confidence crisis, and system risks. Especially system risks in different gross- and net settlement systems have been profoundly dealt with.(19). This domain lies however totally outside the area of this analysis.

A special situation arises in a case of hyperinflation. A certain time before the total decomposition of the payment system deposits on savings accounts and bank loans will disappear, partly by cessation of new deposits and withdrawal of earlier deposits and non-acceptance of new loans, but also by standing savings accounts and loan amounts are diminishing to nil (like of course also private loans). Even the value of bonds and money market instruments disappear in that way. Near the point of collapse all deposits into check and giro accounts cease and all earlier deposits are, where possible, withdrawn. In the terminal stage there are only the banknotes left, as long as someone is willing to take them. The value of the coins has of course changed to

nil at the earliest stage of all. Instead foreign currencies and claims in such currencies take over some part of the payment functions, as long as these substitutes suffice. Of course barter also increases, goods and services against goods and services, even if this trade is conducted at the price of great economic losses..

Banknotes and coins constitute the beginning and the end for other types of money. Everything began once with banknotes and coins, as the individual´s life begins and ends with them from the baptismal hundred Chrowns banknote to the last ´öre´ in the splitting up of inheritance. Banknotes and coins are also the only types of money that are valid in all contexts. They have the most general convertibility in their currency area. An example of this is also that bank crisis can result in a lower value of check and giro means compared with banknotes and coins. The latter are what Erich Schneider called them, definitive means of payments (definitive Zahlungsmittel)(20). Friedman-Schwartz use the term ´high-powered money´, even if he also includes the banks´ balance of accounts in the FRB-system therein. Banknotes and coins are in many ways the base for the whole payment system, they are *money, means of payments of the first order, primary money.* See also the schedule in Diagram 3A.(21).

Check- and giro means are also important, even if they are not convertible to the same extent as banknotes and coins. They are always supported by an account in central bank money and comprise rules, routines, and forms that highly facilitate payments and therefore make them different from other bank deposits but also from other money.(21). They are objects of a continuous, often daily accounting and reporting activity with buyers, sellers, banks, and payment institutes, which makes it easy to control and follow the transactions; at the same time this can be done with very good safety and at low costs.(22). This difference against savings tends to become more pronounced, because the banks try increasingly to manoeuvre the payments by charging high fees for non-general methods of payment. What makes check and giro means different from payment cards, bank cheques, and money orders is that the former can receive payments not only from owner's accounts but also *directly* from other person´s accounts. This means that they live to a high degree their own life. They can exist during long periods of time without supply of own means. But even if there is great confidence for the banks´ capacity to fulfil their duties and to secure the value of their check and giro means, there can arise situations, e.g. at war, when the confidence is shaken and the check and giro means get a lower convertability than banknotes and coins.(23). Check and giro means can therefore be said to belong to *the money of the second order*, *secondary means of payments*. Together with banknotes and coins they constitute the *independent money*.

Account cards and card accounts without own reporting, which are accounted for via check and giro accounts, do not on the other hand live a life of their own. The handling of account card transactions then resembles handling of invoices, which releases a check and giro payment, even if it mostly is the seller that handles the contact with the bank or payment institute in case of a card payment, while it as a rule is the buyer who does it in case of an invoice payment. Even if the check or giro account is money of the second order, this is not true for the account cards as a medium or a means; they are definitely of the third order.

Card accounts with own accounting can as a rule not be considered being independent money either, because they lack the most important distinctive sign - they cannot receive payments from other parties, if we disregard interest entries and corrections from the side of payment institute. When they are separately accounted, means must nearly always be transferred from owners' check or giro accounts, they live no life of their own. This applies for, among others, most firm (customer) accounts that are mostly separately accounted. Besides, the account cards are only to a restricted extent regulated by law, in contrast to e.g. banknotes, coins, and checks.(24). Therefore the account cards must be considered as *money of the third order*. But of course they can be considered to constitute *regular means of payment,* in contrast to savings means, bonds, stamps, discount stamps, or voucher cards.

Now it is at least theorethically possible that card institutes can make it possible also for other parties than the possessor to make payments to card accounts with own accounting. In that case a new situation arises. Then even these accounts can be looked upon as independent means of payment, provided that the payment possibilities for other parties are made to some extent common. But today this is to my knowledge not possible, partly for cost reasons for the payment institutes and the payers, and partly because the monetary authorities see risks with such a system.

Account cards and their accounts with own accounting belong thus today to nonindependent money of the third order. To a still higher extent bank checks, money orders, postal orders, and such means of payment are to be regarded as nonindependent money. They lack as a rule own accounts and special payment routines and are often not even used for payments of goods and services but are often used for effecting owners' exchange operations. We should perhaps classify them as means of payment of the fourth order, but I prefer to refer them, like the payment cards to the third order.

The public, enterprises, and administrations outside the bank system use as money most of the banknotes and coins volume outside the central bank and the balance of own check and giro means that they can build up on these. On the other hand these cash-

holders cannot as a rule use the inner channels of the bank system. If they could do this, it would be a way to offset a possible shortage of money within the economy outside the banks. It can be done in a few cases. This applies to certain sales, of often large amounts, of properties, flats, shares, companies or parts of these as well as of some quantities of sold goods and services, which are made only by the inner bank system. In the same way this applies to certain payments within public clearing. That payments sometimes can be made solely via the bank internal system or the public clearing, does not constitute a principal problem, but can result in measuring problems.

On the other hand changing and financial transactions only within the bank sector, the Rix system, or public clearing do not affect the price formation process in the sector outside the banks. Transactions via the bank system for the market outside can for every check or giro payment cause several transactions internally within the bank sector. But none of these act upon the money liquidity of the cash-holders, only the own transaction makes this and not the bank system' follow-transactions. They cause no restrictions for the economy outside and hardly any for the bank sector. This, on the other hand, is the case with changing and financial transactions in the economy outside the bank sector, not because they affect directly the price formation process, but because these transactions make use of a part of the scope of money, it is affected indirectly.

That the bank system sometimes uses the postal giro and bank giro system for the economy outside the banks, can also distort the measurements. It is so in the cases where small banks and credit institutes use the usual giro systems (outside the banks) for their own payments. To the extent it regards payments for goods and services, the result is not distorted, but if the transactions to a great extent are financial, this will be the result. To the extent the banks for their payments credit customers' accounts, these payments concern the customers' accounts only in a positive way, these payments do not mean any restriction. Here exists thus also a measurement problem, but the regularities of the statistical numbers, imply this is not a great problem

A factor that also determines the scope for payments of goods and services is the volume of the interior transactions in the same enterprise or concern. The enterprises or administrations are, at least if they are of some size, divided in places of business. They have mostly an accounting responsibility against the mother company, and in order to controle that the places of business follow the written or unwritten policy or budget of the company or administration, they are debited and credited for transactions between them. Even in cases when it considers different companies within the same group, there is the same accounting responsibility. If a development towards horisontal or vertical integration occurs,, it is probable that the volume interior transactions in the accounting increases and that the payments volume through the external, general payment system decreases. But it is not certain that this occurs to the full extent. The owners can choose to let the place of business, the company, and the administration continue to make regular payment transactions to other places of business, companies, or administrations within the same group. Two group companies find it probably difficult to settle transactions by accounting without money, when deliveries and payments go mostly in one direction. If a company is divided, the new companies therefore change to external debiting. Internal debiting occurs however to a limited extent for faulty notations, returns, and counter-deliveries, which I have mentioned earlier under the sector on barters.

Here we have, as we have seen, a measurement problem. If we shall give an account of the volume of payments and transactions between different owners, we cannot directly use the official statistics because these also include e.g. postal giro and bank giro payments between a lot of places of business, companies, and administrations within the same company group. But there are factors indicating that this is not a problem.

Firstly, what gives the money its immense importance, is its being in short supply, and that the cash-holders value it very highly and are prepared to give up often large revenue for having a supply of it. The account keeping on the other hand does not demand an ´öre´ in cash, means no interest loss, or fees to the payment system. If now the company or the administration in spite of that chooses to use regular money, this shows that in these cases the payer has quite the same reason to use it as for payments between totally different companies (the value setting is the same). Otherwise he would not do it, among other reasons because there is a cheaper alternative. There is therefore no cause for differing out transactions between units within the same company or group, when we work with general statistics. That regular money is used is in itself a correct borderline between them and companies that only use accounting.

Secondly, the relation between only accounting and the volume payment transactions is probably structurally conditioned and very stable. Horizontal and vertical integration do not go in one direction only, and the changes take out each other to a large extent. And even if totally an integration or a desintegration is going on, it is not certain that this increases or decreases the accounting without payments. At least it is true for a society that eventual changes take very long.

What is important for the price formation process in the first place is thus the payments of goods and services against money, even if these to a part include payments within the same company or concern. These payments are to the greatest part made

between the parties outside the bank system, between the cash-holders of the public, the companies, and the administrations, but mostly via the bank system.

The division and defining of boundaries that I try to achieve in this and the following chapters, is not easy to accomplish in practice, mostly because of deficiencies in statistics or non-existence of such. It may be considered as based on principle or like an ideal condition. As we shall find later, we yet achieve evident tendencies in the material in spite of these deficiencies. The tendencies that we are going to describe are so strong and permanent that they are totally dominating.

Notes.

1. J.M.Keynes ´The General Theory of Employment, Interest and Money´ (JMK), 194 - 196, 170.

2. See e.g. David King ´Banking & Money´ (DK), 75: "- - - There are several substitutes for money as there are various forms of wealth-holding , chiefly bonds and equities, physical goods and human capital (which relates to people´s income-earning potential). - - -"

3. Compare Lars-Erik Thunholm ´Svenskt kreditväsen´, 1989 (LET89), 199: "- - - En bank måste därför i sin placeringspolitik alltid väga likviditets- och räntabilitetssynpunkter mot varandra." (- - - A bank must therefore in its investment policy always weigh liquidity and profitability points of view against each other.")

4. Gottfried von Haberler ´Prosperity and Depression´, 292: "- - - We may concieve the various investment opportunities existing at a given moment of time as being arranged in order of decreasing profitability, and construct a schedule or curve sloping down from left to right. - - -"

5. See e.g.Lybeck-Hagerup ´Penningmarknadens instrument´ (L-H), 192, 139, 194.

Bruce J. Summers ´The Payment System ´ (BS), (Marquardt), 118: "Payment system policy is often divided into two categories, namely, policies that promote efficiency and policies that reduce risk. - - -"

6. Compare Martin Andersson ´Kontroll av bankernas betalningssystem´ (MA), 66: "Vid mina samtal med olika högre befattningshavare på Riksbanken, så framkommer tydligt, att Riksbanken har en mycket riskavertionell hållning till frågor rörande betalningssystem. Denna uppfattning styrks också i den litteratur som framtagits i anslutning till olika centralbanker runt om i världen, då där finns ett kraftigt fokuserande på riskminimering (se nedan)." ("At my talks with different senior staff at Riksbanken, it becomes clear that Riksbanken has a very risk-aversional attitude in questions concerning payment systems. This point of view is also strengthened by literature projected in connection with different central banks around the world, where there is heavy focusing on risk minimizing (see below)").

7. Irving Fisher ´Booms and Depressions´, 9: "Chance is inseparable from life. Every transaction. is a taking of chances, and over-indebtedness is whatever degree of indebtedness multiplies *unduly* the chances of becoming insolvent. Everyone who is not a gambler, provides himself with a margin of safety. He puts a buffer between his debts and the collector. This buffer is the difference between assets and liabilities. - - -"

8. The judgements of the cash-holder and the bank are to be similar. See e.g. LET89, 194: "Om vi ser föhållandena från en enskild banks synpunkt skall vi finna att det föreligger en hel del restriktioner som en bank har att ta hänsyn till i sin kreditpolitik. Först och främst gäller detta bankens *´likviditet´*, men därtill kommer också överväganden som har att göra med *´räntabilitet´* och *´riskbedömning´*." ("If we see the conditions from the point of view of a separate bank, we shall find that there are lot of restrictions , which a bank has to consider in its credit policy. First of all this applies for the *´liquidity´* of the bank, but to this also considerations that have to do with *´profitability´* and *´risk calculations* .have to be added).

9. J.S.G.Wilson ´Banking Policy and Structure´ (JW), 1: "- - - Thus, in any well-run bank, no matter where it is situated (with the partial exception of Sovjet-type institutions), there must be a certain amount of emphasis on liquidity and on margins of safety in lending. - - -"

10. Compare the division in LET89, 196: "- - - Framför allt består emellertid likviditetspolitiken däri att banken bland sina tillgångar håller en betryggande reserv av likvida medel. Med ´likvida medel´ förstås då dels kassatillgångarna, dvs den inneliggande sedelkassan plus de medel som innestår på checkräkning i riksbanken, dvs sådana tillgångar som alltid snabbt och utan väsentlig förlust kan omvandlas i kontanter. De förra brukar benämnas *primära likvida medel*, de senare *sekundära likvida medel*. - - -" (Above all the liquidity policy stands for the bank among its assets keeping an adequate reserve of liquid means. By ´liquid means´ is then understood partly the cash assets , e.g. the banknote supply in hand plus the means deposited in check accounts in Riksbanken., e.g. such assets that can always be quickly changed into money without significant value loss. The former are generally called *primary liquid means,* the latter *secondary liquid means*. - - -)". To the letter Thunholm counts e.g. ´relatively short-termed document of value which in a difficult situation can be turned over in the market.(my own remark).

11. JW, 385: "- - - Commercial banks will generally attempt to preserve a nice balance between their pursuit of profit and the necessity to maintain the degree of liquidity sufficient to ensure that they can repay deposits on demand when required to do so.

- - -"

12. Brunner-Meltzer ´The American Economic Review´, dec. 1971, 804: "- - - the private and social productivity of money are a direct consequence of the saving in resources that the use of money permits and of the extension of the market system that occurs because of the reduction in the cost of making exchanges."

13. Björkholm- Johnsson ´Betalning med kontokort´ (B-J), 30: " - - - Kontokorten är bara i begränsad utsträckning reglerade i lag, och kan inte betecknas som ett generellt betalningsmedel. - - -" ("- - -The account (payment) cards are only to a limited extent regulated by law, and cannot be characterized as a regular type of money.- - -")

14. See e.g.LET89, 25.

´Elektroniske betalningsmidler i Norden ´, 45, 75.

15. Lempinen-Lilja ´Payment Systems and the Central Bank´, 36, 47.

16. JW, 265: "- - - Indeed, in a modern money market, the eligibility of specified assets at the central bank is the essential basis of liquidity, since this ensures that accommodation will, if necessary, and at a price, always be made available."

17. JW, 387: "However, such crises did not merely eliminate banks that had been incompetently managed. Because of the general loss of confidence, they often also threatened the continued existence of institutions whose condition was essentially sound. Hence the necessity for some intervention by the authorities to prevent complete collapse."

18. Few descriptions of the history of the bank crises reach up to Friedman-Schwartz ´A Monetary History of the United States´ (F-SI).

19. See e.g. Kvist-Nyberg-Wissén ´Penningmarknaden´, 158 - 159.

BS, (Van den Bergh, Veale, Marquardt), 89, 93, 132 - 133, 153.

20. Erich von Schneider ´Einführung in die Wirtschaftstheorie´, III, 5: "Banknoten bezeichnet man auch als *gesetzliche oder definitive Zahlungsmittel*, weil jedes Wirtschaftssubjekt verpflichtet ist, Banknoten zur Tilgung einer Forderung anzunehmen." - - - "Der Besitz eines Sichtguthabens bei einer Kreditbank bedeutet mithin einfach, dass der Haushalt einer Teil seiner Kassenführung einer Kreditbank übertragen hat - - -."

BS, (även Blommestein), 22: "- - -Payment using central bank money is a unique form of payment, because such payments result in a claim on an institution that cannot fail and that, because of its money creation powers, will never suffer a shortage of liquidity. - - -".

21. Hans Hellwig ´Kreditschöpfung und Kreditvermittlung´, 18: "- - - Sie tun dies nicht nur, indem sie auf Geld lauten, sondern auch insofern, als das Geld in erster Linie für Menge und Wert etwa des Kreditgeldes die unerlässliche Unterlage bildet. - - -"

Johan Myhrman ´Svensk kapital-marknad`, 177: "Från teoretiska utgångspunkter är pengar, eller betalningsmedel, tillgångar som är perfekt likvida, d.v.s. en tillgång med vilken man kan genomföra en transaktion av vilket slag som helst. De skall alltså vara ett allmänt accepterat betalnings-medel. I en sådan strikt mening är det endast mynt, sedlar och checkräkning som uppfyller kravet på att vara betalningsmedel. Utvecklingen inom det svenska affärsbanksväsendet har sedan länge varit sådan att medel innestående på andra inlåningsräkningar än checkräkning varit mycket lätta att få ut. Det har med andra ord varit endast en liten tripp till närmaste bankkontor som behövts för att omvandla inlåning på andra räkningar till betalningsmedel. Därför har av praktiska skäl den svenska penningmängden empiriskt sett definierats som mynt, sedlar samt all bankinlåning." (From theoretical points of views money or means of payment are assets that are perfectly liquid, i.e. an asset by which we can effect a transaction of any type They can thus be a generally accepted type of money. In such a strict sense it is only coins, banknotes and check accounts that meet the means of payment definition. The development in the Swedish commercial bank system has since long been such that means deposited in other deposit accounts than check account have been very easy to withdraw. In other words only a little trip to the nearest bank office has been required to exchange deposits from other accounts into money. Therefore the Swedish money volume has for practical reasons been defined as coins, banknotes, and all deposits).

See also n. 2 - 12.

22. BS, 16: "- - - To be competitive vis-a-vis currency for purposes of payment, bank deposit may must meet two conditions. First banks must provide transfer facilities for moving deposit money from account to account that are attractive to their customers. Attributes of an attractive funds transfer service include reliability, speed, low cost, and the provision of good records of transactions. Second, banks must provide conversion facilities that readily allow their customers to make and receive payments using bank deposit money in a variety of forms that are really convertible with each other and with currency".

23.Compare F-SI, 110: "By creating a dual monetary system, restriction of cash payments also reduced the usefulness of deposits. This made the given nominal stock of money equivalent to a smaller stock with free interchangeability. It also led the public to desire to decrease its ratio of deposits to currency, even aside from any doubts about the solvency of banks. - - -"

24. Compare n.13.

CHAPTER 4.
THE ACTORS OF THE PAYMENT SYSTEM AND CHANGES IN THE VOLUME OF MONEY.

a. The Central Bank and the Issue of Banknotes.

The payment system of the society has as I said earlier three great actors, the central bank, the bank system outside the central bank, and the cash-holders of the public, the enterprises, and the public administrations.

Of the whole volume banknotes and coins only the volume outside the central bank can be regarded as money. Of this net volume the bank system possesses a very small part, as a rule less than 10 % and the part for the commercial banks is as a rule only 2 - 5 % (at least in Sweden).

The amount banknotes and coins outside the central bank has mostly or to a great part been created through the state borrowing from the central bank (In Sweden ´Riksgälden´ in ´Riksbanken´), thus a pure book-keeping transaction between two state institutions that in no way are affected by supply and demand; besides the transactions can be made for both the state and for the central bank nearly without costs. This is true, even if a certain price level or a certain interest level has been stated. The state pays in that case to itself. The net amount banknotes and coins can be decreased, if the state pays the central bank the debts that have been formally created, which is also a transaction outside the market.

The net amount of banknotes and coins outside the central bank is on the other hand not affected, if there are transactions within the bank system including its state institutions, and between the bank system and the economics outside the bank system, including the state administrations outside the bank system. It is to be emphasized that I in this context only am measuring the influence on the volume banknotes and coins. Nearly all transactions in bonds, certificates, money market instruments, and bills are made against other money or in clearing systems specific for the bank sector. But as I will show later, the development of these is of very small importance for the price determining process.

Unlike the transactions in banknotes between the central bank and the state, the transactions in banknotes between the central bank and other parties are formally made on strictly business lines between two independent parties, who make an exchange at a certain price and a certain interest level. But because the banknotes almost lack production costs, the transactions are in reality a one-sided monetary transaction, a tax, even if the owners of the banknotes thereafter collectively divide the costs of loss of interest between themselves Normal supply- and demand relations are not valid for this or other taxes.

The net amount of banknotes and coins outside the central bank decreases, if the bank system or the economics outside make deposit in, pay loans to, buy bonds or money market instruments from, or redeem bills in the central bank. But the net amount is increased again, when the bank system or other parts of the national economy withdraw money from accounts in, or borrow from the central bank, or sell bonds, money market instruments, or redeem bills to the extent this is done with banknotes and coins. But as we have said earlier, most transactions with the central bank are made in other money, e.g. checks and money orders or via clearing. The net amount of banknotes and coins is affected very little by most transactions. It is true on the other hand that it is very easy for the central bank to change the banknote volume. A very large increase of the banknote volume outside the central bank can be effected by a relatively moderate decrease of the volume bonds and money market instrument outside the bank. If ´Riksbanken´ in Sweden increases the banknote volume outside the bank by buying bonds for SEK 10 billion (milliard) on the market, this will mean a large increase of the banknote volume but a rather small decrease of the bond volume outside, and if the purchase is made through the state borrowing in ´Riksbanken´, this will mean no decrease at all of the bond volume outside. It is not even sure that it will affect the bond rate or the quotation. That the bond interest rate increases secondarily due to the increase of the banknote volume increase aggrevating inflation, is another thing.

As I have said earlier the right to issue banknotes is the most unlimited and dominating monopoly of the market. [(1).] The issue of banknotes from the central bank is almost free of costs, and yet the bank can supremely determine the price or the interest rate. (A Swedish banknote had in the year 2000 a manufacturing cost of about SEK 1.) To a great part or to the greater part the supply to the market is effected by the state borrowing from the central bank, i.e. a non-market conditioned accounting transaction. Even if the supply is made directly to the bank system or the economics outside, it is only formally a business transaction, because the price the market pays, is the price of a ´product´ without costs, in reality it is the question of a one-sided monetary transaction, a tax. Now the receiver can of course transfer the tax on to those, who sell something to him, but from the total economics point of view the transfer causes a tax, thus not an ordinary business transaction.

Thus the central bank determines supremely the volume banknotes and coins outside the central bank. Most economists nowadays seem to agree on this.[(2).]

It should be noted that this is true only for the total volume, and that it does not mean that the central bank determines the volume coins or the denomination of different banknotes and coins. In this

case we can talk of a requirement of the market and this the central bank adjusts itself to. It has of course no interest in certain denominations accumulating in the bank vaults.

Who or what determines the volume banknotes and coins outside the bank system? The bank system and the cash-holders of the public, the enterprises, and the administrations have, as we know, to share the volume banknotes and coins outside the central bank. Suppose that the bank system holds 10 % or SEK 1.000 million and the cash-holders 90 % or SEK 9.000 million and that the central bank increases the volume by 1.000 million. Can the cash-holders say no to an increased percentage share (why should they?) and bring about the bank system having to increase its share to 2.000 million? How can they do it, if the bank system tries to transfer the increase in banknote volume to the cash holders? They can of course try to keep their earlier level by getting rid faster of the banknotes at purchases. But in this case they only transfer them to other cash-holders. It is true that they can increase their velocity, but this does not reduce their common banknote volume. They can also try to restore the amounts to the bank system by increasing their deposits to the bank system. This is also exactly what happens in reality. They increase their deposits. But the bank system cannot accept these increased deposits without reacting. It would of course mean that the bank system would get a drastically increased volume of banknotes compared with the deposit and the loan volume and compared with the transaction requirements. The bank system has as a rule no reason at all to more than insignificantly increase its holding of banknotes and coins, only because the deposits increase. That this is so is shown by the fact that the share of the bank system, apart from short-termed fluctuations, being on the same percentage level, year in and year out. The bank system increases instead its loans or its purchases of securities to nearly the same extent as the contribution. In both cases the banknotes return to the cash-holders. This deposit- and lending expansion goes on, until both parties have reached the level in their banknote volume and deposit- and loan volume that agrees with their transaction and earning power requirements (ceteris paribus this means the same percentage rates as in the initial position). The cash-holders have neither any direct interest in saying no to an increase of their banknote volume. They may know that a common increase of money can produce inflation, but for the single cash-holder this is not material, when just he or she receives an increased amount of banknotes.

b. The Process of an Influx of Banknotes and Coins.

Suppose that the parties in the starting position have a balance as in table 4A. For the sake of simplicity I presuppose that there are no bonds or other claims; this does not change anything in principle. I also presuppose ceteris paribus that the parties´ preferences for different assets do not change during the process.

This is of course only an example, especially concerning volume changes in detail. The loan volume can of course have other values than SEK 53.000 - 58.300 million, depending on what other values enter in the balance sheet. But for the sake of simplicity I have chosen values that correspond with the deposits. The example shows only what results the influx of banknotes get ceteris paribus. But the starting position and the end results of the changes are very realistic and are close to reality.

Table 4A.

The bank system (SEK million)		The cash-holders outside the system (SEK million)		
Bank notes and coins (10 %)	Bank loans (lending)	Bank notes and coins (90 %)	Check- and giro-means	Long-term deposits
1.000	53.000	9.000	18.000	36.000
The central bank adds 1.000 in banknotes, of which the bank system lends 900.				
1.100	53.900	9.900	18.000	36.000
The cash-holders increase their deposits by further 600.				
1.700	53.900	9.300	18.600	36.000
The bank system increases its lending by 600 more.				
1.100	54.500	9.900	18.600	36.000
The cash-holders increase their deposits by further 500.				
1.600	54.500	9.400	18.800	36.300
The bank system increases its lending by 500.				
1.100	55.000	9.900	18.800	36.300
The cash-holders increase their deposits by further 450.				
1.350	55.000	9.450	18.900	36.650
So the process can go on, until the following balances have been reached.				
1.100	58.300	9.900	19.800	39.600

That the central bank increases the banknote volume outside the central bank results in a credit- and deposit expansion.

Now it is probably so that the bank system reacts upon an expansion with a certain time-lag. The cash-holders do so too, but probably not to the same extent as the bank system. The cash holders increase probably at once their check and giro means, but wait perhaps for a while before they increase their long-term deposits. [3]: The bank system does not perhaps directly increase its lending, but invests in the first place the surplus in bonds and money market

instruments with short duration. First after a time, when they realize that the addition to the liquidity seems to be more permanent, they increase long-range deposits. But this does not affect the volumes of deposits and lending, even if it postpones it somewhat.

It can be of interest to compare the possibilities of the bank system and the other economics to bring about a credit- and deposit expansion by their own strength with the possibilities of the central bank, thus without its disribution.

Suppose that we have the same values as in the previous example. Suppose also that the bank system finds it possible to decrease its possession of banknotes by SEK 100 million. The decrease is thus as large as 10 % of the earlier balance, which is very unusual on non-long-term. I suppose that the adjustment process can occur more or less in the following way, where B sets forth the volumes as an effect of the dispositions of the bank system and K the volumes as an effect of the dispositions of the cash-holders.

Table 4B.

The bank system (SEK million)		The cash-holders outside the bank (SEK million)		system
Bank notes and coins (10 %)	Loans	Bank notes and coins (90 %)	Check- and giro means	Long-term deposits
1.000	53.000	9.000	18.000	36.000
B 900	53.100	9.100	18.000	36.000
K 950	53.100	9.050	18.050	36.000
B 900	53.150	9.100	18.050	36.000
K 950	53.150	9.050	18.050	36.000
B 900	53.200	9.100	18.100	36.000
K 950	53.200	9.050	18.100	36.050
B 900	53.250	9.100	18.100	36.050
K 950	53.250	9.050	18.100	36.100
B 900	53.300	9.100	18.100	36.100
K 950	53.300	9.050	18.100	36.150
B 900	53.350	9.100	18.100	36.150
K 950	53.350	9.050	18.100	36.200
B 900	53.400	9.100	18.100	36.200
K 940	53.400	9.060	18.120	36.220
. . . .	. . . .	. . . .	. . . .	. . . .

So the process can ceteris paribus go on until the following values are reached, which is in line with the changed preferences of the bank system and the unchanged preferences of the cash-holders.

900 (9%)	53.700	9.100 (91 %)	18.200	36.400

The increase of the bank loans results thus definitely in a credit expansion by SEK 700 million, i.e.7 times the original increase in the lending, and a deposit expansion by 600 million. But this expansion is not only insignificant. By it the bank system has also created a more difficult liquidity situation for itself. If the decrease of the banknote volume was not a result of lighter demands on liquidity from the customers, there is probably a strong incitement to a reversion to the earlier cash quota. And in that case a corresponding retardation is brought about. In the long term perspective these tendencies take each other out. The bank system cannot decrease the volume banknotes and coins under a certain level without risking its daily liquidity, its reputation, and long-term its paying capacity. And in any case the bank system has exhausted its potential for a further independent credit expansion. In reality the commercial banks' ability to bring about a credit expansion is still lesser than in the example, because they as a rule possess a smaller part of the banknote volume. In reality such changes of the stock of banknotes and coins of the bank system do not occur. They can rest on the same percentual level year in and year out. The bank system almost lacks the ability to bring about an independent credit expansion. Is the payment liquidity of the public, the enterprises, and the administrations strained, the bank system outside the central bank cannot remedy this. In such cases also the liquidity of the bank system uses to become strained.[4].

In the example above it is presupposed that the cash-holders outside the bank system wish to hold a volume of check and giro means twice, and a volume of long-term deposits four times their banknote and coin volumes, thus six times the volume. In Sweden the quota between the volume check and giro means and the volume banknotes and coins was for a long time 1:1 or somewhat lower. If we assess the deposits to only five times the volume banknotes and coins, the credit volume expansion at a decrease of the banknote volume in the bank system will be only 600 in above example and not 700, is it seven times as large, it will be 800.

What chances have then the cash-holders to bring about a deposit expansion by their own strength? It is certain that these chances mostly consist of a deposit increase of long-term accounts, because the quota between check and giro means and banknotes and coins seems to be very difficult to change. If the cash-holders find it to be in their interest, they can perhaps increase the volume of their long-term deposits by 10 %, which is quite within the range of the feasible. Such an increase could bring about the following changes (ceteris paribus) (Table 4C) in the earlier example.

This change is not especially significant either, but it is considerably larger than what the bank system can produce (3.600 instead of 700). It does not exclude the possibility of a further deposit expansion either, if the cash-holders find this justified. Their payment liquidity has hardly detoriated by the deposit increase.

Can the cash-holders affect their balances of banknotes and coins? Can they from a level, when

Table 4C.

The bank system (SEK million)		The cash-holders outside the bank system (SEK million)		
Bank notes and coins (10 %)	Loans	Bank notes and coins (90 %)	Check and giro means	Long-term deposits
1.000	53.000	9.000	18.000	36.000
- - - -	- - - -	- - - -	- - - -	- - - -
- - - -	- - - -	- - - -	- - - -	- - - -
- - - -	- - - -	- - - -	- - - -	- - - -
1.000	56.600	9.000	18.000	39.600

they possess 90 % increase this part to 91 % or decrease it to 89 %?

Let us start from the previous example. Suppose that they will increase the balances from 90 to 91 %, e.g. from SEK 9.000 million to 9.100. It means that they decrease their deposits by a corresponding amount, 100 million. The bank system sees its banknote- and coin cash decreased to 9.000 million, which is equivalent to 9 % of the volume outside the central bank, thus a decrease by 10 % from 10 %-units to 9 %-units. For this decrease to become permanent the bank system must accept it. But it is certain that if the bank system earlier saw100 million. and 10 % of the volume outside the central bank be a reasonable level of its banknote volume, it will consider 900 million and 9 % to be completely unacceptable. If the cash-holders in this case would insist on having a banknote volume of 91 % and 9.100 million (why should they?), the result will then be the bank system decreasing loans radically, which gradually will restore its part of the banknote volume to what it consider necessary to fulfil its payments and transactions and to have a satisfactory payment liquidity for its customers.

But perhaps someone says:. The commercial banks need, as we know, only to go to the central bank to get their shortage of banknotes covered. By having an account in the central bank or by occasionally borrowing there, they can any time bring about an increase of banknotes. Of course this is quite correct short-term. If the bank systen in the example above gets SEK 111 million in banknotes from the central bank, it has again reached the level of 10 % of the total volume banknotes outside the central bank that it saw necessary at the starting-point to cope with the transaction volume. But for the shortage to be covered more long-term, the central bank must be prepared to permanent the increase of banknotes outside the central bank. The supply of banknotes of the bank system and the cash-holders are in this case, as always, wholly dependent upon the good-will of the central bank to supply the market with an increased volume.(5). The bank system has no independent capability to increase the banknote volume. It can only decide, how large a part of the total volume outside the central bank the bank system will hold in cash.

What then determines the volume of banknotes and coins that the bank system holds in cash? This is something entirely different than the so called cash reserve quotas that commercial banks and savings banks are keeping, either because of legal rules and regulations or due to directions or recommendations from the central bank or just by following sound business practice.(6). These reserve quotas are intended to be a protection for the money of the depositors, and to enable the banks to fulfil their obligations to the employees, the state, the share-holders, and the creditors, or they are a result of the ´credit policy´ of the central bank, sometimes in combination with other restrictions. Sometimes the claims on other banks´ and some state bonds and treasury bills are included, besides banknotes and coins and the balance of deposits in the central bank. (7). Only 20 years ago the ´credit policy´ was one of the main lines in combating inflation, which did not influence in any way buying power and price development. It is an irony of fate that the central banks now seem to have reached a relative price equilibrium, in spite of the fact that all that can be called ´credit policy´ has been abolished in the era of free international capital movements.

This results in the banknote- and coin volume level mostly lying far below the level of any cash reserve requirements. There has as I know never been any request for a certain volume banknotes and coins other than the volume the bank itself determines. When the cash reserves of the bank system greatly exceed its holding of banknotes and coins, it does not matter, how the reserve quotas develop, as the public, the enterprises, and the administrations do not compete for these other liquid means for payment purposes. The banknote- and coin volume outside the bank system are not affected by the development of the cash reserves. On the other side the cash reserve quotas can play a role, when investments of the bank system and the choise between lending, bonds, money market instruments, and other claims are concerned. But this choise does not affect the supply of money for the economics outside the bank system, as we will also establish later on

Instead it is true also for the bank system that the volume banknotes and coins is determined by transaction and earning power requirements in the same way as for the cash-holders outside. There is always a lowest level that the bank system cannot fall short of and there is always a great incentive to invest surplus in a profitable way.(8). These requirements and needs seem to have a definite relationship to the volume banknotes and coins outside the central bank and also outside the bank system. Anyhow, the fact that the volume of the banknotes and coins can stay for decades at the same percentual level of the total volume outside the central bank indicates that this .is so. This is perhaps connected with the fact that if the

banknote volume increases, the transaction volume of the economics also increases, which in turn increases the bank system's call for banknotes. Of course there are changes both is absolute and relative numbers in the long-term due to structural changes, mostly in the payment systems. But it does not give the parties outside the central bank greater freedom of action.

During the period 1945 - 1970 the Swedish commercial banks share of the total volume banknotes and coins outside ´Riksbanken´ exceeded seldom 5 % and the share has had a lightly falling tendency. The highest monthly value since 1945, 5,46 %, was measured in Aug. 1946 and the lowest, 2,42, in Feb.1970. It is thus a very stable quota. The development of the volume banknotes and coins outside ´Riksbanken´, by the commercial banks and outside these are shown in diagram 4A.

We get also the same picture, if we study the statistics in Friedman - Schwartz ´A Monetary History of the United States, 1867 - 1960´ and ´Monetary Statistics of the United States´. See e.g. ´Vault Cash´ and ´Currency in Circulation Outside Treasury & F.R.Banks´ in the latter work, p. 340 - 350, 371 - 376, 380 - 393 and 396 - 413. The volume ´Vault Cash´ is very stable and likewise its part of the total volume ´Currency in Circulation´ outside F.R.B. Before the First World War it was regularly about 1/3, since then it was hardly 20 % until the thirties, but thereafter it has dropped slowly and amounted during the Second World War and until 1960 to less than 10 %.

Or take an example from Western Germany, the volume ´Kassenbestände der Kreditinstitute´ in relation to ´Banknotenumlauf´ varied between 3,6 and 4,8 % during the years 1950 - 1957. (Hans Hellwig ´Kreditschöpfung und Kreditvermittlung´, 166.

The volume banknotes that other credit institutes and other companies with bank, loan, capital management, and payment functions are keeping is still lower. Reasons for this is among others that other parts of the bank systems use very little cash in their activities and that the bank system has intensive interior clearing and loan giving and loan possibilities in commercial banks and the central bank that level out occasional declines.

Important companies as the postal giro, the insurance companies, different funds, the state lending sector and the tax administrations lack nearly entirely banknote cash money, mostly because their transactions are made to a great part through accounts in the regular banks and the payment and clearing institutes. Even if the stability of the banks' quotas can be due to more factors, it is still possible to predict, what a change in the banknote volume outside the bank system results in. It means that a change nearly always results in an equal percentage change of the banknote volume outside the bank system. When the central bank changes the banknote volume, this change spreads very fast outside the bank system.

If we go back to the earlier example, where the cash-holders was in possession of 90 % of the volume banknotes and coins, they are not interested at all which percentage share they possess of the total volume banknotes outside the central bank. Their interest lies in their total volume banknotes, deposits, and other assets being as high as possible, and the assets having the mixture they want. They let therefore gladly the bank system determine its share of the banknote and coin volume outside the central bank. The bank system determines with regard to liquidity, earning power ability and structure of the payment system the volume banknotes and coins that it needs for its transactions and payments, how large a part that shall be withdrawn from the controle of the cash-holders. It is in this respect only that the bank system has an influence on the volume money in the economics outside, even if this certainly does not mean any independent line of action, because the bank system is obliged to keep the volume on a level that corresponds to its demand for liquidity and profitability. If the bank system has few possibilities to affect the banknote volume outside the bank system, the cash-holders of the public, the enterprises, and the administrations have no freedom at all. The volume banknotes and coins, with which the central bank has provided the economics cannot, after that the bank system has kept its share, be changed by the cash-holders. Any attempt of one of these actors to decrease its cash volume by purchases, will increase someone else´s cash. [(9).] And to the extent the cash-holders try to transfer banknotes and coins to the bank system, this leads to an increase of the volume check and giro means or other deposits, which in turn ceteris paribus increases the lending of the banks and thereby restores the share of the volume banknotes and coins that the cash-holders tried to get rid of by the original deposit increase

If the cash-holders of the economics outside the bank system lack possibilities to influence their total volume of banknotes and coins, they have on the other hand greater possibilities to change the volume of their check and giro means. They try all the time to make the selection of different money to correspond with their payment requirements.[(10).] They choose the selection that is in their interest. The bank system has minimal influence on the means volume that is put into the cash-holders´ check and giro accounts. This signifies that the relative volume of check and giro means in relation to the volume of banknotes and coins outside the bank system is very stable. It is one of the most stable relations of the economics. It can remain almost unchanged for decades, but it can undergo structural changes in the long term and it is also subject to seasonal changes. [(11).] See table 4B. The quota can change for a person or a company over time, but the average will be more regular. Changes go often in different directions and take out each other. The quota can also change strongly for different persons and companies, but the average changes are

considerably less. In Sweden it was around the level 1,0 during the years 1925 - 1951 with a break for the years 1937 - 1939, when it was approximately 1,2. During the remaining years 1925 - 1951 only a few monthly values exceeded 1,1 or were below 0,9. During the years 1951 - 1954 the quota fell however to about 0,7, while it increased again to 0,85 by 1964. From 1960 there are however no reliable figures for check and giro means due to the introduction of new giro systems.

We get the same picture, if we study Friedman - Schwartz´ material in ´A Monetary History of the United States, 1867 - 1960´ and ´Monetary Statistics of the United States´. See e.g. the diagram in ´A Monetary History´ (Chart 1) between the pages 4 and 5, which has the merit that it between 1915 - 1960 reproduces the more correct measure ´Demand deposits´ besides the measure, which Friedman generally uses, namely ´Demand and Time Deposits´. The parallell development of ´Demand Deposits and Currency Held by the Public´ is very obvious. But the correlation is clearly obvious also between ´All deposits´ and ´Currency Held by the Public´, even if the latter measure is subject to more changes. While the former measure has varied between the values 3 and 4 in the period 1942 - 1968, the latter measure has changed between 4 and 8 in the same time period. The cash-holders keep the quota between Demand Deposits and Currency on a much more determined level than the corresponding quota between Time Deposits and Currency. That the quotas decreased during the years of the crisis in the nineteen-thirties can be attributed to the fact that the distrust of the public and the enterprises towards the bank system but also regular hoarding resulted in their decreasing their deposits in relation to their holding of banknotes and coins.

To take an example of Western Germany, the volume of ´Sichteguthaben bei den Kreditinstituten´ varied in relation to the volume ´Banknoten´ between 0,95 and 1,10 the years 1950 to 1957 (Hellwig ´Kreditschöpfung und Kreditvermittlung´ p.166.

We can find an amusing example of the stability of the quota between the volume check and giro means and banknotes and coins in the statistics that illustrate Bertil Ohlin´s article ´Stockholmsskolan kontra kvantitetsteorin´ in ´Ekonomisk Tidskrift´, 1943, p. 27 - 46 If the check and giro means in Sweden in December 1941 had amounted to SEK 1.513,5 million, the increase in the total money volume since December 1930 by 208,25 % could have been attributed entirely to the increase in the banknote volume. Now it amounted instead to 1.520 million and the increase was 208,9 %, of which increase thus 0,65 % was a result of other things, that the cash-holders had slightly increased their share of check and giro means. The figures that Ohlin quoted and considered as speaking against the quantity theory are thus a case in point of the opposite.

If the supply of banknotes outside the bank system increases, the total volume of money increases to nearly the same extent, due to the volume check and giro means increasing nearly in parallel with the banknote volume. This is not news. Irving Fisher proved it already at the time (e.g. in ´The Purchasing Power of Money´, p. 50 and 308) [(10).] and Erich Schneider (´Einführung in die Wirtschaftstheorie´, part III, p. 58). [(12).] No matter what statistics we examine, we find always the same solid relation. We should not be able to find such a relation, if the cash-holders outside the bank system did not supremely determine this quota. There are however many measurement problems and statistical sources of error. Such a problem is that the concept 'Demand deposits' in the statistics does not always correspond to 'Deposits subject to check'. Another one is that the quota between accounted check and giro means and banknotes and coins can increase temporarily by quantitative deposit restrictions on savings accounts of the banks, when savings can temporarily flow over to accounts for check and giro means. Conscious barter can also, as we said, result in changes.

An aspect of this quota is that it can be affected, if a country has a currency that is not mutual convertible. If a part of the currency gets a lower value for the cash-holders, e.g. at bi-metallism, this will lead to a decrease of the relative volume check and giro means. See note 3:23, F-S, p. 110. If on the other hand the lower convertibility applies to a type of check and giro means, this will lead as a rule to an increase of the quota.[(13).]

The cash-holders of the economics outside the bank system determine also their and the society´s volume of deposits on savings and long-term accounts by determining how large part of their money they will set aside for this.

The economists have often interpreted the model that I gave an account of in the earlier example. so that the bank system by lending can bring about a credit expansion that is a multiple of the original addition. [(14).] That autonomous lending from the side of the bank system leads to a credit expansion is correct, which I also showed in my example, but it is wrong to maintain this to be a significant factor. If the central bank does not put banknotes at disposal, the bank system is soon drained of banknotes. Of the volume that the central bank makes available, the bank system is obliged to keep a part for transaction purposes, but not so large a part that the earning power decreases. If the economists´ assumption had been right, considerable changes would be common in the quotas between the volumes of the cash-holders´ check and giro means, the volume of there savings and long-termed deposits, and the volume of banknotes and coins. But the factual changes completely contradict this assumption The first quota rests year in, year out on the same level, which shows that it is the cash-holders who determine it. The second quota is characterized by greater variations, which mirror the

cash-holders´ reactions to savings terms, formost interest rates, inflation, and fiscal regulations. But also this quota is rather stable. We can as a rule with great accuracy predict volume changes also in the long-term deposits following an addition to the banknote volume outside the bank system.

c. The Active Role of the Cash-holders.

Even if the bank system functions as a channel, it is the cash-holders outside who are the active parties. They take the initiative to and determine the type of deposits that will be made, or if a deposit will be made at all. They choose not only between banknote cash and check and giro means, but also between these and savings and long-term deposits, and determine the volume different types of deposits shall have of the amount at disposal. They can then choose between a great number of types of accounts in different banks and savings and credit institutes.(15). That the bank system should refuse to receive deposits occur hardly at all, and does not matter, because in such a case a large number of other accounts and investment options are at the disposal of the depositors. The bank system cannot either (other than in cases of extreme bank crisis) refuse withdrawals from the accounts. The cash-holders can also invest in bonds or other claims or in shares or real capital or go outside the bank system. This functions only as a channel, an agent for the deposit transactions that the central bank and the cash-holders make.

But, someone will say, the banks can as we know offer carrots by increasing the deposit interest rate and thus affect deposit positively. The competition sets as a rule stop for the possibility of the separate bank to do this, if it is not made possible by productivity gains. But the bank system as a whole can perhaps increase the deposit interests rates somewhat and thus the deposit volume. But soon profitability requirements put a stop to this. The banks cannot raise the interest rates, if this leads to the interest margin or the lending volume falling under a wanted level. But equally usual is that the bank system instead feels obliged to decrease the interest rate levels. The frames that the profitability and liquidity requirements set are relentless.

There is as we know a related model (with the model of a deposit- and credit expansion) for how autonomous investments increase the income- and demand volume in society by a certain multiple, the so called multiplier theory. It maintains among others that the effect of investments decreases on account of leakage, e.g. through saving. (16). As regards banknotes and coins, check and giro means, the payment system for the economics (the bank system and the cash-holders outside) can be compared to one large communicating vessel. Money does not disappear out of the system through saving. On the contrary, money and buying power *are created* when check and giro means are used for saving. And already in the next transaction the saved means can reach the public and the enterprises without the money volume for the rest being affected. The saving thus creates potential for an increased consumption or investment. So long as the means is left in the bank system and with the cash-holders, it circulates in a constant stream in order to meet payments, e.g. the buying power is realized, or is kept in readiness to keep payment liquidity and thus make future purchases of consumption- or investment commodities and services possible.(17). It is thus without importance, if it concerns expenses for consumption or investment. The money does not in the least change character in the one or the other case. If the saved amounts are lent out by the bank system, the volume banknotes and coins with the cash-holders does not even decrease, but the net result can be an increase of the volume check and giro means and thereby *increased* potential demand. If the saved amounts with the cash-holders are not put into check and giro accounts but are saved long-term and then are not lent to cash-holders, the net result can be a decrease of the volume money with the cash-holders, but then it is this (the decrease of the banknote volume) and not the saving that leads to a reduction of the cash-holders payment capacity. The contradictions and lack of agreement with reality that characterize the multiplier theory should have made the economists react a long time ago.

It is thus quite wrong to put saving and consumption against each other here. They are no correct opposites in this context. Saving creates both consumption- and investment potential. This potential is on the other hand restricted by the single person´s or the society´s supply of money and their velocity. The consumption and investment of the single person and the entire community must however be contained in the frame of expenses of the single person and the entire society. First when the single person has made his (her) choice - an investment - or a consumption purchase-, the division is definitive. On the other hand the choice between saving, investment, and consumption is decisive for the development of the production- and prosperity in the long-term. But this is quite another story in an entirely different area.

But is it not so that the saved amounts can be hoarded in the bank system and so contribute to decrease demand in the society. There are normally no saved means that so to say can be stored within the bank system without being considered when determining the volume. All the deposits in the bank system are subject of lending or purchase of bonds, money market instruments, other claims or real capital or the transactions that these payments result in. Alternatively they form the basis for interior transactions of the bank system or transactions with the economics outside, are the base for the money liquidity of the bank system. And this basis is, as I said earlier, strongly structurally conditioned within the limits that liquidity and earning power set. Hoarding is the same as having a higher volume

banknotes than the liquidity demands and normally no bank can afford that.

There is however an exceptional situation, when hoarding can render a certain income. In the beginning of the nineteen-thirties hoarding in banknotes was done in Sweden, USA, and other countries, because banknotes rendered interest in reality, the interest was equal to the general price decrease. We can also find barter activities during other deflation periods. But yet it was not so much the real interest rate, which made primarily the banks but sometimes also the public and the enterprises keep large reserves of banknotes and other strongly liquid means but the common uncertainty following all bank failures. [18]. The banks kept large stocks of banknotes and other liquid means in order to meet a withdrawal crisis. For the banks lending was however, if it was possible, a better alternative, because it besides profit on deflation also rendered a replacement for the lending itself. But this was restricted by the extreme demands of quick repayment and security, which the banks were obliged to meet in the situation of the nineteen- thirties. But even during an extreme deflation banknotes perform their payment liquidity function. They can be used at once for payments. Check and giro means can do it too, even if the loss risks give them a lower dignity.

During periods of price stability or inflation the cash-holders like the banks have no incitement at all to hoard. An exception would be to store banknotes for real or pretended tax reasons, but this irrational custom has probably no great scope and besides does not change notably between different periods. But irrespective of business cycle level it is true that hoarding nearly always is measured most correctly if one measures the velocity of the money. We can seldom differ out an amount of money and say that just this is hoarded. All means of check and giro accounts have the same status, these claims are of generic character and the same is also true for banknotes. All banknotes of a certain denomination has the same value, the same function and can be freely changed against each other. We cannot distinguish between used and not used means either. The money of yesterday is in transfer to-day and makes the money of to-morrow. Any attempts at distinction between hoarded and not-hoarded money mean risks of definition or arbitrariness.

Perhaps we could distinguish between bank accounts that only to a smaller extent are used for payments, savings (hoarded means) and money (that corresponds to common check and giro means). It is only so that the parts can almost never be objects for measurement and statistics. One way is however to suppose that the velocity of the money part is set equal to the velocity of other check and giro means, while the velocity of the remaining amount of such an account is put equal to 0. Suppose that we have the following values, where M_2 corresponds to the volume check and giro means that is directly measurable, while M_3 corresponds to the volume of other bank accounts that only to a limited extent permit payment transactions. V_4 denotes the velocity by this means.

$M_2 \text{ x } V_2 + M_3 V_3$	$= MV$
2.000 x 80 + 4.000 x 2	= 168.000
can also be stated:	
2.000 x 80 + 100 x 80 + 3.900 x 0=	
2.100 x 80 + 3.900 x 0	= 168.000
But it can also be stated:	
$(M_2 + M_3)\ V_4$	$= MV$
or	
6000 x 28	= 168.000

When the cash holders react to an influx of banknotes from the central bank, this leads mostly to a deposit expansion similar to my earlier example. What then stands at the disposal of the bank system will be the amounts that have been available by the deposits and the deposit expansion. Of course there will also be a lending expansion in most cases, but this is only an adjustment of the bank system to the deposit expansion.[19]. What the bank system disposes over during the course of the deposit expansion, is mainly rest posts. As far as lending is concerned the bank system is entirely dependent on the demands put by transaction requirements and earning power. See my earlier example of the lacking or non-existent powers of the bank system to bring about an autonomous credit expansion. What a bank perhaps can do independently is to determine, how it will divide the existent scope into lending, bonds, money market instruments or certain other claims. If the bank system e.g. prefers bonds, the deposit expansion does not lead to a bank loan expansion. A corresponding sale of bonds can however do this, but changes of this type do not affect the payment liquidity for the economics outside and its deposits, The bank system's options are furthermore strongly limited. It cannot for profitability reasons make too large investments in money market instruments rendering low interest.[20]. The bank system has also, compared with the economics outside, more limited investment alternatives, because as a rule it cannot or may not invest in real capital. The active part that the cash-holder contrary to the bank system plays with deposits and withdrawals, is not matched by the same active part from the side of the banks regarding lending.[21]. Also in this case it is the cash-holders who are the most active party. They take nearly always the initiative. The role of the banks is as a rule limited to accept or not accept loans within the frame that deposits have created. All the time, both by deposits and by lending the bank system has mainly a passive, mediating service function. This is also evident by the bank system sometimes reacting quite slowly to a deposit expansion. But it also often happens that the deposit change and the credit expansion are closely adapted to corresponding deposit expansion.

An individual cash-holder can withdraw savings in order to increase the volume and the share of his check and giro means. From this some economists draw the conclusion that also saving should be regarded as money. They can argue as follows. Suppose that the cash-holders at the start have SEK 1 million in banknotes and coins, 2 million in check and giro means, and 5 million in savings. Then these economists consider that the cash-holders can increase their money by transferring 0,2 million in savings to check and giro means. Hey presto, the money has increased from 3 million to 3,2 million. But such changes nearly never occur in reality. Even if the cash-holders would have the will to make such a change, they do not do it collictively, as long as the volume banknotes and coins is at the same level. The quota between the volume check and giro means and the volume banknotes and coins outside the bank system is on of the most stabile relations of the economics. It can stay at the same level not only for years but also for decades. For the volume check and giro means to change to any extent worth mentioning, the volume banknotes and coins outside the bank system, thus the monetary basis, must be changed. And this volume the cash-holders cannot change as a collective. There is however nothing that prevents the cash-holders with unchanged volume check and giro means from decreasing (increasing) the volume of their savings through a deposit contraction (expansion), even if such changes occur seldom and in small volumes. It can also occur at the same time as a declining (rising) volume check and giro means, but then this decrease (increase) has nearly always been preceded by a decrease (increase) of the banknote volume outside the central bank or more seldom by a change of the cash-holders´ preferences at an unchanged volume banknotes and coins. It is important to maintain that if the cash-holders want to change the proportions between their money and their savings, the changes will nearly always be in the volume savings and never in the banknote volume that the cash-holders cannot affect, or in the relative volume check and giro means, which they as a rule will not change.

Suppose that the cash-holders in the earlier example find that they can decrease their balance of banknotes and coins to only 1/6 of their balance of long-term savings. The cash-holders can do this by increasing the volume of their long-term deposits by an expansion. Instead of having SEK 36.000 million as in the example, they increase their volume to 54.000 million. By the deposit expansion the bank system can ceteris paribus increase its lending from 53.000 million to maximum 71.000 millions kr., thus in both cases by 18.000 million. That such considerable changes seldom or never occur in reality, is due to the cash-holders payment liquidity becoming negative affected. They probably cannot manage their expenses with this split. They have in the quoted example since long found that to be able to do this, the proportions between banknotes and coins and savings should be about 1 to 4 and between the money totally and savings about 3 to 4. But of course the cash-holders have considerably better capability than the bank system to bring about a change. Small such changes also occur in the quota between the volumes of banknotes and coins outside the bank system and the savings, but seldom changes of the size in the example above.

In the same way as there is a strong relationship between the volume deposits in the savings accounts of the banks and the cash-holder´s volume of banknotes and coins, there exists certainly a relationship between their total savings volume, thus inclusive bonds, money market instruments and other claims, and their volume of banknotes and coins. But the more long-term a holding is, the greater the importance of the interest rate will be and the lesser importance the role of the liquidity, i.e. the relation to the banknote and coin volume becomes weaker. But because information on the cash-holder´s total savings volume is often not available, it is seldom possible to produce statistical material that illuminates that.

But compared with the ability of the central bank, the cash-holders are also very restricted. If the central bank in the earlier example increases the volume banknotes and coins outside the central bank by 1 billion, this leads at unchanged preferences to a deposit expansion of 5,4 billion and a lending expansion of 5,3 billion. But there is nothing that prevents the central bank from increasing the volume banknotes and coins to 200 billion and thus bring about a deposit expansion ceteris paribus to 1.080 billion and a credit expansion to 1.070 billion. This is also made easy by the total volume of bonds and money market instruments in most developed countries being so much larger than the increase in banknotes and coins. To decrease the volume of bonds or money market instruments outside the central bank by a SEK 1 billion means a relatively small intervention compared with increasing the banknote volume by SEK 1 billion. The increase of banknotes in a year is seldom as much as 1 % of the total volume bonds and debentures and still less will it be, if we also put it in relation to the volume money market instruments or the total volume loans and claims. The increase of banknotes in a month can be measured in per mil or parts of per mil. And if the addition occurs as a result of new government loans in the central bank, there is no decrease at all of the volume bonds or money market instruments. This means that any decrease of their volume can often be effected without this affecting their rate of exchange. Still more decisive is of course that banknotes cost almost nothing to produce, which means that the interest cost for the central bank can in reality be disregarded. The central bank is not directed by interest factors but can itself use interest as a controle instrument. [(22).]

d. Who Creates Money?

Most economists seem to agree that money is created, when the central bank delivers banknotes and coins to the bank system or the economics outside. Likewise most of them agree that money is created, when banknotes and coins are deposited in check and giro accounts. In the same way money is destroyed , when the central bank withdraws banknotes and coins from the bank system or the economics outside or when cash-holders make withdrawals for themselves or other persons from their check and giro accounts. Giro transfers or transfers to other person´s accounts do on the contrary not affect the volume of the check and giro accounts, because the receiver gets the same volume money that the remitter leaves. It is unfortunate that most economists have not perceived that it is the cash-holders of the economics, who are the active party in this connection and not the bank system. The central bank determines consistently the volume banknotes and coins outside the central bank and the cash-holders determine all the time the volume their check and giro means shall have in relation to the volume of their banknotes and coins. The cash-holders power is however restricted by the requirements of money liquidity and profitability that are put on them, and by the technical design of the payment system. If they consider that the quota shall be between 1,4 and 1,5 as in Western Germany 1948 - 1954, the bank system at any rate can do nothing about it.

Some economists also maintain that money is created, when the bank system lends money, because then the cash-holders' money volume increases. But if the volume banknotes and coins increases at the cash-holders, it decreases at the bank system. The volume is unchanged. All the time it is the deposits that lead and create money to the extent this is done on the check and giro accounts. That we carefully differ between the bank system and the economics outside, does not necessarily mean that banknotes and coins held by the bank system should not be regarded as money. On the other side, if the lending is in the form of a balance in the cash-holders' check and giro accounts, their volume is increased, without any change to the volume of banknotes and coins. Some people maintain perhaps that the bank system should control this. But then they overlook that it is the cash-holders, who all the time decide the volume of the deposits in the check and giro accounts. It does not matter how high the loan volume is and how the account is temporarily affected by the outpayment. In relation to the bank system the cash holders determine supremely the volume of the check and giro accounts and consequently, if money will be created or not.

If the lending of the bank system in itself does not create money, we can on the contrary say that it makes demands on earlier created money, because this also must be subjected to transactions necessary for transfers. The same is true for e.g. savings and long-term deposits that put similar demands without ability to funktion as money. They compete thus with payments of goods and services and other payments and transactions for the scarce and valuable resource that money constitutes.

Who creates or annihilates the amount of regular money that can be used for transactions to, between, or from the cash-holders of the economics, can be summarized in the following points:

For banknotes and coins to be regarded as money, they must be outside the central bank.

When the central bank delivers banknotes and coins to the bank system, the state, or the economics outside (the cash-holders) money is created.

When the cash-holders deliver banknotes and coins to the bank system for deposition into check and giro accounts, money is created.

When the cash-holders transfer by giro or pay to other person´s accounts or pay by banknotes and coins, the volume check and giro means or the volume money for the rest is not affected.

When the bank system gives loans in the form of banknotes and coins to cash-holders, neither the volume banknotes and coins nor the volume check and giro means are affected.

When the bank system lends in the form of check and giro means, money is created. But as it is the cash-holders that determine the volume check and giro means, this new money can be created only, if the cashholders permit it. They decide to deposit a certain part of the loan amount into their own check and giro accounts. In reality it is always the cash-holders that create check and giro means, also in this case.

When the cash-holders withdraw check and giro means for themselves or others in banknotes and coins, check and giro means is annihilated without changing the volume banknotes and coins.

When the bank system, the state, or the cash-holders deliver banknotes and coins to the central bank, money is annihilated.

The original influx of money and the factor that starts a deposit expansion, comes almost without exception from the central bank or the cash-holders outside.

The different influences of the actors are reflected in their roles. The bank system has an institutional, intermediary function. It is a system where we can make payments, but it has besides this a very un-independent, passiv role, where payments are concerned. The system is strongly marked by its role and structure and this is difficult to change. It puts at disposition a technical apparatus and a number of channels and accounts, to and from which payments can be made, but it can by itself only slightly affect these payments. Erich von Schneider expresses this very clearly in ´Einführung in die Wirtschaftstheorie´, III, p. 29.[21].

That an influx from the central bank leads to a credit expansion from the side of the bank system, which in turn leads to a deposit expansion, does not mean that the bank system plays an independent role in that connection either. The bank system is in this case only a channel for the actions of the central bank. Its increase of banknotes can as well (and often does) reach the cash-holders directly, e.g. if the central bank buys bonds or consoles directly from the public and / or the enterprises. So it also is when the state places loans directly in the central bank. The following deposit and credit expansion follows the same pattern, either the influx from the central bank is distrabuted via the bank system or it reaches the cash-holders directly. The bank system can seldom or never function as a buffer, so changes from outside are quickly transmitted to other parts of the economics.

The ability of the bank system to bring about an autonomous credit expansion of any importance without the help of the central bank is from the beginning to the end a myth and it is depressing that an entire branch of science could get off the track as occured within this part of the theory complex. It becomes still worse, if we consider that some economists moreover limit this expansion ability to the commercial banks, because it is obvious that a great part of the following deposit expansion happens in savings banks, postal giro or other institutes and some part is used to purchase bonds, money market instruments or other claims. It is also difficult to understand, why loans from a commercial bank, but not from the savings bank or postal bank down the road should have multiple effects. The latter have, as we know considerably less significant requirements to keep cash reserves and banknote cash and have therefore a considerably higher lending capacity. This becomes also often a play with words, Should the savings banks get credit expansion ability, only because they have changed to commercial banks? Furthermore the commercial banks seldom possess as much as 10 % of the banknote volume outside the central bank. In Sweden the volume in the years 1944 - 1964 was between 4 and 5 %, as we said earlier. Every small independent credit expansion from the side of the commercial banks drained them soon of banknotes.

The cash-holders of the public, the enterprises, and the administrations can play a more active role than the bank system and have a wider spectrum of values and measures to choose from . They decide not only which purchases and investments that will be made, but also the split between banknote cash, check and giro means, long-term deposits and other claims. They determine also, how quickly the expenditures on the basis of banknote volume and volume of check and giro means shall be made. But they still have strongly limited action options. They have to use the existing structure of bank system and payment system and the volume banknotes and coins that the central bank places at their disposal. The net effect of the cash-holders´ measures will also become an average for a certain period of time for themselves and for the collective of cash-holders. This results in flows of payments being characterized by high stability. Seasonal changes can be quite considerable, but long term very small changes take place. For the society outside the bank system banknotes and coins and check and giro means have a bottle-neck character. The banknotes and coins render no interest other than during deflation periods. On the other hand cash-holders must pay for the decrease of the money value during inflation periods besides the savings interest that they miss. It is thus very expensive to keep banknotes and coins and usually also check and giro means, for which the cash-holders nowadays also often must pay charges. In spite of that they are prepared to keep large volumes of money.

The central bank is distinguished by having the most extreme and unlimited monopoly of the market. The banknotes cost very little to produce. Yet the central bank can freely determine the banknote volume outside the central bank and at what price lending and deposits shall be made. By that the central bank has a decisive influence also on the other money, as it knows (or should know) that the cash-holders normally keep the quota between check and giro means and banknotes and coins unchanged. The central bank has for this policy an arsenal of measures, of which the most important besides the banknote distribution is determining some interest rates and taking part in the business with bonds, bills, and money market instruments. The central bank can increase the banknote volume in the economics by lower annual percentage rates, 1 - 20 %, which was the normal case in most countries after the Second World War. But it can also increase the banknote volume nearly without limit, which happened in Germany, Austria, Russia, and China during war- and post-war periods and which resulted not only in the breakdown of the payment system but also in the breakdown of the entire economics. Theoretically, the central bank can also decrease the banknote volume very considerably. Any central bank management or government that would try such a measure will not be especially long-lived, so this is hardly implemented in practice. It is easier to be a gormandizer than a starvation artist..

It is not in the bank sector that inflation or deflation affects the central economics functions. It is in the economics outside the bank system, in the sectors of the public, the enterprises, and the administrations; these I also call the cashholders´ sector. If the cash-holders get an influx of banknotes and coins directly from the central bank or via the bank sector, their payment capacity and the price level are affected directly. But it is of no direct importance, how the accounts of the bank sector in the central bank and its interior transactions, e.g. via clearing or loans or its purchases or balances of bonds or other

claims develop, as long as this does not affect the banknote volume of the cash-holders. The transactions within the bank sector have no direct influence on the price level, apart from the small share of the bank sector that trades with goods, services, properties or stocks and shares. On the other hand changing and financial transactions can affect the price level indirectly, when they compete about the money and the space for payments with payments for goods and services.

We can say that the central bank through placing banknotes and coins at the disposal of the cash-holders creates the monetary basis for the payment system and the economy of the society. On this basis the bank sector and the payment system have created a structure of rules, accounts and physical handling in order to make possible and facilitate the payment capacity of the cash-holders, These fill then this structure with content by their payments and transactions on the basis of their money.

No matter how large the credit volume of a society is, the supply of money outside the bank system will always be a tight section, a bottleneck, upon which the buying power is quite dependent. It is equally true that no matter how small the credit volume of a society is, the buying power will develop in a satisfactory way, if only the money volume is sufficient.

Notes.

1. Erich von Schneider ´Einführung in die Wirtschaftstheorie´, III (EvSIII), 26: "Ob und wann und in welchen Mengen die Zentralbank primäre und sekundäre Aktiva zu erwerben oder abzustossen wünscht, bestimmt allein die Zentralbank. Ob ein Aktivum, das nicht Geld ist, gegen Zentralbankgeld umgetauscht werden kann, d.h., ob es liquid ist, beruht allein auf einer Willentscheidung der Zentralbank.- - "

David King ´Banking & Money´, 46: "- - -Of course, the fact that the Bank of England can print as many notes as it likes and have a negligible cash ratio means that in principle there is little constraint on the amount of money it could create in either cash form or deposits. - - -"

2. Friedman-Schwartz ´A Monetary History of the United States, 1867 - 1960´, (F-SI), 51: "Under a fiduciary standard, as from 1862 to 1879, the amount of high-powered money is determined by governmental action. The government may not formulate any explicit policies with respect to high-powered money; the amount outstanding may be the net result of many other actions affecting taxes and expenditures, borrowing and repayment of debt. Yet, ultimately, government has the power to make total high-powered money anything it wishes by its decisions about how much fidicuary money to issue to the public and the banks.- - -"

F-SI, 693: "- - - At all times throughout the 1929 - 33 contraction, alternative policies were available to the System by which it could have kept the stock of money from falling, and indeed could have increased it at almost any desired rate. - - -"

3. Niels Thygesen ´The Sources and the Impact of Monetary Changes´, 225: "Hester and Pierce - - - The basic idea is that a bank is unwilling to increase its loans as soon as it experiences an increase of its lending capacity as a result of a deposit inflow. It stays rather liquid for a while and when the increase appears to be permanent and possibly even accelerates the bank gradually moves into less liquid assets, i .e. loans. In a transitory period the bank may buy securities which are subsequently run off as the growth of loans gets underway. Reserves are adjusted more gradually to the long-run level which changes in deposits has made desirable."

4. Irving Fisher ´The Purchasing Power of Money´(IF1), 42: "- - - Since the business of a bank is to furnish quickly available property (cash or credit) in place of the ´slower´ property of its depositors, it fails of its purpose when it is caught with insufficient cash. Yet it ´makes money´ partly by tying up its quick property, i.e. lending it out where it is less accessible. Its problem in policy is to tie up enough to increase its property, but not to tie up so much as to get tied up itself. - - -"

5. EvSIII, 50: "13. In welchem Ausmass eine solche Refinanzierung ber der Zentralbank möglich ist, bestimmt natürlich allein die Zentralbank."

6. J.S.G.Wilson ´Banking Policy and Structure´ (JW), 409: "- - - It is only fair to point out, however, that in its origins, the American insistence on stated minimum cash reserve requirements for commercial banks was really only a means of prescribing minimum standards of sound behaviour. It was not until rather later that variation of such ratios was seen to be a useful supplementary quantitative credit control. This has also been true elsewhere (as in India and New Zeeland)."

7. See a textbook like Lars-Erik Thunholm ´Svenskt kreditväsen´, 196, see notes 3 - 10.

: 8. JW, 385, see notes 3 - 11.

9. R.G. Hawtrey ´Currency and Credit´, 203: "- - - But so long as the total amount of balances, the unspent margin, remains undiminished, one man can only get rid of his superflous cash by unloding it on another. The effect is to increase velocity."

10. IFI, 50: "- - - It has been argued that this interposition of circulating credit breaks whatever connection there may be between prices and the quantity of money. This would be true if circulating credit were independent of money. But the fact is that the quantity of circulating credit, M^1, tends to hold a definite relation to M, the quantity of money in circulation; that is, deposits are normally a more or less definite multiple of money."

IFI, 308: "- - - We have seen that, normally, deposits rise or fall with money in circulation. Therefore, if deposits had increased just as

fast as money and no faster, we should ascribe the whole increase to money alone. In that case no part of the rise of prices would be ascribable to any increase in deposits; for there would have been no increase except what was due to the increase in money. The increase of deposits subject to check can be considered independently of the increase of money only in so far as the deposits have increased *relatively* to money.- - "

11. IF I, 51: "In a given community the quantitative relation of deposit currency to money is determined by several considerations of convenience. In the first place, the more highly developed the business of a community, the more prevalent the use of checks. - - -".

12. EvSIII, 58: "- - - Aus Spalt 4 der Tabelle, die in Fig. 6 graphisch dargestellt ist, ist unmittelbar ersichtlich, das die Grösse *c* in der Deutschen Bundesrepublik vom September 1948 bis zum Dezember 1954 nur geringe Streuungen um den Wert 0,4 aufweist. Wir können also sagen, dass im Durchschnitt 4/10 der Zahlungsmittel des Nichtbankensektors in Form von Bargeld und 6/10 in Sichtguthaben bei den Banken gehalten werden."

13. F-SI, 110: "Restriction of cash payments brought to an end the stream of bank failures. But it also in effect created a dual monetary system - currency and deposits not interchangeable at a fixed rate. - - -"

See also notes 3 - 23.

14. See for example a textbook like Robert Heilbroner ´The Economic Problem´, 341 ff.

15. Ernst Dürr ´Wirkungsanalyse der Modernen Konjunkturpolitik´(ED), 39: "Der Zins spielt schon im Bereich der monetären Liquidität (nach unserer Gelddefinition) insofern eine Rolle, als er die Wahl der Kassenhaltung in Form von Münzen und Noten, Sicht- und Zeitdepositen beeinflusst. Falls auf Sichtdepositen keine Zinzen gezahlt werden, ist die Wahl zwischen Bargeld und Sichtdepositen lediglich abhängig von dem Aufbewahrungskosten des Bargeldes, dem Mass an Bequemlichkeit, Kosten- und Zeitersparnis, das der bargeldlose Zahlungsverkehr bietet und dem Liquiditätsgrad der Depositen (der bei Bankenkrisen sehr gering sein kann)."

16. See a textbook like Erik Lundberg ´Konjunkturer och ekonomisk politik´, 107 ff.

17. Knut Wicksell ´Föreläsningar i nationalekonomi´ I, häfte II, 18: "- - - Genom denna egenskap, att efter förmedlande af ett köp eller försäljning omedelbart vara i stånd att verkställa ett nytt samt att efter en kortare eller längre väg återvända till utgångspunkten, skiljer sig penningen ifrån alla andra varor, även om dessa tillfälligtvis genom mellanhandel kunna få tjänstgöra såsom (individuellt) bytesmedel." (By this attribute that after intermediary of a purchase or sale immediately be capable of affecting a new one and after a shorter or longer journey return to the starting-point, the money differs from all other commodities, even it these by barter accidentally can serve as (individual) mediums of exchange.").

18. ED, 37, not 62: "Mc Kean (a.a.O., S.77) weist darauf hin, dass Forderungen eine ´Schön-Wetter´- liquidität haben und Schulden eine ´Schlecht-Wetter´- liquidität. In guten Zeiten, wenn keine massenhaften Kreditkündigungen zu erwarten sind, sind Forderungen äusserst liquide und bilden einen guten Geldersatz, anderseits sind Schulden, die leicht erneuert oder refinanziert werden können, nicht sehr illiquide, so dass nur eine geringe Kassenreserve erforderlich ist, um Verpflichtungen zu erfüllen. Wenn schlechte Zeiten kommen und eine allgemeine Liquidisierung versucht wird, bezweifeln Gläubiger die Liquidität ihrer Forderungen, während die Schuldner stärkerem Drück zur Rückzahlung ausgesetzt sind und grössere Schwierigkeiten haben, sich zu refinanzieren. Daher verlieren Forderungen ihre Fähigkeit als Geldersatz und Schuldern erfordern die Ansammlung von Kassenreserven."

19. EvSIII, 49: "- - - Die Kreditbanken haben keine Möglichkeit, durch gegenseitige Verabredungen über Tempo und Umfang der Kreditgewährungen den Kreditspielraum des Bankensystems zu erweitern. - - "

20. JW, 278: "Amongst the assets in a bank balance sheet, it is the loans and advances that constitute the core of a bank´s earning assets. It is this group of assets that is usual the most profitable. - - -"

21.EvSIII, 29: "*Einzahlungen* aus dem Nichtbankensektor bei Kreditbanken führen also zu einer *Giralgeldschöpfung*, *Auszahlungen* an den Nichtbankensektor zu einer *Giralgeldvernichtung.*

Der Anstoss zu der Giralgeldschöpfung bzw. Giralgeldvernichtung, wie wir sie in Fall 1 kennengelernt haben, geht allein vom Bankkunden aus, die Bank selbst verhält sich passiv. Welchen Teil die im Nichtbanken-Sektor befindlichen Zahlungsmittelmenge - also ein gegebenen Zahlungsmittelmenge - die zu diesem Sektor gehörenden Wirtschaftssubjekte in Form von Zentralbankgeld und welchen Teil sie in Form von täglich fälligen Forderungen an Kreditbanken zu halten wünschen, bestimmen allein die Wirtschaftssubjekte des Nichtbankensektors. Die Kreditbanken verhalten sich bei den aus ´diesen´ Wünschen resultierenden Giralgeldschöpfungen und Giralgeldvernichtungen völlig passiv. - - -"

22. FSI, 51, se not 2.

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CHAPTER 5.
THE VELOCITY.

The cash-holders determine thus on the basis of their banknote cash, their balances of check and giro accounts and by that their total volume of money. How great is their ability to determine their total expenses, their total transaction volume? The quota between the expense (or transaction) volume and the money volume is generally called ´velocity´ for which we usually use the number *V*.[1].

The symbol *V* stands strictly for ´velocity´ or ´rate of velocity´. But *V* and ´velocity´ do not mean that in economic theory and literature but ´rate of turnover´ or ´rate of circulation´. So when we in the following use the term *V* and the concept ´velocity´, it is in the meaning ´rate of turnover´.

Instead of counting with *V* some economists use *V*:s inverted value *k*. *k*= 1/*V*. This procedure is usually called ´the cash balance approach ´. Instead of saying that the cash velocity has risen from 50 to 51, they say that the cash part of the expenses has dropped from 1/50 to 1/51. This was done e.g. by Alfred Marshall, even if he in his descriptive rendering did not use the symbol *k* The methods render of course the same result if used correctly.

Many economists have maintained that velocity is a very unstable variable that can show large changes and / or which is determined by other variables. [2]. In itself this is natural, because many theory buildings are built thereon and fall to pieces, if the assumptions are correct.[3].

Another variant is their assumption that velocity is determined by the cash-holders, but that these have great freedom and great scope to vary the velocity.[4]. These economists ought to ask themselves, why the cash-holders then do not use these options during a deflation, when most of them regard the lack of money as a great problem. The reality is that the cash-holders during a deflation regularly decrease the velocity, sometimes by a conscious hoarding.

The payment system of the society is built on and functions on four presumptions:

1. The absolute main part of all payments and transactions, which the cash-holders of the public, the enterprises, and the administrations make, are in money (means of payment).

2. One and the same money volume cannot at the same time effect two payments or transactions. [5].

3.This money is very expensive for the cash-holders, it is for them a bottleneck and causes them regularly considerable interest losses. In spite of that the cash-holders keep it in large quantities.

4. The cash-holders determine undeniably how soon they will and can make their payments and transactions and thus how large a volume of payments and transactions they can perform with a certain amount of money, but they are in that respect tightly constrained by the structure of the payment system. The changes will not as a rule be great from one period to another, mainly because it takes time to effect payments and transactions.

These conditions are true for banknotes and coins and for check and giro means (accounts). They are also true for payment cards that are built on these check and giro accounts, for bank checks and money orders or for every imaginable means of payment. The time is an important controling and limiting factor. A check sent by mail needs 1 - 2 days to reach the receiver, a transfer by giro needs 1 - 2 days to reach the bank or the central postal office and further 1 -2 days to reach the addressee. This amount of time is further extended by Sundays, holidays, and other non-working days. If we arrive 5 minutes past closing time of the bank the transaction time is extended by one day. Received checks will rest perhaps one or more days, before the receiver gets an opportunity to redeem them or transfer them to his bank giro account. Received payments rest perhaps one or more days, before they are recorded and credited by the receiver, e.g. due to work load peaks, but also because of idleness or routines and other deficiencies in the payment- and book-keeping work. Such waste time can be further extended, because a bank or payment institute issues account statements with a certain periodicity. Absence and sickness have an effect as well. Individuals, companies, or administrations are, as we know, not perfect. Such waste time can again be extended by Sundays. holidays and other non-working days.

Also, it sometimes takes time for the payer to collect cash reserves large enough for a payment. Important is also that the payments must be suited to the payment terms that are common in the trade and industry or are applicable to the consumers. Wages and salaries are paid out at the ends of weeks or months, Monthly invoices in the retail trade are settled after the end of the month, the invoices of the trade and the industry are paid e.g. per 10 days, 30 days, or 3 month. [6]. Furthermore there are often clauses of free month of delivery, which results in payments ackumulating at the ends of the months. The buyer gains as a rule nothing when paying in advance, which results in payments almost exclusively being made at the end of the payment period. Individuals and enterprises are obliged to keep money to meet these peaks. Besides, they must also keep a reserve for unexpected expenses. [7]. An unexpected surplus can on the other hand often not be used directly, because the receiver is unprepared.

Besides, payments of goods and services perhaps demand an equally large or larger amount of changing transactions to be effected, i.e. transferred from one type of money to another. The banknotes must be transferred to the postal giro or the bank giro or vice versa. The card account must be brought means from the giro account. A balance, which shall

be credited, must be sent over to be used in the giro- or the check account.

Further, the money is also used to effect all financial transactions and transfers of money to and from long-term accounts. Also here, the time is lengthened by earlier enumerated factors as Sundays, holidays, work-free time and periods of retention etc., whereby the scope for performing payments of goods and services further decreases.

For technical and economic reasons it is impossible to increase the velocity above a certain level. It can be increased long-term by new means of payment (types of money) and payment systems, by better postal-, tele-, and bank services, by computerization and automatization, through improved communications and on increasing share of the fastest methods of payment, but also on that point the increase becomes as a rule of limited extent. Likewise economic reasons do not permit a reduction of the velocity worth menthening. One too great holding of cash and of check and giro means is very expensive due to interest and inflation losses. It means also often increased risks for theft or fraud.

Even if the cash-holders will and try, their potential to increase or decrease the velocity is very small. They are narrowly restricted by the structure of the payment system and any change of velocity will therefore be strongly limited. (8). A cash-holder can, it is true, make a payment faster, but if the receiver does not do the same with the amount, the result will be unchanged. The measures go often in different directions and take out each other.(9). The mean will therefore be a limited change. For the single cash-holder the same is true for different parts of a period. Nearly always it is the average, the mean that is of importance. The more people, enterprises, administrations, groups of commodities, sectors or geographical areas that are affected, the more even the averages will be, as well when the whole society is affected, of course. (10). See also my earlier work, p. 134 ff.

The velocity is therefore nearly always a very stable variable. (11). This stability can be seen in all statistical material. It develops very regularly. It shows some short-range and seasonal changes and it is affected by trends that mirror the structural development long term. (12). The trend-generated changes can be followed from month to month and from year to year and can thus be predicted with a certain confidence, they are as a rule very small.

One reason for the stability of the velocity is that the real volumes of the payment- and transaction streams are so tremendously stable, at least in normal conditions. While the changes in the money volumes, nominal transaction volumes, and price-levels can be no matter how large, the relative price- and salary changes are as a rule quite small. The consumption patterns are changed very slowly and production changes come about as a rule very long-term. Increased production is a precondition for increased comsumption and vice versa. The changes that are done are often parallell with each other, which can be seen from the development of ´the GNPs volume and the total real volume of goods and services turned over. Taxes and fees are mostly paid at a certain percentage rate of turnover, income. or capital. Interests and dividends are paid at a certain percentage rate of a capital amount. Expenses for repairs, services, and constructions stand in a certain relation to the volume buildings or machines. Increased turnover in production- and wholesale trade presumes increased turnover in retail trade, and vice versa. If the payments for goods and services of the society increase, the transactions made in order to make the payments possible increase too. We can see such examples of correlation over the whole field. But the changes in the total volumes will also be small, because numbers take out each other. A production- or a consumption decrease in one area occurs at the same time as an increase in another area. Numbers for shorter periods tend to be leveled, spread over longer periods. The changes in a large group will be smaller than for single members or in small groups.

We can, as I said earlier, speak of different types of velocity, which we usually use the term V for. Its changes can be of structural nature, $V_{s,}$ in contrast to changes that we can denote as dependent of the business conditions or as irregular, Va.(13). We can also differ between long-term and short-term structural or seasonal changes. V_s is as a rule of limited interest in this connection. The question of V:s importance in the price building process is not dependent on the development of V_s .On the other hand it is important that V_s can be eliminated correctly when measuring seasonal cleared and trendcleared values.(14). What then remains are thus changes dependent on the business conditions, which we can suppose have a wavelength of 1 - 7 years, and irregular changes. As economists and statisticians have noted, these are often difficult to distinguish from each other.(15). We can call them autonomous, V_a, because they are mostly independent of the structure of the payment system and the economics, and the cash-holders have a certain influence on their development. (16). In Appendix 3 I have made a split in factors that I consider affect V of seasonal or long-term structural character, from of business affected, or irregular character.

We can also differ between different ways of estimating the velocity V, dependent on what volume money we put the turnover in relation to. If we e.g. measure V at postal giro means, we can put the turnover in relation to the volume of the money that is directly concerned, in this case the balance of postal giro accounts. I call this measure for *VI.* But we can also put the turnover in relation to the total volume money outside the bank system or the volume banknotes and coins outside the bank system. I call these measures for *VII* and *VIII.*(17). All these three types of measures have their advantages and disadvantages, but they are as a rule developed very

much in parallel and can therefore in most cases be used alongside each other.

We also obtain somewhat different measures of *V*, dependent on the volume money *M* being counted at the beginning or at the end of a period, or if we use averages for the period. If there are statistical returns for the averages of a period (e.g. a month), this is perhaps the best measure. But this is seldom the case. Of the numbers for *M* at the beginning or end of a period, the first measure is probably the best. The cash-holders are, regarding their expenses, surely more dependent on the volume at the beginning of the period than of the volume at its end.

There are economists who maintain that we should only count the used money, and that we thus should always disregard hoarded money. There are others who maintain that we also should disregard the means in circulation or currently in turnover, or that we only should consider these. It is immediately clear that the last view is totally absurd. It is on the contrary the means in the cash-holders´ cash box, which is the basis for their purchases or expenses. To a higher degree then the means they have paid out, they make the basis for their expenses. But it is hardly wrong to include also the means in circulation or under current turnover This has as we know been the basis for the expenses of yesterday, stands often in a certain relation to their current cash, and will soon build the basis for other cash-holders´ expenses. Besides, if we consequently would disregard floating amounts (the float) or certain existing amounts, the volume of the expenses would remain the same and instead we have then to count with a correspondingly increased velocity. The changes vould take out each other. If we e.g. count with a volume *M* of 2.000, of which we consider 400 to be hoarded, and a turnover of 40.000, we get the following numbers for *M, V,* and *MV*

1.600 x 25 + 400 x 0 = 40.000
But this can just as well be written:
2.000 x 20 = 40.000

As the statistic numbers as a rule include means in turnover, there is no reason to disregard them. The concept float was of real importance during earlier eras, when checks were sent by post or the owner´s bank in an often long chain of transfers. In the new automatic systems the volume of and the time for the float tends to decrease strongly. Besides, when a giro institute makes postal giro- and bank giro remittances, the float disappears to a high degree, because increases and decreases of the money volume are counted at the same time by the institute. Furthermore, it is so concerning statistics that checks at the receiver´s bank, as a rule are noted, before the payers´ bank has done so, while for bank giro payments the contrary is true. The effects go thus in different directions and take out each other to a certain degree. When a check is handed over directly by the purchaser to the seller, their combined cash is not affected, the sellers´ cash increases at the same time and by the same amount that the buyer´s cash decreases.

We cannot as a rule make a division in not used, hoarded means and used, non-barted means. Such a division will as a rule be artificial and superficial.[18] The concept hoarding (not to use the money) is best measured as the concept velocity, *V*.[19]

A problem with most measurements and estimations of velocity is deficiencies in and absence of statistics. A very frequent fault is that the volume of deposits without term of notice (demand deposits) is given instead of check and giro means (deposits subject to check and giro, deposits for transfer). That the means can be withdrawn quickly does not make it money, even if this is a necessary precondition, as we have observed earlier. If there are not special rules, routines, and forms for payments, the deposits are not used for payments, this can be regarded as a common rule. This can be seen e.g. from the low velocity of savings, even in those cases when it is formally permitted to draw checks on them. As example we can mention Ronald A. Shearer´s ´The Income Velocity of Money in Canada´, p. 414. According to this ´personal savings deposits´ were turned over only 1,86 times a year against 88,3 times a year for ´demand deposits´ and this in spite of the turnover of the former type of accounts probably being mostly own withdrawals and not real payments.

But now the problem is not so great, because the main part of the demand deposits in most cases also would be deposits subject to check and giro, and because the volumes, where they can be counted, seem to develop very much in parallel. In many cases the very ability to make payments is regarded as a token of demand deposits. E.g. Friedman- Schwartz do this in ´Monetary Statistics of the United States´, p. 80: "- - - The distinction between demand and time deposits at commercial banks, at least since 1933, has typically been that demand deposits were, and time deposits were not, transferable by cheque". But even if there is only statistics about deposits without notice time, its volume is probably a good approximation of the volume check and giro amounts due to their parallel development. Often however data only exist of the total deposit volume. But even this develops often so much in parallel with the part volumes that it too can be used as an approximation of the volume development, even if this is a less secure measure.

A good picture of the development of the velocity is obtained by the Swedish public statistics of giro transfers (gireringar) and outpayments (utbetalningar) from giro accounts 1925 - 1959. In diagram 5A the giro transfers and outpayments in relation to the balances of the account holders, uncleared numbers of *VI*, are stated and in diagram 5B the corresponding seasonal cleared numbers for transfers of *VI, VII,* and *VIII* and for outpayments of *VI* are stated. In diagram 5B I have differed between *VI* calculated on an average per month and *VI*

calculated on the entry value per month. The latter calculation method gives somewhat higher numbers, but else the numbers of the two methods follow each other rather well. The diagrams show how immensely stable and regular the velocity is. The same picture we get also from a lot of other statistics and from the material of other scientists. No economist has hithertoo been able to give a correct different picture. It is therefore possible to anticipate the development of *V* and its effects on the transaction volume and the price level on the basis of the earlier development.

The velocity of the giro transfers *(VI)* during the years 1925 - 1959 increased with an average of 1,21 units per year from 18,88 the year 1925 to 59,94 the year 1959. The velocity of the outpayments *(VI)* decreased during the same time slightly from 27,84 the year 1925 to 27,74 the year 1959 and *VI* for both increased by 1,20 units per year from 46,72 the year 1925 to 87,68 the year 1959. If we instead make a regular statistic trend calculation for the period for both, we get instead an annual increase by 0,79 units instead of 1,20.

The numbers vary between different studies dependent on the transactions, money, periods, and areas that are included, but the stability in the numbers for *V* and the covariance in the alterations is not changed. Throughout there is a long-term structural, trend-adapted development, but the deviations from the trend are generally small or very small.

This stability is maintained even during times of hyperinflations. Some economists suppose that the numbers for *V* can be very high during such periods. That was also to be expected, because the cash-holders then were bound to feel that the money ´burned in their hands´.(20). Of course, it does, but this is counteracted by other tendencies, mainly that the sellers become still less inclined to accept a currency that quickly decreases in value, and that the volume goods and services turned over and paid in the own currency quickly decreases when the payment system brakes down.(21). If we study the German and the Chinese inflation periods 1919 - 1923 and 1945 - 1949, we find examples of this. Certainly *V* increased perhaps to the 3 or 4 -fold in the most feverish period, but even then there was a border that it could not go beyond (22).

But even if the velocity for technical and economic reasons must keep within tight margins, especially concerning material cleared from short-termed changes, the cash-holders have still certain options to increase and decrease the velocity. There is a certain scope for their own active measures. They can, when they consider this favourable, try to increase the purchases of goods and services at the cost of cash, when they expect a price increase. (23). Every such decrease of a cash-holder´s cash increases ceteris paribus as much the cash of another cash-holder. Their total cash is not affected, but *V* can increase.

For every point of time and every social economy, sector of the economy, or single cash-holder, there is a certain cash holding level in relation to other assets and in relation to the turnover which the cash-holder and the cash-holders regard as normal. (24). An influencing factor is also the degree of stability or uncertainty prevailing in the society or for the single person.(25). When the economic, psychological or other factors, which made the cash-holder or the cash-holders increase or decrease *V* over and under the normal level, have discontinued, he, she, or they will restore it to the normal level. (26). If the normal situation has been disrupted by the individual´s or the total economics' cash having increased to much, this will as a rule lead to attempts to decrease the cash, which is the same as to say that *V* measured in statistical numbers tends to increase, until it has reached the level it had, before the addition of money happened.

The factor that would affect the cash-holders most seems to be the expected price development for goods and services. The most common forecast method would however be to expect the prevailing development of the price to go on. (27). This we also easily find examples of in statistic material over *V*:s development compared with the price development. When the price level increases, the cash-holders also increase *V* somewhat.(28). This means that the changes in *V* strengthen the effects that are exerted on the price level by other factors, e.g. an increase of *M* , not weaken or prevent them which a number of economists have assumed.

In diagram 5C the development of the comsumption price index for the years 1945 - 1959 in Sweden is given. This period, which began and ended in periods with relative stable prices, is marked by three price increase periods, 1946 - 1948, the end of 1950 to the beginning of 1952, and from the end of 1955 to the beginning of 1958, of which the middle one in connection with the Korean War was the most remarkable. The diagram states also *V* by the transfers and outpayments of the ´Postgiro´ during the same period.

When we study the diagram, we see that *V* tends to increase, when the price level increases, and that it decreases during periods of relative price stability. Now it is surely, as we have said, not the realized price increase in itself that makes that the cash-holders increase *V* but the expected one. But on the other side it is certainly easy for them to draw the conclusion that the price increases go on if such a process has been started. The only real exception in my case is the end of the war 1945 - 1946. *V* fell heavily, in spite of relative price stability. But then we must remember the prevailing atmosphere. Large sectors of the economics were ecpecting a deflation process, among others under impression of books such as Gunnar Myrdal´s ´Varning för efterkrigsoptimism´ (Warning for After War Optimism).

We can also notice in the material a tendency to delay in certain cases. Some times *V* is changed first a few month after the price change process had started or come to a standstill. So it is e.g. the years 1947, 1948, and 1952.

The value of the diagram is of course limited, because the measurements of *V* are only valid for transfers and outpayments in ´Postgirot´. We do not know what changes in the velocity of the banknotes and the check and bankgiro means will go through. There is a lot, however, that points towards the changes going in parallel. It can be seen among others from a comparison between seasonal cleared and trendcleared values of *V* for transfers and outpayments in ´Postgirot´ that follows each other closely. The material is of course much too restricted for enable any conclusions based on it only, but other economists have reached the same result.

It is often difficult to find statements on velocity, especially after the Second World War, because the economists have not understood the importance of the reports, and because of their influence on the public statistics, this area of the political economy has laid waste, at least in the Swedish material. Up to now I have in the domestic material only counted with the total transaction volume and its velocity. As a rule there are however statements of *M,* the money volume, and by putting the statements of GNP in relation to *M*, another velocity concept can be calculated.

It is clear that this concept is considerably inferior to the concept of total turnover volume of goods and services put in relation to *M,* because the turnover of raw material, semi-manufactures, wages, etc. affects the common price level and this turnover is not included in GNP.[29]. Commodities and services are as we know turned over both at sales and purchases in the retail trade, the service sector, and the self-employed sector, but also in different production links, when raw material, auxiliary material, semi-manufactured goods, and finished products go from seller to buyer, e.g. at the wholesale companies' purchases from and sales to production and at the production companies' sales to other companies besides to retail trade. Further at the inverse sales hetween different retail enterprises, service companies, and the self-employed. This is true of course not only for the distribution of industry goods but also for the handicraft, the areal businesses, the building and construction sectors amd for the transport sector. And it is valid for both goods and services. All wages- or salary payments are thus to be added, including those in the household sector. Also the second hand sales turnover of goods and properties ought in principle to be included. If the prices of these types of assets increase, it is of course also a part of the decline of money value. But lack of statistics makes it at present impossible to include these transactions.

On the other side amounts ought not to be counted that only are objects for accounting within one and the same enterprise. Payments within the same company or company group ought however to be taken account of, in those cases the amounts are invoiced and paid via the common payment system.

The GNP-concept is however perhaps not inferior to the total transaction volume concept, which we usually have to count with. The latter includes not only payments of commodities and services but also the financial and monetary transactions that do not directly influence the common price level, but that must take place for the other payments to be made; it furtermore encroaches on their space.

Regarding the total transaction volume, of course only transactions for parties outside the bank system are concerned (including transactions to or via the bank system).

In the same way as we can differ between payments of goods and services, financial, and only monetary transactions included in the total transaction volume, we can of course talk of *V* in the respective case. This can be expressed in a simple diagram.

$$M \qquad MV_y \qquad MV_z \qquad MV_f \qquad MV_m$$

$$V_y \qquad V_z \qquad V_f \qquad V_m$$

where
M denote the money volume
V " the velocity
V_y " " " for payments of goods and services that are included in GNP [29].
V_z " " " for payments of goods and services that are not included in GNP [29].
V_f " " " for the financial transactions
V_m " " " for the changing transactions
V_t " " " for the whole transaction volume
V_t " $V_y + V_z + V_f + V_m$

Then become:
The total transaction volume $= MV_t$
GNP $= MV_y$
The total turnover of goods and services - GNP $= MV_z$
The volume of the financial transactions $= MV_f$
The volume of the monetary transactions $= MV_m$
The total turnover of goods and services $= MV_{y+z}$

Now the co-variance (parallelism) between these different measures of payments and transactions amd between their velocities is so strong, as we also shall see in the following chapter that a change in one of them often coincides with a change in the others in the same direction.

A disadvantage with the GNP and NNP concept is that they are not refined transaction measures. They comprise volumes that are not objects

for turnover and exclude others that are. To these belong stock changes and writings-off, which are counted, despite their not affecting directly the price building process, and some reinvestments that sometimes are discounted even though they do effect the price process. Despite these deficiencies the GNP and NNP concepts can be said to be a rather good approximation of the turnover of the goods and services that are included in this concept.

On account of the co-variance a change in the total transaction volume like a change in GNP can therefore be used as a good measure of volume changes in the payments of goods and services. Besides, the latter represent a middle position between the two former. If the total transaction volume increases by 6 % and GNP by 3 %, there is good reasons to suppose that the total volume payments of goods and services increases by more than 3 but less than 6 %. Measurements of the co-variance are made easier by that all these measures of V being so stable, regular and to a great extent predictable.

How great the correlation is, we can study in works of a number of economists, among others the studies Morris A. Copeland has made in ´A Study of Moneyflows in the United States´, p. 15 and others, where he compares ´Debits to deposits´, which is a measure of the transaction volume with what he calls ´Total Main Circuit Outflow´, which corresponds closest to my concept MV_{y+z}, but yet comprises a part of financial transactions. For the period 1936 - 1942 the quota between them is slightly decreasing, but the changes from year to year are small with the exception of small deviations in the year 1942; these would depend on changes in the federal sector after USA´s entrance in the war. In the same way there is a strong correlation between different transaction measures as ´Bank debits´ and ´Bank Clearings´ for the years 1936 - 1958 but with a slightly increasing trend to 1941 and thereafter first an unchanged and then a slightly decreasing trend. The measures for the time 1943 - 1958 I have received from Geoffrey H. Moore´s ´Business Cycle Indicators´, vol.II, p. 44 and 134. (A broke 1942 - 1943 is probably explained by differences in the statistic material of the two works. The latter work (P.133 - 139) shows also ´Bank Debits outside New York City´ and ´Gross National Product´, both series seasonal adjusted for the years 1921 - 1958. The correlation between their changes is high, between a transaction and a BNP measure. Richard T. Selden says however in ´The Postwar Rise in the Velocity of Money, p. 487: "- - - Second, deposit turnover, nonfinancial velocity, and income velocity have displayed nearly identical trends in the postwar period. This has not always been the case, as reference to the experiences of the late 1920´s and early 1940´s indicates."

Another work ´Flow of Funds in the United States, 1939 - 1953´, p. 1 -23 (tab. 24 - 38) (edited by FRB) uses another concept for the turnover of goods and services. In contrast to Copeland the authors separate all financial transactions as I do and like me they count trade in properties as a non-financial transaction, but in contrast to me they count dealing in shares among the financial transactions. Revised figures are given in ´Federal Reserve Bulletin´, e.g. 1937, p. 376 - 379 and p. 1190 -1192. If we compare the numbers for `Flow of Funds´ with numbers for ´Bank Debits outside New York City´, we find great correlation at short term but a lightly decreasing trend for the year 1944 - 1956. (The latter measure from Moore´s work, vol. II. p. 134 ff).

In the same way we find easily other examples of V:s stability, regularity, and predictability. There are extensive examples in Friedman, Milton and Jacobson-Schwartz, Anna ´A Monetary History of the United States´. See e.g. the diagram on the page 678 and table on page 774 The authors obtain here V by dividing ´;Money income´, which is compiled from NNP-figures, partly by ´Currency´ + ´Demand deposits´ and partly by ´Currency´ + ´All deposits´. According to the material V has taken nearly a century to drop from about 4,6 to about 1,7 (if we count with ´All Deposits´. If we count with only ´Demand Deposits´ (during the time 1915 - 1960), 1918 represented the highest value 3,53 and 1946 the lowest 1,52.[30] Carl Snyder finds in ´Business Cycles and Business Measurements´, in Appendix, p.294 that V for ´Bank Deposits´ in 141 towns in USA during the year 1919 - 1925 has varied between 462,3 and 529,9 per annum. In spite of all external disturbances the yearly changes are very small. This holds even, if we count the changes by ´Time Deposits´ in the denominator instead of ´Demand Deposits´ on account of the correlation in their changes. Of 46 annual changes in Friedman-Schwartz´ material, it is only 2 of these that point in different directions and then to a very small extent.[31] That shows that the changes in ´Time Deposits´ or still better ´All Deposits´ can be used as an approximation of the changes in ´Demand Deposits´ when we do not have the more reliable measure at a measurement of changes of V..

Other examples of V:s stability and predictability we find in Friedman - Schwartz´ following works ´Monetary Statistics of the United States´ and ´Monetary Trends in the United States and the United Kingdom´. A great number of tables and diagrams show this. They find even great correlation between the changes of V in both the examined countries. "Perhaps the most remarkable feature about the rate of change of velocity, as about its level, is the extraordinary similarity of movement in the two countries. Chart 5.5 superimposes the two separate levels of velocity series from chart 5.2 and the two rates of change of velocity series from chart 5.4. The parallelism for levels and the near identity for rates of change is striking. The rate of change series for the two countries are almost duplicates, except for the early period. - - -" (Monetary Trends, p. 177). See also chapter 7.2, chart 7.1, table 7.2.

Notes:

1. Arthur Marget ´The Theory of Prices´ I (AMI), 454: "- - - Velocity is a factor involved in the ´Total of money spent´; it is ´established´ simultaneously with the ratio of money spent to the stock of cash balances, since it is identical with that ratio. - - -"

Irving Fisher ´The Purchasing Power of Money´ (IF1), 17: "The important magnitude, called the velocity of circulation, or rapidity of turnover, is simply the quotient obtained by dividing the total money payments for goods in the course of a year by the average amount of money in circulation by which those payments are effected. This velocity of circulation for an entire community is a sort of average of the rates of turnover of money for different persons. Each person has his own rate of turnover which he can readily calculate by dividing the amount of money he expends per year by the average amount he carries."

2. Knut Wicksell ´Geldzins und Güterpreise ´, 48: "Es entsteht nun aber die Frage, ob denn für die Grösse der so aufgefassten Umlaufsgeschwindigkeit des Geldes *selbständige Ursachen* angegeben werden können, oder ob dieselbe vielmehr, wie zuweilen behauptet wird, bei gegebener Grösse der umzusetzenden Warenmenge und der vorhandenen Geldmenge, lediglich eine *Wirkung* ist von der jeweiligen Höhe der aus *anderweitigen* Ursachen bestimmten Warenpreise." (`Interest and Prices´, 54).

AMI, 418: "- - - This corollary is simply that if, instead of being content merely to record the fact that ´velocity´ is at a given level, we wish - in the words of Marshall - to unravel the *´causes that govern ´* the rapidity of circulation of the currency´, we must, as always whenever we attempt to explain how market values are determined, put ourselves in the position of the induviduals engaged in market processes, and ask what they do which is relevant to the particular market process in which we are interested, and why they do it."

3. Compare Stanley Jevons ´Elementary Lessons in Logic´, 238: "- - - But the great requisite of the true philosopher is that he be perfectly unbiasssed and abandon every opinion as soon as facts inconsistent with it are observed."

IF1, 152: "For aught the equation of exchange itself tells us, the quantities of money and deposits might even vary inversely as their respective velocities of circulation. Were this true, an increase in the quantity of money would exhaust all its effects in reducing the velocity of circulation, and could not produce an effect on prices. If the opponents of ´the quantity theory´ could establish such a relationship, they would have proven their case despite the equation of exchange. But they have not even attempted to prove such a proposition. As a matter of fact, the velocities of circulation of money and of deposits depend, as we have seen, on technical conditions and bear no discoverable relation to the quantity of money in circulation.- - -"

4. AMI, 454: "- - -There is certainly no suggestion that the change in the ratio ´determines´ velocity; since the ratio and ´velocity´ are identical, they are both ´determined´ by the *decisions of cash-balance administrators with respect to the size of cash-balances held relatively to outlay."*

Compare J.R. Hicks ´A Suggestion for Simplifying the Theory of Money´, 4: "The essence of the method I am proposing is that we should take the position of an individual at a particular point of time, and enquire what determines the precise quantity of money which he will desire to hold."

IF1, 152: "For aught the equation of exchange itself tells us, the quantities of money and deposits might even vary inversely as their respective velocities of circulation. Were this true, an increase in the quantity of money would exhaust all its effects in reducing the velocity of circulation, and could not produce an effect on prices. If the opponents of ’the quantity theory’ could establish such a relationship, they would have proven their case despite the equation of exchange. But they have not even attempted to prove such a proposition. As a matter of fact, the velocities of circulation of money and of deposits depend, as we have seen, on technical conditions and bear no discoverable relation to the quantity of money in circulation. - - -"

Arthur Marget ´The Theory of Prices´ II (AMII), 100: "(a) Nothing but a crude exclusivism, for example, could have led to the suggestion that anyone committed to the use of Quantity Equations of the Fisherine type necessarily stands committed to a ´mechanical´ treatment of the process of price determination and price change, in the sense of a treatment which leaves no room for the play of the conscious decisions of ´economising´ individuals. Actually, there is not a single variable in the Fisherine equation - whether it be ´velocity´, the ´quantity of money´, or the ´volume of transactions´ - which is not capable of treatment such that the movements of these variables are in all cases referred to the notions of economizing individuals, as those individuals operate in a given institutional setting."

5.Knut Wicksell ´Föreläsningar´, del II, (KW2), 24: "- - - Och då de penningar, som befinna sig i en persons kassa, icke på samma gång kunna tjänstgöra såsom bytes- eller betalningsmedel i någon annans hand, så ligger här *den egentliga gränsen för penningens omloppshastighet* vid varje given tidpunkt. Det är den nödvändiga storleken av de individuella *kassorna*, som i sin totalitet reglerar och begränsar penningbehovet och därmed inverkar modifierande på penningvärdet; - - -" (And when the money that is in an individual´s cash-box cannot at the same time serve as means of exchange and payment in another individual´s hand, then there is *the real limit for the velocity of the money* at any given point of time. It is the necessary volume of the individual *cashes*, which

in its totality regulates and limits the need of money and so influences the money value in a modifying way.)

6.Patrick Kirkman ´Electronic Funds Transfer Systems´, 108: "6. *Credit terms enforcement*. In the UK the official credit period offered by most companies is in the region of 45 days (end of month following the month of transaction). Average credit taken is, however, well over 60 days (about 70 days in the manufacturing sector). - - -"

7. Friedrich A. Lutz ´Corporate Cash Balances´ (FL), 37: "- - - A company which has reason to expect that, in the near future, it will have to make cash payments that are not matched by an inflow of money will have to hold more cash than if it expects that receipts will come in at the same time that expenditures are being made.- - -"

Ib.39: "- - -In general it is true that the greater the feeling of uncertainty about the future, the greater the ratio of cash to payments. - - -"

8. AMII, 715, not 95: "- - - The contention is merely that, if we are to understand the functioning of the economic process, we must be prepared to relate market results to the actions of ´individuals´, as these individuals may be expected to operate *in a given ´institutional´ setting*. - - -"

IF1, 152: "- - - As a matter of fact, the velocities of circulation of money and of deposits depend, as we have seen, on technical conditions and bear no discoverable relation to the quantity of money in circulation. Velocity of circulation is the average rate of ´turnover´, and depends on countless individual rates of turnover. These, as we have seen, depend on individual habits. Each person regulates his turnover to suit his convenience. A given rate of turnover for any person implies a given time of turnover - that is, an average length of time a dollar remains in his hands. He adjusts this time of turnover by adjusting his average quantity of pocket money, or till money, to suit his expenditures. He will try to avoid carrying to little lest, on occasion, he will be unduly embarrassed; and on the other hand to avoid encumbrance, waste of interest, and risk of robbery, he will avoid carrying too much. Each man´s adjustment is, of course, somewhat rough, and dependent largely on the accident of the moment; but in the long run and for a large number of people, the average rate of turnover, or what amounts to the same thing, the average time money remains in the same hands, will be very closely determined. It will depend on density of population, commercial customs, rapidity of transport, and other technical conditions, but not on the quantity of money and deposits nor on the price level.- - -"

9.Morris A. Copeland ´A Study of Moneyflows in the United States´ (MC), 229: "Neither type of discretion is absolute. In both cases we must recognize that the decisions of various transactors are mutually conditioning. The range of choice open to any transactor is limited by the choices others are taking. - - -"

Ralph George Hawtrey ´Currency and Credit´ (RGH), 203: "- - -But so long as the total amount of balances, the unspent margin, remains undiminished, one man can only get rid of his superfluous cash by unloading it on another. The effect is to increase velocity. - - -"

10. Friedrich C. Mills ´Statistical Methods´ (FM, 1955), 253: "- - - tendencies, relationships that hold on the average. Observations do not accord without exception to a mathematically definable ´law´. Causal forces are complex, not single, and isolation of one or two factors is usually impossible. - - - In all such cases as these the determination of an equation of relationship calls for an averaging process by which ´most probable´ values of the constants in the equation may be estimated from varying observations. - - -"

11. F-SI, 678: "The relation between money and other economic variables has been not only close but also highly stable in form and character. - - -"

F-SI, 679: "The velocity of money, which reflects the money-holding propensities of the community, offers another example of the stability of basic monetary relations. - - -"

12. FM (1940), 299: "- - -Trend and seasonal forces are the constant factors in the behaviour of time series. In combination they may be thought of as providing the base from which cyclical and accidental movements occur, as deviations. (This is a convenient, and perhaps not a faulty conception. We do not, however, possess knowledge of the true organic relations among the elements of time series.)."

13. K. S. Rao ´Statistical Inference & Measurement of Structural Changes in an Economy´, 177: "4.3:4 The primary economic forces considered above can be classified further: (1) Forces contributing to steady growth of productivity, consumption, etc. brought about by uniform changes in the factors detailed above. In the familiar language of economic statistics, these are forces contributing to the trend component in an economic variable. (2) Forces which bring about a seasonal variation in the variable. (3) Forces responsible for expectations and planning for the future of the basis of the past values of economic variables. These are the forces contributing to the business cycle phenomenon."

Ib.178: "4.3:42 *Cyclical* fluctuations. The succession of prosperity and depression noticed in an economy may be either due to the inherent forces in the economy generating these cycles or due to the cumulative adjustments caused by random fluctuations resulting in a cyclical phenomenon. That summation of random fluctuations can lead to cyclical series is known as the Slutzky -Yule effect. - - -"

14. IF1, 72: "A somewhat different sort of cycle is the seasonal fluctuation which occurs annually. Such fluctuations, for the most part, are due, not to the departure from a state of equilibrium, but rather to a continuous adjustment to conditions, which, though changing, are normal and expected. - - -"

15. FM (1940), 293: "- - -The complete elimination of all non-cyclical movements is impossible, of course. We must content ourselves with measures reflecting cyclical changes intermingled in rather uncertain proportions with accidental fluctuations."

16. MC, 227: "- - - As we noted in the previous section by and large the within-the year patterns of ordinary transactions are imposed on the individual transactor by the payment habits of the community. And sporadic variations lie for the most part outside the scope of a transactor´s discretion. The type of discretion just described is pretty much discretion over cyclical plus secular variations in ordinary expenditures."

MC, 228: "We have singled out these two types of transactor discretion for examination because it is essential to see how they affect moneyflows if we are to understand the way cyclical expansions and contractions of moneyflows come about." - - - "In moneyflows the questions, Where does discretion lie? and Where does causation lie ? are closely intertwined. It is natural to suppose that what we have said about discretion and about the lack of transactors´ discretion over cyclical variations in their active balances has implications for causation. - - -"

D.J.Botha ´A Study in the Theory of Monetary Equilibrium´, 170: "Average velocity is determined by objective (over which the individual has no control) and subjective factors. The first, as Angel and Ellis have shown, are the average length of payment intervals ´*p*´ and the degree to which the receipts and expenditures of the individual (firm) are aligned, i.e. the degree of overlapping ´*g*´. - - -"

17. AMI, 366: "- - -Like the concept of ´income velocity´, ´virtual velocity´ was introduced in order to relate a stock of money to a stream of money payments which was regarded as relevant for the process of price determination, the only differences here significant being that, in the case of ´virtual velocity´, the stream of money payments was the *total* of money payments, and the stock of money included only money of *ultimate redemption*. Like the concept of ´income velocity´ also the concept of ´virtual velocity´ is not without its value for problems of a very broad nature. - - - In the case of ´virtual velocity´; we are dealing with a devise that may be taken as summarizing the forces which will cause a given change in the quantity of money of ultimate redemption to result in a greater or smaller change in the total of money payments of all kinds, and therefore in determining the extent of the amount of money of ultimate redemption which a country ´needs´ in order to carry on a given volume of transactions at a given level of prices."

18. AMI, 463: " - - - the attempt to establish a distinction between money which circulates and that which does not circulate as a difference in *kind* becomes, in truth, an element of ´superfatation´."

19. Gottfried von Haberler ´Prosperity and Depression´ (GvH), 202: "Hoarding and dishoarding thus means or implies a decrease or increase in the velocity of circulation of money *V*, or an increase or decrease in the reciprocal of *V* - that is to say, in the Marshallian *K*."

IF1, 80: "Hoarded money is sometimes said to be withdrawn from circulation. But this is only another way of saying that hoarding tends to decrease the velocity of circulation."

20. Constantino Bresciani-Turroni ´The Economics of Inflation´ (CBT), 97: "- - - The ´flight from the mark´ became general. Those who were in Berlin in those days tell of shops besieged by a crowd ready to buy any object at any price, in order to get rid of paper marks as quickly as possible. - - -"

21. CBT, 222:"- - - Businesses and great shops were deserted. The personnel was greatly reduced. Moreover, the country customers were absent, because the farmers would not sell their products for a money which depreciated from hour to hour."

See also IF1, 251.

Ludwig von Mises ´The Theory of Money & Credit´, 228: "- - - There is also the additional fact that as commerce gradually begins to use foreign money and actual gold in place of notes, individuals begin to hold part of their reserves in foreign money and in gold and no longer in notes."

22. Chang Kia-Gnau ´The Inflationary Spiral´ (CKG), 270: "- - - By July 1948 the velocity of circulation had risen to nearly eleven times the prewar rate.

Because of the method of calculation used, the figures for the velocity of circulation overstate the actual variations in velocity since they do not allow for the influence of two other factors symptomatic of failing confidence in the currency in the closing stages of runaway inflation. One was the fall in the volume of goods offered for sale in the market, because of the dislocating effects of inflation on production and the hoarding of commodities by all classes of society. The other, which concerns us more in the present context, was the increasing volume of supplementary money entering circulation as the demand for notes outran the capacity of the government printing presses."

23. J.S.G.Wilson ´Banking Policy and Structure´, 252: "- - - Inflation that can be more or less effectively suppressed will always result in an increase in total liquidity, which may then be run down fairly gradually as controls are relaxed; but ´open´ inflation´ with rapidly raising prices will act as a deterrent to the holding of idle money, since the public will attempt to convert their money into goods before prices rise still further (as in Japan in 1946 - 8 and the United Kingdom in 1967 - 9). Conversely, deflation and a sagging price level will encourage the holding of idle balances. If prices are expected to fall further, there is little inducement to spend."

24. KW2, 73: "På varje stadium of kommersiellt framåtskridande ges det därför en ny och i allmänhet en högre grad av genomsnittlig cirkulationshastighet hos omsättningsmedlet, som icke sedan minskas, men tills vidare icke heller utan olägenhet kan ökas." (At every stage of commercial progress there is a new and generally higher degree of average velocity of the circulation means that is not afterwards reduced but which cannot be increased either without inconvenience.)

25. CKN, 32: "- - - In the climate of uncertainty created by the war, money became the most convenient and secure form of storing wealth, and there was a general movement on the part of the public to hold assets in liquid funds. This preference for money prevailed until the public began to view the depreciation as inevitable. - - -"

See also F-SI, 673.

26. RGH, 203: "- - - Distrust will lead people to reduce their cash balances below their real requirements, or, more accurately, will swell the consumers´ outlay beyond its due proportion to the unspent margin. - - -"

RGH, 205: "If the unspent margin be kept constant, the consumers´ outlay may be expected therefore to fall until velocity is normal, and prices will fall in the same proportion. - - -"

27. F-SIII, 9: "- - - We use the rate of prior inflation as a proxy for expectations of inflation."

28. RGH, 189: "When depreciation becomes visible, rapid and illimitable, no one will lend for any considerable period at all in a medium which has forfeited confidence."

- - -

"When prices are rising, it is more profitable to hold commodities than to hold money. People will desire to hold smaller balances than usual in comparison with their incomes or their turnover. They will pay away their money more quickly than usual, - - -"

IF1, 63: "We next observe that the rise in prices - fall in the purchasing power of money - will accelerate the circulation of money. We all hasten to get rid of any commodity which, like ripe fruit, is spoiling on our hands. Money is no exception; when it is depreciating, holders will get rid of it as fast as possible. - - -"

29. GvH, 61: "- - -The velocity of circulation meant is not the transaction velocity, nor it is the income velocity. One might perhaps call it trade velocity, the term being understood to cover all transactions which involve an exchange of goods in all stages of production, but to exclude financial transactions (e.g. on the stock exchange). If the quantity and the transaction velocity of money remain constant, but at the same time the requirements of the financial circulation rise, the result will be a decrease in the effective quantity of money as defined above. - - -"

See also AMI, 422.

30. F-SI, 682: "- - - Despite the secular trend, the consistent cyclical pattern, and the sizable margin of error in our estimates, the observed year-to-year change in velocity was less than 10 per cent in 78 out of the 91 year-to-year changes from 1869, when our velocity figures start, to 1960. Of the 13 larger changes, more than half came during either the Great Contraction or the two world wars, and the largest change was 17 per cent. Expressed as a percentage of a secular trend, velocity was within the range 90 to 110 in 53 years, 85 to 115 in 66 years. Of the remaining 26 years, 12 were during the first 15 years, for which the income figures are seriously defective, and 7 during the Great Contraction and the two world wars."

31. F-SI, 640. Chart 57 shows two *V*-concepts´, partly at ´currency + all deposits at commercial banks´ and partly at ´currency + ´demand deposits at commercial banks´.

32. Lempinen-Lilja `Payment Systems and the Central Bank´, 87, 91

CHAPTER 6.
THE TRANSACTION VOLUME AND THE PAYMENTS FOR GOODS AND SERVICES.

The transaction volume in a society counted in money consists of, as we earlier have found, of different part volumes, partly the amount that corresponds to the volume goods and services turned over and included in BNP (MV_y) or not included in BNP (MV_z), partly the financial transactions (MV_f) and the purely monetary (changing) transactions (MV_m).[1],[2] In the financial transactions we can also include all one-sided monetary transactions (gifts, inheritances, etc.). M is in these cases the money volume and V_y, V_z, V_f and V_m the velocity for different subtotals, and V_t is V for the whole transaction volume. $V_y + V_z + V_f + V_m = V_t$.[3]

The monetary and financial tranactions are of a special character and have special qualities. Their only purpose is to make possible production, purchases and consumption of commodities and services in the short and the long run. For savings and investments the time can stretch very long. But also if these transactions in themselves do not create any tangible results that can be consumed, their importance for the society is enormous.[4] All that is expressed in certain numbers of money units follow the value of the money unit contrary to certain units of goods and / or services, the value of which can differ however much from that of the former, both in the short and the long run.[5] This is of course a truism, but it is still important to remember. For a check or giro amount of SEK 1.000, we gets a bank debit, a claim of SEK 1.000. For an inpayment of SEK 2.000, we always get a debt reduction of SEK 2.000. And while 1.000 commodity units in a year can double in value units, the deposit after a year is still 1.000 money units, if withdrawals or deposits have not been made. That interest may have been added, does not change the amount of the original deposit. The SEK 5.000 that we have paid for a bond we get back, if we keep it until payment day. We always change x money units against another value of x money units, and the value relation between them is the same all the time. Likewise we get the interest that has been promised, if the debtor is serious and solvent. That this interest can be profitable or disadvantageous compared with other investments, is another matter.

Of course there can be minor changes in the quotations of bonds and other claims with a fixed rate of interest due to interest valuation, but these are changes around one in the long term unchanged nominal and real value, because the interest levels by and by return to the starting point. Here I disregard changes of substance values, which are strictly volume and not value changes. Furthermore these changes in the quotations happen only during the remaining validity time of the bond. As the exchange lists and other data show, the deviations from par are as a rule very small. While the general price level has increased continuously for 60 years, the interest levels have repeatedly returned to the starting point.

Monetary and financial assets differ thus fundamentally from goods and services, their price development is quite different.

A determination of the value of goods and services must therefore, to be correct, take into account only such items that are really goods and services. Financial and monetary magnitudes cannot belong there; they follow all the time the value of the unit. If we should include these, it would mean that we include to an extent quantities that are equal in value to the value unit at the measurement of magnitudes in this value unit. They will be measured twice.. This means that to keep a correct price of goods and services, monetary and financial transactions must always be discounted from the total transaction volume.[3] A problem is that while the volume money can be counted rather good, the velocity for at least certain money can also be counted rather good, and the price index can also be supposed to give a rather correct picture of the price development, statistical statements of the volume development of the goods and services turned over (the real volume or its value in money) or its relation to the total transaction volume are mostly lacking. Sometimes we can use values that we have arrived at the back way by knowledge of other factors. Often there are only GNP statements and its development available. Even if we can show, which we can, that the volume of this to a large entent runs in parallel with the total transaction volume, at least during 1 - 7 years periods, GNP:s development makes only an approximation of the development of the total volume goods and services turned over. It thus remains, if we want to have more exact values, either to count this latter one or to calculate the relation between it and the transaction volume or the BNP-volume.

It is to be noticed that when we access the expenses for goods and services of the society, it is better if we can get the volume of the expenses directly, rather than to try to reconstruct it with the help of the income or production of the society. The most important reason for this is that the cash-holders directly determine the expense volume, while the determining of their income is fairly diffuse.[6] The income of the society is, it is true, also its expenses, but the income does not have the independent, by other parties self-governed character that the expenses have. The income reaches the cash-holders, even if these are more or less passive. If the cash-holders decrease their expenses, also other cash-holders income decreases. And even if these would protest and want to retain their income level, they could not bring about that. Those who sit at the ´cash taps´ for the expenses of the community, decide not only the expense level of the society but also its income level. There is equality between expenses and income at the point of time1or period 1, but there is definitively no equality between the income period 1

or point of time 1 and the expenses period 2 or point of time 2.

The expenses are in contrast to the income created by an active action of the cash-holders, while the income can be transferred to them without their co-operation in other ways than possibly signing a receipt. To have an income is of course important, but it is not directly decisive for the payment ability. The income contains and depends of a number of insecure factors. Certainly it does not rain over the cash-holders, but it is to a great part outside their control. The income has indirect importance, as much as it is a precondition for the expenses of the next period. But for the expenses to be made, the individual, enterprise, or administration must be payment liquid, e.g. have adequate money for this. It does not help the cash-holder to have a large income, if he cannot pay his expenses. On the other hand, if he has the cash, the cash-holder can pay out in principle unlimited amounts, even if his income is 0 (if the cash contains .. an amount equal to the expense or more).

Income calculations have also often the disadvantage that they are affected by amounts that distinguish them from payments or expenses, e.g. stock changes, written off items, reinvestments, purchase (sale) taxes, or other indirect taxes. That I also use the concepts GNP and GNI does not therefore mean that I give the income concept any value of its own in the price formation process. It is all the time the expenses that are primary. But as the income in principle is always equal to the expenses, we can sometimes use the former as a measure of the latter.

Within the groups of goods and services the bought volumes develop to a great extent in parallel. A larger commodity volume and a larger transaction volume in the retail trade presuppose a larger volume also in production, wholesale trade, wages, salaries, and service sector, and often also in import. Larger volumes of finished products presuppose larger volumes of raw material, additives, expandable material, and semi-finished products. This is true for quantities counted both real and in money. Wages, salaries, and service costs relate closely to expenses and income in production, trade, and service sector, and the same is true in reverse order. One person's expenses is another person's income in a long chain. Travel costs, allowances, commissions, brokerages, royalties and cost compensations are closely related to wages, salaries and income development. Income and expenses in handicraft, free professions, and in the transport- and building sectors are directly dependent on other sectors and expenses of the society on the whole and follow therefore these to a great extent. Leasing, tenancies, usufructs, and compensations for encroachment and easement are closely related to the production and the income development in the acreage businesses. Rents and dwelling costs go also to a great extent in parallel with the building costs and the prices of real estate, but follow also the income development for private persons and enterprises. The expenses for repair and maintenance develop in step with the volume buildings or machine tools. Generally, even if the total absolut volumes of money in the society can change very quickly and strongly, the relative changes between different volumes of goods and services and between different sectors of the society are mostly very small or occur very long-term.

In the same way changes in the financial and monetary transactions of the public and the enterprises will develop in parallel with payments for goods and services Deposits into and payments from accounts effected to make payments possible, are as we have found earlier in a very determined relation to the volume of these payments The cash-holders struggle all the time to keep money of different types in a certain proportion to each other and also in proportion to savings, bonds, and claims of different types. Personal loans, customer credits, hire purchase trade and credits in production, whole-sale trade, retail trade, handicraft, free professions, transport sector, and building trade, and some more trades. will medium term (1- 7 years) develop rather in parallel with expenses and income in these sectors. Payments of interest and dividends are in a certain percentage relation to the capital amounts. This latter has however often less practical importance, as imterests amd profits are often added to the capital and therefore do not result in a transaction.

In the same way the expenses and income and other activities of the state and the local authorities have a close relationship to the expenses and income of the society. The income taxes have a certain percentage relation to the income of the economics outside. Taxes on wealth, inheritance, gifts and real estate are closely related to the real capital of the society. Taxes on wages and salaries and other fees for the employer have a certain percentage relation to the costs for wages and salaries; sales taxes and other taxes on commodities and services have a certain relation to the value of the taxed goods or services. This is true also for excises, duties, export and import duties, stamp charges and licence fees. Certainly percentual changes of tax rates and fees occur sometimes, but these are as a rule of limited magnitude compared with those that are not changed. Even such other one-sided monetary transactions as gifts, inheritances, transfers, or thefts mostly develop in parallel with the expense volume of the society.

In contrast transactions in the stock exchange and in the value paper business with shares, bonds, and money market instruments are characterized by far greater interior oscillations than the business in goods or services. But the former business probably increases or decreases the scope for the latter very little, because it is mainly effected within the bank sector in the wide sense of the word and with its means of payment and clearing systems. This is true also to a great extent for the foreign

currencies business. That part of the commerce with value papers where the cash-holders outside the bank system are one part of a transaction and which would claim their money, would however be characterized by considerably smaller oscillations. It would probably develop more in parallel with the development in the goods- and service sector or at least with the development of other financial and monetary transactions.

Observe that we are here all the time interested in volumes and amounts turned over for parties outside the bank system. What happens within the bank sector and with its means of payments and clearing system is of no interest in this connection. Neither we are interested of that which do not lead to a transaction, e.g. interest or profit which is added directly to the capital.

This parallelism between transaction volume and volume payments of goods and services should probably apply also for seasonal changes and not only for irregular changes or changes dependent of business activities. We can e.g. see regarding the postal giro that transfers on one side and inpayments and out-payments on the other develop very much in parallel, in spite of the fact that this latter type of changes to a very large part consists of changing transactions. On the other hand the long-term structural changes develop probably unequally, which is natural considering the development of the economics and the payment system. But these latter types of changes develop as a rule very slowly and regularly.

The expenses and income of a person, a group, or a society can sometimes be characterized by considerable changes. But either the expenses and incomes in a society from a period to another do not change or change equally much, which corresponds to the production increase in the society, or will be an object for great changes, it is a reasonable assumption that the division of the expenses of goods and services, monetary or financial assets as well as the division in different sectors of the society will not change to an extent worth mentioning over a period of 1 - 7 years. The society and single persons have a demand structure that brings about such results. And even if there would be large changes in the expenses of single persons, groups, or all the community, these should to a large extent take out each other, and the total average changes will therefore often be considerably smaller, especially over a somewhat longer time period. (7). The same is true for influences on deposits, other claims, and most types of assets.

If there is an influx of money in the form of banknotes, we can see a pattern, a model for its distribution in the community. At very short term the volume banknotes only will increase with the cash-holders. These get a surplus that they use primarily to increase the volume of their check and giro means. If the cash-holder had not earlier been able to pay his invoices with cash discount, he does it more often now. He decreases thus perhaps his debts to suppliers. When the cash-holders notice that the influx seems to become more permanent, they increase perhaps the volume of more long-term savings.

But soon also the volume of purchases starts to be affected. The single person gives his wife (her husband) that ring, which he (she) could not afford earlier. The enterprise buys the machine tool that can improve efficiency of the production process or let the employed take that educational course, for which there was no money earlier. Most private persons or companies have a priority list, written or not written, which states the degree of priority for different expenses, and when they have been more payment liquid, the possibility to realize the expense or the dream arises. He or she who is inclined to make impulse purchases, uses the increased volume money in his or her way. But these are expenses that coincide well with the earlier expense structure. The influx of money tends to be distributed in a way that corresponds to this and the earlier balance of money, savings, and real capital, both for the single person and for the community in its entirety. First when the incomes of the single person or the society have changed so much and for so long that the increase of the income or the wealth is considered to be permanent, the expense pattern or the investment in different assets can be changed. For the community as a whole this happens very slowly and long-term.

In the same way, if there is a withdrawal of bank notes, the decrease is distributed in different expenses and in different money, savings, and real capital in a similar way, although in the opposite direction, both for the single person and for the whole society. The person who first experiences a decrease in available money, decreases in the same way his spectrum of assets according to his preferences. And the company or the person realizes that they must postpone the next expense on the priority list, e.g. the investment that they earlier considered themselves to be able to afford.

I have earlier divided payments and transactions in barter and monetary transactions, one-sided and two-sided. Barter transactions are of no great interest in this study on account of their regularity and small extent and because they directly affect only the relative prices and not the common price level. Indirectly barter can however affect the common price level by decreasing or increasing the volume goods and services that is on offer against the monetary buying volume, and so the price level could become somewhat higher or lower than it else would have been.

Appart from the supply of bank notes and coins we are not, as we said earlier, interested in the transactions from or to the central bank or within the bank sector. The payments and the transactions within this sector put no demand on the money that is at the disposal of the cash-holders (outside the bank sector). Neither do the payments of the bank and payment

system to the economics outside.[8] They are made with the own payment means of the bank system. The payments from the bank system to the cash-holders can also influence the cashes of the latter only in a positive way, which is measured by the changes in the money volume outside the bank system.

The bottleneck of the community and the payment system lies in the economics outside the bank system. It is in this sector that the division in one-sided and two-sided transactions and payments and the division in monetary and financial transactions and in payment of goods and services, have relevance. For all these transactions, it is true, that they put demands on the scope that the cash-holders´ money volume set at disposal.[9] All these payments and transactions are effected in parallel with each other. The latter transactions act directly on the price and the money value, the former only indirectly through competing of the same scope. If we imagine these as a stream of payments and transactions, they can be visualized as in the diagrams 6A and 6B. The total volume of the strems can in exceptual cases remain unchanged for long or short periods, but it is mostly characterized by large or small changes. What we have experienced since the nineteen-thirties is that the volume calculated both in real units and in money units have increased all the time. The volume changes in real units have however been small and more evenly distributed than the changes in money units. The 19th century and the time onward to the nineteen- thirties was on the contrary characterized by the changes in money units being rather restricted, but the changes in real units being about the same as during the rest of the 20th century. But irrespective of the total transction volume showing small or large changes counted in money units, it is true that the changes in real units have mostly been small.

In diagrams 6A and 6B I have thus tried to illustrate the transaction streams in principle. In the principle sketch A the streams are specified by the way the bank system is concerned, in a group of payments and transactions to the bank system from the cash-holders, in a group payments and transactions to other cash-holders via the bank system, and in a group payments and transactions outside the bank system to other cash-holders. The payments and transactions via the bank system are perhaps the largest group. Then within every group a division has been made in one-sided (monetary and financial) transactions, in changing transactions, in financial transactions, and in payments of goods and services, the last three groups two-sided. The division in types of transactions is the same as in Chapter 1, the diagrams ´The Main Features of the Distribution´ and ´The Main Division of the Payment System´, and in Appendix 2. `Different Types of Payments and Transactions´ with its subdivision. Specified numbers may be consided seasonal-cleared, otherwise the numbers would vary more short-term.

In the principle sketch B the streams are divided only by transaction type in one-sided and two-sided transactions, the latter group subdivided in changing transactions, in financial transactions, and in payments of goods and services. We can also include the changes of the volumes of GNP in the picture, in what case we get a division of the volume goods and services turned over, dependent on their being included in the GNP-statistics or not.

The diagrams state thus values and changes of the transactions for some main groups of them in a model society with a total transaction volume of 10 - 15 billion money units. The cash-holders must divide their payments, so that the money is enough to pay the bank system and other cash-holders for all their transactions. The diagrams state the frames for this, which as a rule do not permit any greater changes.

In the diagram the transaction volume has increased considerably more than the volume goods and services turned over counted in money units, or with 50 % compared with 40,15 %. This reflects the long-term development in Sweden during the 20th century, but it deviates from the development during the period 1945 - 1959, which I account for in Appendix 4, when the transaction volume increased with 176 - 188 %, while the volume goods and services counted in SEK increased by whole 235 %.

In the diagram above the payments of goods and services decrease their parts of the total volume from 25 % to 24 %. If we suppose that it deals about a 10 years period, the relative change will be less than 0,1 % per year in average. In the example in Appendix 4 the payments of goods and services thus increased their part from 20,66 % to 23,97 % in alt. 1 and from 27,93 to 33,85 % in alt. 2, which in alt.1 means a change with lesser than 0,2 %-units and in alt.2 a change with lesser than 0,4 %-units per year.

We would also be able to design diagrams, where we instead for estimated, approximate values, state the real development, so far as there are statistics, but cleared from seasonal changes. But to-day the existing statistics does not give any possibilities to this.

The addition to or the reduction from the volume banknotes and money results thus in a proportionally equal distribution through the economics. What some economists maintain that there should be some delimited areas, as e.g. the savings, where the money is locked up for shorter or longer periods, has no validity at all. The amount that a household deposits in a bank account, is perhaps already the same day lent for an investment or a consumption purchase, unless the bank changes its possession of banknotes, but then it is this that is decisive and not the savings in itself. The economics is as far as the money is concerned one large communicating vessel, where money moves all the time, even if the speed is different in different sectors.

There can be large absolute changes of the transaction volume, the expenses and the incomes in a

community measured in money, but this does not as a rule change the relative distribution of money and other assets during the periods of 1- 7 years, which we are interested in. Both they and the payment system itself are structurally very stable and change very little due to different business activities. This should mean that also the transaction volume and the volume payments for goods and services counted in money develop in parallel to a large extent. It would be advantageous, if there existed statistical measures of the turnover of goods and services in their entirety, in real and monetary terms. Now this is seldom so. But if this turnover shows correlation with the changes of the total tranaction volume during the medium-term periods of 1-7 years, during which the changes in business activities occur, we can on the basis of such suppositions be able to draw conclusions about changes in the volume of the former on account of changes in the latter. In the same way we might draw conclusions from such suppositions of changes in the volume goods and services on account of changes in the GNP-volume.

I quoted earlier, when dealing with the velocity, examples of the parallelism between the transaction volume and the volume goods and services turned over. Such an example was Morris A. Copeland´s work ´A Study of Moneyflows in the United States´ p. 15 ff., where he compared ´Debits to Deposits´ with ´Total Main Circuit Outflow´, thus a transaction volume measure with a measure of the volume goods and services turned over. Other works were FRB´s ´Flow of Funds in the United States´ and Richard T. Selden´s ´The Postwar Rice in the Velocity of Money´. (10). Also Irving Fisher considered the check volume as a measure of the turnover of goods and services. (11).

How great the correlation is between the parts of the streams in the earlier principle sketches appears perhaps by diagram 12E in Appendix 4, where I have put in the development of the total transaction volume and the GNP-volume in Sweden in the years 1945 - 1959. It is, as we said, difficult to receive measures of the total volume goods and services. But nothing contradicts the hypothesis that also this measure develops in parallel with the two other measures, especially as it is an intermediate link between the two others.

In diagram 12F in Appendix 4 I have put in what I call ´the transaction quota´ and ´the GNP-quota ´ for the period 1945 - 1959. The transaction quota makes thus the quota between the transaction volume and the volume goods and services turned over counted in money. The GNP-quota makes thus the quota between the volume goods and services turned over (real or in money) and the GNP-volume (real or in money). The transaction quota x the GNP-quota make thus the quota between the transaction volume and the GNP-volume.

In the tables 12A - 12B and the diagrams 12A and 12D in the same Appendix 4, I have put in a number of variables, their volume and absolute and relative changes, which further illuminates the correlation between the transaction volume, the volume goods and services and the GNP.

But even if there are good theorethical reasons to suppose that the turnover of goods and services develops in parallel with the total transaction volume during periods of 1 - 7 years and there are also statistic data on this, this is still mainly to be proved. There are very few empirical studies of this kind, why the supposition for the present may be regarded to be a very probable hypothesis.

That there is such a correlation, does not of course exclude the existence of changes both short and long-term of the connection. There are of course seasonal oscillations in the turnover of goods and services in the same way as the transaction volume is characterized by them and these do not always follow each other.(12). And there are long term changes of structural nature. It is e.g. very probable that the volume of the monetary and financial transactions in developed countries grow faster than the goods- and service transactions. Also this development should be possible to measure. But that there are changes in this quota long term, does not contradict that we can draw conclusions about the development of the goods- and service payments in 1 - 7 years term on the basis of the development of the total transaction volume. But the scarcity of empirical studies in this area is however a great problem.

Earlier principle sketches and diagrams as well as the description in the chapters 5 and 6 showed the correlation between the nominal values for the payments of goods and services and the values for the financial and monetary transactions. The correlation in the price development for different goods and services is also large. As small as are the differences in their mutual price development , as large are often the changes of their absolute numbers. In Sweden we have had a common yearly price increase of between 5 or 10 % during the time after 1931, which means an index increase from 100 to about 2.500 or 2.600, if we count with linked indices. It is not unusual with a price increase of 100 or 1000 % in some countries, while the price difference between two products in many cases perhaps vary by 10 % or less, often only 0 - 2 %. For a single person, a separate commodity or a service or in a single market the values can deviate much from this picture, but the more persons, commodities, services, or markets that are included the nearer the values match this picture. In the same way it is true that the values for a single point of time, a short period of time or part of a season can deviate, but the more the period is extended the nearer the values match this picture.

But despite all the deficiencies in the statistic material in hitherto existing studies, the strong correlation between the changes in transaction volume, volume goods and services turned over, and also GNP-volume become apparrent. It means that

when the central bank changes the money volume of the society and with the cash-holders´ help determine its transaction volume, the bank by that also determines buying power volume and demand of the society, and this quite independent of what other parties do. What these other parties possibly can do, are to affect their parts of the income, the total frame is outside their control. This would have been true, even if the volumes had not shown such great correlation. Also in this case the buying power volume must keep within the frame that the transaction volume determines. But the difficulties to measure the changes of the buying power volume increase of course, if the correlation is weaker.

Notes::

1. Morris A. Copeland ´A Study of Moneyflows in the United States´ (MC), 9: "But our estimates exclude certain money payment transactions too. They are confined to what will be called *the main money circuit*. They omit, in addition to non-monetary-payment transactions, a large class of transactions that will be referred to as *technical transactions*."

2. MC., 198: "We might have drawn the line between main circuit and technical transactions so as to define all financial transactions as technical. This would have given us a concept of the main circuit that is unique, or to be precise one that we could hope to make unique by improving our basic information sufficiently so that we could avoid any netting in the real estate transfer account."

3. Gottfried von Haberler ´Prosperity and Depression´ (GvH), 61, se not 5 - 29. :

4. Ralph George Hawtrey ´Currncy and Credit´ (RGH), 35: "Fees and salaries are paid for services rendered; they are payments of *money for things*. The purchase of a pecuniary right is a payment of *money for money;* both items in the exchange are affected in the same way by changes in the value of money."

5. RGH, 204: "- - -The same discredit which attaches to holdings of money attaches also to investments of which the interest and principal are fixed in money. - - -"

6. Compare AMI, 364, not 49: "The distinction between those ´income payments´ which are payments *into* income and those payments which are payments <u>*out of*</u> income has, unfortunately, not always been made clear, with resulting havoc for much of the analysis associated with the concept of ´income velocity´, and for the good name of the ´income approach´ generally."

7. Stanley W. Jevons ´The Theory of Political Economy´, 89: "- - - But the aggregate, or what is the same, the average consumption, of a large community will be found to vary continuously or nearly so. The most minute tendencies make themselves apparent in a wide average.- - -"

Ib., 90: - - - "In such circumstances the average laws applying to them will come under what I have elsewhere called the ´Fictitious Mean´, that is to say, they are numerical results which do not pretend to represent the character of any existing thing. But average laws would not on this account be less useful, if we could obtain them; for the movements of trade and industry depend upon averages and aggregates, not upon the whims of individuals."

8. Irving Fisher ´The Purchasing Power of Money´(IF1), 280: "- - - The bank reserves are excluded because, as we have shown, they are used for banking operations, not commercial purchases."

9: GvH, 61: "- - -If the quantity and the transaction velocity of money remain constant, but at the same time the requirements of the financial circulation rise, the result will be a decrease in the effective quantity of money as defined above. - - -Financial transactions immobilize a larger part of the circulating medium, and demand for goods falls."

10. Richard A. Selden ´The Postwar Rise in the Velocity of Money´ (RC), 487: "- - - Second, deposit turnover, nonfinancial velocity, and income velocity have displayed nearly identical trends in the postwar period. This has not always been the case, as reference to the experience of the late 1920´s and early 1940´s indicates,"

11. IF1, 272:"- - -The next column, headed ´clearings´, is indicative of the volume of check transactions, the circulation of deposit currency. As a fairly constant proportion of checks is settled through the various clearing houses of the country, clearings may fairly be regarded as somewhat of a criterion of M^1V^1.- - -"

12. RS, 487: "- - - Some velocity determinants affect income velocity and transactions velocity identically, other differentially. The latter include the degree of vertical integration, the relative importance of barter, and the volume of financial transactions per dollar of income - - -"

PART 2.
THE CONCEPTS SUPPLY AND DEMAND.

CHAPTER 7.
SUPPLY AND DEMAND AND THEIR CHARACTER.

Already at an early stage in history they began to use coins, and banknotes have also a long history, even if they did not become dominating money until in the 19:th century. The coins facilitated the coming up of merchant enterprises and markets. People began to speak of supply or offer of commodities and services and demand for these. The term and the concept ´offer´ is more exact than the term and concept ´supply´, because the essential in and the most useful application in relation to the term and the concept demand is the realized value. We cannot speak of realized supply. But because the word ´supply´ is so common in English, I will use it too, but with the limitation that it then has the meaning ´offer´.

The supply of a certain commodity, e.g. butter stood against a certain demand. In a transaction 2 kg. of butter was exchanged against 5 kg. of bread. [(1).] Against a realized supply of 2 kg. butter stood thus a realized demand in the form of 5 kg. bread. Suppose, that we used coins and units of coins that we can call ´crowns´ (cr.) .In another transaction 5 kg. of butter was changed against 10 crowns. A realized supply of 5 kg. of butter stood thus against a realized demand in the form of 10 cr. The realized price for butter became 2,5 kg. of bread. It also became 2 cr. The realized price for bread became 0,4 kg. of butter. It also became 0,8 cr. A realized supply of 500 kg. of butter stood perhaps against a realized demand of 1.011 cr. at an average price of 2,022 cr. In a bigger market a realized supply of 400.000 kg of. butter stood perhaps against a realized demand of 770.000 cr. at a price of 1,93 cr. in average. A realized supply of 930.000 kg. of bread stood perhaps against a realized demand of 740.000 cr. at a price in average of 0,796 cr. Furthermore 250 kg of bread was changed against 102 kg of butter in the same market at an average price of 0,408 kg. of butter or 2,45 kg. of bread.

In reality prices for the same product differed due to differences in knowledge, distances to or between markets and due to monopolistic features, but values in average take care of this. This simple model for supply and demand can be used for a single barter as well as for big and complicated businesses in the whole country.

The last example gives no complete picture of the earlier role of barter, because intermediaries soon appered that had just the function to overcome the limitations that the scarcity of money involved. A customer could pay with a single product and for this choose from the whole of the merchant's stores of natural products and other goods. This was common e.g. in the Swedish countryside in the period 1850 - 1950, when the peasants made their purchases against their butter or meat or their eggs and berries. Another variant was that the farm labourers received their wages in products from the farm as in the so-called ´statarsystemet´ (statare, a farm worker) in Sweden. A third one was that a commodity such as a packet of cigarettes functioned as a payment medium, as for instance in Germany after both World Wars..

Business based on banknotes and coins became wholly dominating already in the breakthrough period of the industrialism. All prices were also expressed in the monetary unit. Money stood for the bigger part of the demand for the goods and the services that were offered and sold. In the same way, as we can speak of a demand in bread against a supply of butter, we can of course speak of a demand in butter against a supply of bread. And in the same way, as we can speak of a demand in crowns against a supply of butter, we can of course speak of a demand in butter against a supply of crowns. We deal here with mirror values. To use these does not as a rule add anything of value to the theory. It only obscures the concepts. At monetary transactions the concept and term demand ought as a rule to be reserved for the money and the concept and term supply ought to b reserved for the commodity /commodities and the service /services.

This is true for demand in most cases where money is used as means of payment, especially in macroeconomics. On the other hand the concept ´demand´ can be used in microeconomics in order to describe, how much of the supply of a commodity or a service the buyer is prepared to take over at different prices at a certain moment, which is expressed in the usual supply and demand curves. But then we should be conscious of all the time that on these curves it is only the point of intersection that measures realized values in reality or mentally (in the thought). In other respects the curves are only products of the mind. Every point on the curves with exception of the intersection point in certain cases is constructed with the help of conceptions of how the parties act in different situations taken from really realized values (values from intersection points). If we multiply ´the demand´ of the curves with the price, we get also the real demand, a demand counted in money.

At every single payment as at all payments for a certain commodity or service or in all payments in a market or in the whole of a nations economy a demand in money (or to a lesser extent commodities and services) stands against a supply of commodities and/or services. On account of its nowadays wholly dominating role, scope and importance, money can approximately be said to be the potential demand (purchasing power) in a society. The price differences that come up between the price of a product or a service at payment with another product or service or

at payment with money, are surely nowadays very small, partly on account of the small volume of barter, partly on account of the fact that the money price all the time is a sort of target that one adjusts to at barter. Barter cannot in any case directly affect the common pris level, because it is the question all the time about relative price changes between different types of goods and services. These are as a rule very small and modest, but also if it were not so, the increase of the price of one would be equivalent to the last penny by the price decrease of other products and /or services.

Nowadays barter, commodity or service changed against commodity or service, is thus of small extent and importance compared with the commerce of goods and services against money.. (2). But it still occurs in a modern form between enterprises and administrations in the form of clearing of purchases and counter-purchases. A variant that has been used in trade with totalitarian states such as the Soviet union, is bilateral foreign trade, where only import or export surplus were settled in currencies. Another variant, as in Russia after the fall of Communism, is that employees received their wages and salaries in the form of produced goods that they in turn could either consume or change against other goods or services. Of course we could also regard the transfers of goods and services that occur within enterprises, groups, and administrations and that are ´paid for´ by internal acounting, as barter. But the usual and the only rational way of using the term payment is to restrict it to transactions that mean a change of ownership or right to use. Or at least we demand that payment should be made in the form of money through the common payment system, because it is the claims that are put on that system that are the problem in this context. The payments and transactions that are made through internal accounting do not put any claims on the money and the payment system. But for all types of barter it is true that their volume is very firm and regular and characterized by institutional and structural factors such as the production and distribution patterns of the society and the enterprises. They are not subjected to such rapid and extensive changes, as the volume of money and the absolute price level can be. Relative prices can stay nearly unchanged for decades. But smaller changes occur constantly and somewhat larger ones can occur especially in wartime or at times of social crisis. But the price adjustment of relative prices is also expressed in money.

Perhaps 90 - 99 % of all payments of goods and services in the modern society are money transactions. Money is accountable for the totally dominating part of demand. This is so for single commodity- and service transactions and this is so for the combined purchases and sales of single persons, enterprises and administrations. And this is so for a commodity or a service in a whole market and for all purchases and sales in the whole community. The realized demand at money transactions is nothing else than the money used for the purchases. Demand is no vague, undetermined concept taken over from the so called real sector, such a concept is only a phantom. Money transactions have no connection with goods and services on the supply side. Supply and demand are determined quite independently of each other and can be developed in totally different directions. It is unreasonable to maintain that demand arises in the production sector. (3). Demand does not increase because Ludvig Svensson's curtain factory can sell their products, if this is not due to an increase of the velocity. If not, if the total demand is not changed, it is directed against some other product or service. The money that Ludvig Svensson after a sale disposes for his purchases or wage payments, is potential purchasing power and potential demand. But the money that the Riksbank has delivered to the market or the bank system delivered it by decreasing its cash quotas is potential purchasing power and demand just as much. There are no physical or theoretical differences between these kinds of money, this purchasing power or this demand. The so called Say's law that the production creates its own demand, is nothing but lies and damned fiction. (4).

The nature of demand and supply expresses itself in the so called quantity equation or exchange equation that is for the most part used in connection with the so called quantity theory. (5). The questions that most economists dealing with the basis of economics want to be answered are first the following: Why does the price level change? Why do inflation and deflation, booms and depressions arise? Why is demand sometimes too high and sometimes too low? Why is the equilibrium in the society upset? The economists have up to now not managed to give satisfactory answers to these questions in spite of innumerable and often deeply conflicting theories and proposals of solutions. On the other hand I believe that most economists are ready to accept that the process of price determination in connection with the exchange of commodities and services is the most central and basic one in the economics and thus also in the theory that deals with it. (6). Even if they have very different opinions of the validity of the quantity theory, most economists seem to be prepared to accept and set out from the quantity equation and most of them also do so.(7).

If we express the volume of money (payment means) with M, its velocity of turnover (rate, speed of turnover) with V, the sold volume goods and services with T and the price or price level with P, we get the known exchange equation (mostly the term quantity equation is used):

$$\frac{MV}{T} = P \quad \text{or} \quad \frac{MV}{T} \equiv P$$

In the quantity equation V stands for turnover velocity, despite using a symbol that correctly means velocity. And also when I use the term ´velocity´ I mean of course turnover velocity in this connection.

If we put in realized values, the equation can be written:

$$\frac{M_r V_r}{T_r} = P_r \quad \text{or} \quad \frac{M_r V_r}{T_r} \equiv P_r$$

When we work on the concepts and the terms *M, V, T* and *P,* we need to use both the concepts ´identity´ and ´equation´. The relation between MV / T and P is an identity in real life. Price is then never anything else than MV / T and cannot deviate from that. [8] But when we assign statistical values of the variables, it no longer is the question of identities but of equations with more or less correct measures of the variables, even for P. On the other hand it is of course desirable that we get and express values that so well as possible correspond to the real values. The goal must be to come as near as possible to the values of the identity. And the identity can of course be used as a measure of the values of the statistical numbers. But the fact that it is the question of an identity, is thus not a guarantee that M_r , V_r , $(MV)_r$, T_r and P_r have correct values. The identity says only that the quotient between ($M_r V_r$ and T_r is always the same as P_r.

Compare Roy Harrod ´Money´, p. 154: - - - If one gets out some figures to see how things have been proceeding, the equality of the figures on the two sides of the equation would not serve to verify what is stated in it; on the contrary, the equation would serve to show whether the data used were accurate or not. - - -"

Economists most often use the formula $MV = PT$, which only means that they have multiplied both sides with T. I find it more correct and practical to use my formula, because it directly emphasises that P is never more than one side of the identity and the only absolutely unoriginal factor in the context and that it also emphazises that both M, V and T affect P and that all other influences occur through these factors.

We can use the equation for a single purchase. If one person disposes and pays 1.500 crowns and buys 50 kg. butter , he pays 30 cr. for each kg. He has thus used, turned over his money once. The numbers of the equation in crowns will be:

$$\frac{1.500 \text{ x } 1}{50} = 30$$

If he instead disposed 3.000 cr., the numbers will be:

$$\frac{3.000 \text{ x } ½}{50} = 30$$

If 100.000 kg. of butter is bought in a society and the society has a money volume of 10.100.000 cr., which is turned over 0,3 times at an occasion or during a period of time for the purchases of the butter, this will be done at an average price of 30,30 cr.

$$\frac{10.100.000 \text{ x } 0,3}{100.000} = 30,30$$

If in a small market 500.000 cr. in money are available and this money is turned over 30 times for certain purchases, e.g. foodstuffs, or all purchases during a time period and for that money are bought 15.000.000 units of commodities and / or services, this will be done to the price 1 and the equation will be: [9]

$$\frac{500.000 \text{ x } 30}{15.000.000} = 1$$

In all societies the traded volume of commodities and services is only a minor part of the transaction volume. But for the sake of clarity or simplicity, we may disregard it here. It does not affect the reasoning in principle.

If we count instead with price index numbers and suppose that index 100 corresponds to 150.000 units of commodities and / or services, where these thus amount to one hundredth and a representative selection of the total volume commodities and services, the numbers in the equation will be: [9]

$$\frac{500.000 \text{ x } 30}{150.000} = 100$$

How T_r corresponds to a basket of goods and services in the society, Irving Fisher has already described in ´The Purchasing Power of Money´, p. 17 ff. What kinds of demands that can be put on a relevant index concept and how this is calculated, Fisher also described in the mentioned book and in `The Making of Index Numbers´. But this is of course

also done today in a great number of other scientific works and textbooks.

If now the money in the market increases to 600.000 cr., the velocity increases to 32, the traded volume goods and / or services increases to 16.000.000 units or 160.000 units at an index computation, where these latter make a representative selection of the total volume goods and / or services, the numbers of the equation will be:

$$\frac{600.000 \times 32}{16.000.000} = 1{,}20$$

or

$$\frac{600.000 \times 32}{160.000} = 120$$

The price level has thus increased from 1,0 to 1,2 or from index 100 to index 120.

If in a certain society there is a money volume of 10 million cr., if this is turned over 52 times during a period and for this are bought 520 million units commodities and /or services or 5.200.000 units that are a representative selection of the volume commodities and / or services turned over, the numbers of the equation will be.

$$\frac{10.000.000 \times 52}{520.000.000} = 1$$

or

$$\frac{10.000.000 \times 52}{5.200.000} = 100$$

If the money volume is increased to 11 million cr., the velocity increases to 53, the volume of commodities and / or services turned over increases to 530 million units or 5.300.000 units making a representative selection of the volume commodities and / or services turned over, the numbers of the equation will be:

$$\frac{11.000.000 \times 53}{530.000.000} = 1{,}1$$

or

$$\frac{11.000.000 \times 53}{5.300.000} = 110$$

Already at this point the problem arises that we meet at index computations: Shall the selection be representative for point of time or period 1 or for point of time or period 2 or for some point of time in between them? In what way shall the units be weighted? [(10).] But this problem is applicable to all index computations and is no special for counting with quantity equations. Modern statistics present a number of solutions, but the problem cannot wholly be escaped, as there is a quality problem at the bottom: "Does 1 kg of butter have the same value at the point of time 1 and 2? How are individual commodities and services to be weighted?" [(11).]

We can also set both *M, V* and *T* equal to 100, then we get the following numbers in the equation:

$$\frac{100 \times 100}{100} = 100$$

After the changes in the preceding example, *M* increases from 100 to 110, *V* increases from 100 to 101,92 and *T* also increases from 100 to 101,92 and the numbers of the equation become:

$$\frac{110 \times 101{,}92}{101{,}92} = 110$$

M can stand for a single cash amount, but it can also denote a sum of many or a great number or all cashes of a certain or all types of money. Irving Fisher (´The Purchasing Power of Money´, p.49) used for the volume of banknotes and coins and the check means the symbols *M* and M^1 and for their velocity *V* and V^1. Fisher did not use the term ´giro means´ or ´giro money´, at first because the giro hardly existed at his time and the term therefore was still not invented. He would surely have put them together, if they had existed, as they in principle do not differ much from each other.

Instead of the symbols *M* and M^1 I use the symbols M_1 and M_2, where M_1 corresponds to Fisher´s *M* and M_2 corresponds to his M^1. *M* in my text stands instead for all types of *M*, the common concept., e.g. M_1, M_2, M_n, $M_1 + M_3$ etc. And I will reserve the symbol *V* for the common concept velocity, *V* stands for all types of turnover velocity. And I will use different measures (standards) for the measurement of *V*. The simplest and most common one is when *V* is set down for a single type of money, the one directly concerned. I call this as I said earlier for *VI.* It means thus that the turnover e.g. of postal giro accounts is put against balances of these accounts. Another measure is *VII*, which means that the turnover e.g. of postal giro accounts or the total turnover is put against balances of all money. A third concept, *VIII*, means that the turnover e.g. of postal giro accounts or the total turnover is put in against the monetary base, the volume of the banknotes and coins outside the bank system. *I, II* and *III* are thus not usual exponents, but

separate different methods for measuring *V*. In all the cases it can concern *MV* for a single person, for a separate commodity or service, for a sector or for a whole society.

All these denominations for *V* (*VI, VII,* and *VIII)* have their advantages and disadvantages. None of them is given before the others. They can often be used alongside of each other as measurements of changes in *V*, as the lack of variation (parallellism) between their changes is very great. In order to secure that *MV*:s values are not changed, *M*:s and *V*:s values must of course be ajusted to a corresponding degree at an addition or transition between the different methods of estimation. If the volume banknotes and coins is 1.000 units with a *V* per period of 40 and the volume on check and giro accounts is 2.000 units with a *V* of 80 during the same period , *MV* can be set down as follows:

$$M_1 \text{ x } VI_1 + M_2 \text{ x } VI_2 = (M_1 + M_2) \text{ x } VII = M_1 \text{ x } VIII = MV$$

Or in figures:

$$1.000 \text{ x } 40 + 2.000 \text{ x } 80 = (1.000 + 2.000) \text{ x } 66^2/_3 = = 1.000 \text{ x } 200 = 200.000$$

But for that the numbers in the above equations to be correct when they are used in a quantity equation with a stated price level, we must first remove monetary and financial transactions. These compete with commodity and service payments for the total space for transactions, but they must not be counted, when the price is determined. Of course we can use a quantity equation also for monetary and financial transactions, but it does not explain anything, because the ´price level´ in that case never diverges from 1 (or 100, if we use index numbers), while the price level for commodities and services can assume any values.

This means in that case that we to the term MV_1 / T for goods and services make an addition of MV_2 / MV_2, where V_2 is the velocity for financial and monetary transactions, and an addition on the price side of 1. Then we get:

$$\frac{MV_1}{T} + \frac{MV_2}{MV_2} = P + 1$$

Or with numbers, e.g.:

$$\frac{1.000 \text{ x } 50}{50.000} + \frac{1.000 \text{ x } 40}{40.000} = 1 + 1$$

Or after a change, e.g.:

$$\frac{10.000 \text{ x } 60}{60.000} + \frac{10.000 \text{ x } 50}{500.000} = 10 + 1$$

But this addition explains nothing.

There are some economists who have criticised the quantity theory, because *MV* is said to include financial and monetary transactions and we then do not get equality between *MV* and *PT*. But this depends only on quantities having been included that are not comparable. The quantity equation has universal validity but only within its own applicability area and only at a correctly made analysis that among other things presumes that we only count comparable values. [(12).] Monetary and financial transactions affect on the other hand indirectly the price determination in such a way that changes in them can increase or decrease the room for paying goods and services. On the other hand can changes in the total transaction volume be used as an approximate measure of the changes in the volume of the sold commodities and services, because these, as we have seen, mostly go in parallel (develop in a similar way).

On the other hand we can of course count with monetary and financial transactions on the demand side of the quantity equation, as long as the price determination is not affected. If *M* of 100 million crowns. is turned over 30 times at payments of goods and services and 60 times at monetary and financial transactions, the total transaction velocity *V* is 90 and the amount totally turned over is 100 x 90 = 9.000 mill. cr.

$$MV_{y+z} + MV_{f+m} = MV_t$$

Or in numbers:

100 million x 30 + 100 million x 60 = 100 million x 90.

The quantity equation is equally valid and useful whether it concerns a single purchase of a

commodity or a service, all trading of a commodity or a service in a market or in the whole society, or all purchases in a certain market or in the whole society. It is thus possible to make aggregations for one or more persons from separate purchases, for one or more commodities or services, for one or more markets and for the whole society. [13] It is however important to make clear to ourselves, what measure we use for *T* to get a relevant and useful price concept. If we do an addition of an arbitrary or unweighted quantity of goods and services, the average price is not relevant.

After monetary and financial transactions have been discounted, we have goods and service payments left , for which the quantity equation or identity can be used:

$$\frac{MV}{T} = P \qquad \frac{MV}{T} \equiv P$$

And for the realized values:

$$\frac{M_r V_r}{T_r} = P_r \qquad \frac{M_r V_r}{T_r} \equiv P_r$$

Some economists have made a point of it being a question of an identity and that it therefore could explain nothing. [14] In itself this is a strange conception, as identities are used constantly in different sciences in explanatory purposes. [15, 13] All economists using aggregates must for natural necessity work with them. Not least are identities used in physics, where we have the acknowledged identities:

Time x velocity = covered distances.
Mass x acceleration = force. ($K = am$).
Force x time = work.
$v = c / p$. (Boyle´s law).
Or why not: $W = mc^2$.
Or Darwin´s statement (in biology) about the survival of the fittest (those with the best capacity to survive).

The physicists work with such identities when measuring the different variables in the same way as they are applicable for the quantity equation.. Such connections are utterly basic in physics. It means for instance that anyone trying to conceal or to get around them at an explanation of causes, would hardly be taken seriously. Of course there are myriads of causes behind every variable, but nobody would seriously try to equalize them with the variables in the basic identities and equations.

In much the same way it is applicable to the quantity equation $MV / T = P$ in any of its variants, e.g. $MV + M^1V^1 = PT$ in Irving Fisher's model (or PQ that he uses sometimes). The equation states the variables through which all other variables *work*. For all the myriad of cause variables working through them it is true that they can act upon the price only by affecting *M, V* or / and *T*. The variables in the quantity equation have simply a higher dignity, a higher power. As Irving Fisher expressed it in ´The Purchasing Power of Money´, p. 74: "- - - These are the only influences which can *directly* affect the level of prices. Any other influences on prices must act through this five. - - -" For instance to equalize the interest that most probably has an insignificant influence on *M, V* and *T* (at least for periods of 1 - 7 years) with these variables, is nonsense. In the same way it is inferior science to replace these exact equations with general functions.

We must distinguish between identities of the type $M \equiv M$ and identities of the type $MV / T \equiv P$, where *P* is a quantity living its own life and having a great explanation value. On the other hand it is true that everything contradictory to an identity must be rejected. This may be a good thing to remember, because there are and have been economists sometimes denying the obvious. [16] All economic theory conflicting with the quantity equation and its laws must be rejected. Most economists are aware of this and in order to get their theories to be in accord and coincide with the quantity equation and the reality, they usually maintain that velocity is very elastic and that its development cannot be anticipated. As we have seen, e.g. in the chapter on velocity, this is completely wrong. But of course it is important that we clear out all identities when we state causes and causal factors. The price in the exchange equation is always only an identity in causal connections and must therefore always be cleared away. The causal factor is *MV/T,* not *P* .

If we confine ourselves to the identity *M* x $V \equiv MV$ (and the equation *M* x *V* = *MV*), there are the same primary circumstances as in the equation $ma = K$. *M* and *V* or *M* and *MV* can be changed independent of each other, so can also mass and acceleration or mass and force. But the third quantity in the identity or the equation, either it is *MV* or *V* or force or acceleration, can only be changed in time to the two other quantities. In spite of that also these identities and equations express and measure very important concepts that all are living their own life. What the quantity equation concerns, the volume *M* measures the central bank's supply of banknotes and coins and the cash holders' preferences for that money on one side and the check and giro money on the other, while the quantities of *V* and *MV* measure the cash holders' dispositions for expenses on the basis of the volume of *M*.

The variables of the quantity equation can also be replaced by the concepts and the terms supply and demand, which usually are denoted D and S after the English words. S stands for the term in its meaning ´offer´. The symbol $_r$ stands for ´realized´. Thus we get the identities and the equations:

$$\frac{D_r}{S_r} \equiv P_r \qquad \frac{D_r}{S_r} = P_r$$

where $D_r \equiv M_r V_r$ and $S_r \equiv T_r$ and $_r$ stands for realized. Or:

$$\frac{D_r}{S_r} \equiv \frac{M_r V_r}{T_r} \equiv P_r$$

Instead of speaking of the exchange equation or the quantity equation, we can thus speak of the demand and supply equation. We can also express it so that the quantity equation or the demand and supply equation is the very core, the very heart, of the science of economy. Nearly everything else builds upon it.

It is not so that there are two different systems, one for common price theory on the micro level, where supply and demand determine the relative price, and one for the money theory on the macro level, where the volume of money replaces demand and determines the absolute price. There is only one system, where as a rule the monetary demand and the physical supply of goods and services, determine both relative and absolute prices. In the system, provided a correct statement, the money volume times the velocity is the same as the demand. D_r and $M_r V_r$ can be freely changed in the same way as we can freely change S_r for T_r. The system is hence monistic and not dualistic. The change and the price determination occurs always according to the law of demand and supply, not in any other way.[17].

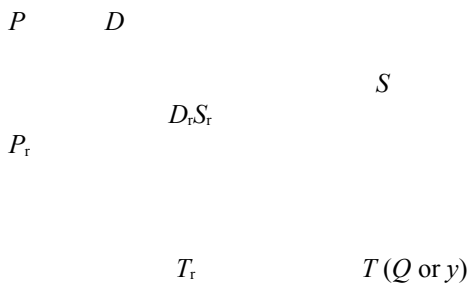
But what about the payment in kind (barter), when a commodity or a service is exchanged against another commodity or service. Yes, in this case the monetary demand is replaced by a physical commodity or service. The price is established as a quotient between the exchanged quantities. But this does not mean that we get two price systems. The prices in the barter area (payments in kind) adapt themselves soon and continuously to the money prices that are set in the market. The price process in the barter sector is also a zero sum game that cannot influence the absolute price level., at least not in a correctly made computation. A price change of a commodity or a service is then balanced by a relatively equal change in the other direction of other weighted commodity and service prices.

The term D has in most cases up to now not been used in the economic science to denote a real demand but the supply seen from the demand side. They have denoted how much (a quantity) the seller is offering of a certain commodity or a service and how much (a quantity) the buyer is prepared to take over, to buy of this offered (supplied) commodity or service. This has the pedagogical merit that both the seller's and the buyer's valuing of the commodity or service can be expressed in the same diagram and be put in direct relation to the price in Cournot's well-known supply and demand curves. Neither it is directly wrong, because as the price is denoted. the monetary demand appears indirectly when S_r is multiplied by the price.

But it is worth stressing that for an exchange to be made in the absolute major number of cases, money must be handed over, and to make it possible to express a real price, the demand in money must be denoted. It is not enough to denote how many units the buyer has taken over of the offered commodity or service. It must be denoted how many units of money the buyer has paid. If this is not done, a formula or diagram does not express any realized demand. It has then no counterpart in the material world, it is only a phantom. [18].

It is strange that economists can speak of a market or exchange economy without talking about one part of the equation that which is the demand. The concept of demand they have used the last decades, is very indistinct and curtailed (cut of). It does not describe reality in a satisfactory way. This is really even more remarkable, because for the classical economists there is no dividing in two of the economics. For Mill as well as for Marshall, demand was the same as the moneyed demand. And so it still was for Knut Wicksell and Joseph Schumpeter. It was so even for J.M. Keynes in some cases. [19]. But unfortunately these economists also embraced the mad Say's law that made their theories contradictory. As economists in later days took over Say's law, it seemed plausible for them to interpret Walras's theory system so that the price determination occured in the so called real sector. [18]. In real life transactions within the real sector itself play a very modest part in this process, that mainly occurs between the real and monetary sectors ruled by money even if it buys goods and services.

Let us start from a common supply and demand diagram as we have learned it in the micro theory:



The diagram denotes that supply and demand are balanced (are in equilibrium) at the point D_rS_r. The offered volume S is balanced (is equilized) with the demanded volume D at the point D_rS_r that is identical with the point T_rP_r. At the prevailing demand and supply conditions there is equilibrium at no other point on the curves D and S than just in the point T_rP_r. At no other point an exchange can be realized. [20]. Other values on the curves are only creations of the mind. They have no other contact with reality than the knowledge of D_r, S_r and P_r that is M_r, V_r, T_r and P_r in earlier realized transactions. What then characterizes this point? Yes, if we have put in the price P expressed in money in the schedule, we have also put in the demand expressed in money units, openly or by implication. Suppose that the exchanged, realized quantity commodities or services is 1.000 kg. and that the realized price is 6 crowns, then we know that the realized demand was 6.000 crowns.

$$\frac{M_rV_r}{T_r} = P_r \qquad \frac{M_rV_r}{1.000} = 6 \qquad M_rV_r = 6.000$$

If the realized supply was 1.008 units and the realized price was 6,02 crowns, we know that the realized demand was 6.068,16 crowns. If the demand instead is 6.000 crowns in the latter case, equilibrium is not reached at the price 6,02 crowns. Only when we express demand in the money really used, it can concern a real, realized demand. To visualize this we can also use a diagram, where the realized demand is set off along the ordinate (Auspitz-Lieben curve, even if such a diagram is not useful in the micro theory).

The usual supply and demand curves measures, the number of units goods and services the seller is prepared to sell at different prices and the number of units the buyer is prepared to buy at different prices. We can say that they measure the supply from the sellers and the supply from the buyers outlook. Some economists argue as if the supply and demand curves in their entirety would give expression for independent factors forming the prices. But all points of these curves are derived from earlier statistics and assumptions in the micro theory about the parties' preferences in different situations, all points besides the intersection point that can be a realized, real volume, a real supply.

We can compare with an exchange in the barter economy. Suppose that we have a buyer of butter, who is also a seller of bread and another person that plays the opposite role. The parties agree to change 1.000 kg. of bread against 500 kg. of butter. The butter price will thus be 2 kg. of bread and the bread price ½ kg. of butter, which we also suppose agrees with the price relations of the market. If we say that the demand and the supply are in equilibrium (are equal) at 500 kg. of butter, sold and bought, that says nothing about the price and nothing about a real demand. In order to arrive at that, we have to denote *what is given instead of the realized supply.* We must denote that against the realized supply of 500 kg. of butter stands a realized demand of 1.000 kg. of bread. First then we get the price 2 kg. of bread or ½ kg. of butter.

As I said earlier the quantity equation or the supply and demand equation represents the kernel of economics, the political economy. Nearly everything else builds on it. Cournot's, Marshall's and Walras's demand and supply curves and functions and the theories about elasticities, marginal benefit and types of price determination all build upon analogies with a starting-point in the quantity equation. On the base of statistics of realized exchanges and with knowledge about the parties' lines of actions in different situations we can draw these curves and calculate the values in these functions. But it is only the intersections of the curves that can represent realized entities. For the rest the values of the curves are taken from realized entities, they are only constructions of the mind. They all build on the fact that the price has been fixed earlier as a quotient between the exchanged quantities. They all represent special cases of the theory of supply and demand that builds on the identity $D_r / S_r \equiv P_r$ and the equation $D_r / S_r = P_r$. [20].

The quantity identity or the supply and demand identity $D_r / S_r \equiv M_rV_r / T_r \equiv P_r$ has universal validity. It says for instance that the price never can be a causal factor in any other way than M_rV_r / T_t is it, as earlier volumes of M_rV_r / T_r can influence the M_rV_r / T_r of the moment or of the period. It also says that only M_rV_r, the expenses of the cash holders, can influence the price, at the same time as they make the income of other cash-holders, but these latter can never directly influence the price except via their expenses. Thus it is all the time M_rV_r, expenses of the cash-holders, the money volume M and the velocity V that are the strategic factors. First when we accept this, all pieces begin to fall into place, first then the dualism, the contradictions and the lack of agreement with reality will disappear.

The importance of M, V and T is also strengthened by the fact that they mostly are accumulated entities. The changes in the factors are small as a rule compared with their accumulated values. This is especially true for V and T that as a rule

are changed by only a few percentage points during a year, if we regard the whole society. New behind lying factors have small effects compared with them. Both *T* and *V* display great stability in reality in statistical numbers, they are developed very slowly and furthermore eliminate the effects of each other to a large extent. That is so for the post-war time in USA and Europe, where *T* and *V* have regularly increased by a few percentage points, resulting in a modest money volume increase only being necessary for counteracting a price increase. The changes in *V* and *T* have mostly been so small and regular that they have seldom been a problem for the national economy and the economic theory. The problems have nearly always been on the *M*-side, because *M* has often been exposed to great and disputed changes. But even for *M* the accumulated value plays nearly always the most important role, as the central bank in stable societies seldom makes any great changes in *M*, even if it has all the opportunities to do that.

The most important factors behind *M*, *V* and *T* during period 2 are of course *M*, *V* and *T* during period 1. Is the money volume *M* 20 billion (milliard) crowns during period 1, this is wholly decisive compared with a change of 20 or 200 million cr. in period 2. Is velocity *V* 90 in period 1, then this is wholly decisive compared with the fact that the cash holders autonomously increased it to 91 in period 2. Is the offered and sold volume goods and services *T* 1.800 billion units during period 1, then this is wholly decisive compared with the cash holders increasing their purchases with 18 billion units during period 2.

Additional *M* does not affect *P* directly, as this presupposes a transaction, but at the next payment *P* is affected by the realized purchasing power *MV*. In the same way *P* is affected by the supplied volume of goods and services, when a purchase is realized. This is a process that always occurs in the same direction (consequently always from that which affects *MV* and *T* to *P),* because *P* is always only a quotient between the co-operating factors *M, V* and *T*. Is the relation between *M,V* and *T* the same as in the earlier transaction or in the earlier period's transactions, the price will not be affected. Has the relations been changed, the price will be influenced in the same direction and to the same extent as the factors have changed. If the changes of *MV* and *T* go in the same direction, some of the effects on *P* will be eliminated. If the changes of *M* and *V* go in different directions, some of the effects on *P* will also be eliminated. Irving Fisher was wrong, when he said that *M, V* and *T* do cause *P*. They can never do that, because the relation is an identity. But what causes a change in the realized *M, V* and *T* also simultaneously causes a change in *P*.

Precise the same is true for the effects of the factors in a period as in a single moment with the difference that the prices of the preceding period can also be causal factors to changes in the present period But this does not take away the role of *P* as an absolutely passive factor. It is only the same as saying that *MV/ T* during an earlier period affect *M, V,* and *T* during a later period or the present period. Or that *MV* / *T* earlier during the period affect *M, V* and *T* later during the period. The quantity equation and the theories that are built on it are thus equally valid for a longer or shorter period as much as for a single moment. In reality changes occur in all the three factors in a period. The quantity equation measures the values at every moment and in every period and it measures the changes between different periods. The quantity equation has universal validity, it can be used just as well during equilibrium conditions for shorter or longer time as during periods of light or grave instability of the type inflation or deflation, boom or depression. It can be used as well for clock time periods as for analytical periods, where all variables take out each other.

In the national economy the so called Say's law has always had a great influence, at least until Don Patinkin's work some years ago about its lack of validity. It maintains as we have said earlier that the production always creates its own demand. It ought to have fallen in discredit during the great depression in the thirties that emphatically showed that this was not true. Say's law was perhaps originally a polemic sharpening of the criticism from the classicists of the mercantilism and is an example of how recent successors have not understood to place a theory in its right context.

Say's law appears in the conception that demand is determined by the distribution of the earlier incomes on consumption and saving. If Ludvig Svensson's curtain factory can produce and sell more curtains, more people can be employed and the total demand can be increased in the next stage. They think that production thus creates sales and incomes. But in reality demand is determined nearly independently of earlier production. SEK 1.000 to Ludvig Svensson from a customer is quite certainly a part of total demand. But SEK 1.000 that a bank or the central bank has lent out is just as much a part of total demand. And this potential purchasing power continues to be demand, as long as the central bank does not withdraw these SEK 1.000 and thus decreases the supply of money to the society. In link after link the market continues to use this purchasing power. The connection that economists since the classicists presupposed between production and supply on one side and the purchasing power on the other does not exist. They are determined nearly independently of each other in the modern money economy.

It is also of no importance, if the money is saved in the banking system. Already the next day it can come back to the cash holders in the next stage. There is no delimited money that so to say ends up outside the payment system. That is to be regarded as a communicating vessel. The saving can increase to very high amounts. If the banks' lending increases just

as much as the long term savings, the cash holders access to money will not have changed by that. In spite of the increased saving the potential purchasing power is the same as before. If the lending is not increased to the same level, the cash holders access to banknotes and money will be lower. But then it is that and not the volume of the saving or its increase that limits the purchasing power. And if the increased saving has ocurred in check and giro money and if the amount in question as normally has been lent out, the payment means and the potential purchasing power is increased by the enlargement of the check and giro means. *This type of savings clearly acts expansive!*.

It is completely indifferent, if the income of the public and the companies derive from their earlier income or something else. The only thing that matters is that the contribution consists of common money that can be used for payments. Or constitutes the small part of the society's resources that can be used for barter and the volume of which seldom changes,, because it is determined by strongly structural factors. If we disregard these payments in kind, demand, potential or realized = money. If it comes directly from the central bank or via the bank system, it is exactly equal and useful for the cash holders and it cannot be separated from the money that constituted their earlier income.

The economists ought to have realized the absurdity in considering saving as an obstacle to demand, as saving in check and giro accounts directly creates demand and saving on long-term accounts, it is true, does not increase the volume of money but makes it easier for those who have expenses. Saving on long-term accounts results in enabling saving on check and giro accounts to be held at a lower level. *The saving is expansive!*

It ought to have been obvious for the economists that demand in a society is completely depending on the money volume and that (disregarding a small amount of barter payments) it is only the money volume that creates the demand. How can anyone equalize a situation where the central bank inserted only as much banknotes (and by that money) as corresponded to the increase in the production and in the volume goods and services turned over with a situation when the central bank injected a further 10 - 20 % in banknotes? The demand situation is totally different in the two cases. Both the means that the central bank added and those being earlier outside the bank system have exactly the same form and exactly the same payment capacity. This is so also for the money that the bank system has eventually supplied by decreasing its each reserves. They all create capacity to pay and purchase power and when this is effected by a purchase, .i.e. the demand is realized, this is done in exactly the same way, independently of from where the money came from. The demand in the example above has increased much, in spite of the increase of the volume goods and services and in real income maybe being non-existing or very small.

Basic for the difference between the quantity theory and other theories is the view of the role of money. Those who maintain other theories have not understood the difference between money liquidity on one side and common liquidity and solidity on the other. The opponents of the quantity theory do not see the difference, because they have not understood the bottleneck character of money in the economy as a whole. The supply of money is a giant problem on medium term (1 - 7 years sight) that has earlier caused perpetual crises and the problem can be solved only by an appropriate volume of money, just as much as is required for price stability. (21). For a quantity theorist the value preserving through common liquidity and solidity is of course also important for the long-term development, but this is not a great problem in most cases and can be solved by investing in a long file of values from money and claims to real capital.

If half of the society's volume of money would burn up or be otherwise destroyed for some reason, the income and the purchasing power for the public and the companies would be reduced to nearly half, in spite of the society's production and supply of real values not momentary being changed. It would cause a long and painful process of stock increase, unemployment and decrease in production and consumption, until a new equilibrium would be possible to reach at a lower level. It was such a crisis that FRB and other central banks caused in the early thirties, when they did not increase the banknote volume in spite of a very big production increase during the latter part of the twenties and in spite of a strongly decreased velocity caused by this discrepancy, often due to conscious hoarding of money that was accentuated by the distrust of the banking system that also increased its cash reserves (22). A sufficient volume of money is an indispensable precondition for the expenditure and payment streams in the society being maintained A decrease of the money volume must however be separated from the so called currency reforms that do not mean a quantitative change but only a change of name.

Hyperinflations are also very expressive examples of the role of banknotes. On these occasions earlier income and money of different types play a very small role compared with the new -issued banknotes. Though cash-holders try to get rid of the banknotes as fast as they get them, these play all the time a much lesser role of the demand compared with the new banknotes that the central bank issues. In the last stage there are only the banknotes left after check and giro money, bank saving, bank loans, bonds and other claims have been reduced to nill, i.e. disappeared. And the notes are left only so long as someone will accept them. (23).

The co-variance between the development of the banknote volume and the price level is so strong in all statistical material that it shows the totally dominating role of the banknote volume for the price

development in the medium-term period (1 - 7 years). As a rule the changes in velocity and production are so small that the co-variance is very clear. And even when velocity and production are characterized by somewhat greater changes or there are changes in the composition of the money volume or in the financial or monetary transactions part of the total transaction volume, these cannot as a rule more than modify the effects of changes in the monetary base.

In Appendix 4 I have made an study of the values of the different variables in Sweden during the period 1945 - 1959. The statistical material is of course too meager and uncertain for making safe conclusions from it only. It is mainly meant to supply a system of concepts that can be used at similar future studies. But I think it gives a rather good picture of the relative values of the different variables. Also Irving Fisher made in 'The Purchasing Power of Money', p. 298 - 304, an attempt to measure and explain statistic values in USA 1896 - 1912 on the basis of the quantity equation.(24).

The economists must realize that demand for and supply of commodities and services are by nature quite different and of different origin. (25). Demand depends on the central bank's supply of banknotes, the steps of the cash holders and the institutional rules and circumstances prevailing in the payment system. If the central bank supplies too much banknotes, this leads soon to increased purchasing power and a too high demand in the society. Inflation follows. If the central bank supplies an insufficient amount of banknotes, the result will instead be deflation and a depressive development.

When economists such as Walras in the latter part of the 19th century set up their theoretical models and formula systems, where the prices were determined through exchanges of different products and services, there was still an important barter trade. But to maintain today that the prices result as a quotient between demand and supply expressed in 'real' terms is as said not only out of touch with realities, but also theoretically wrong. It is not unreasonable to think that 100 % and not 90 - 99 % of all payments would be transactions with money. How would the economists then explain the nature of demand?

For the concepts demand and supply we can do the following summing up:

For all transactions in the society's economy that are really realized, the following is valid:

The realized price is the quotient between the realized demand (or which is the same thing in money transactions between the used volume of money times its velocity) and the realized supply (offer) of commodities and services.

Consecutive propositions:

The realized price can only be affected through by the realized demand (or in money transactions the money volume times its velocity) and / or the realized supply of commodities and services being changed.

Otherwise demand, supply and prices are only imagined entities without equivalence in the material world, entities that, it is true, can be visual and illustrate connections but that say nothing directly about causal connections. This is so for most of the demand and supply curves and functions in the micro theory. They rest wholly on assumptions of how different parties have acted at purchases realized earlier.

To the extent that the price has a role as a causal factor, it is as earlier volumes of MV / T.

To the extent expectations play a role on the price, they must influence one of the factors M, V and T.

To the extent the income influences or is influenced, it is by affecting the expenses MV.

Wages and salaries are also only prices. To the extent changes in these are influenced and influence, it is by a larger or lesser part of the total demand MV being directed against the labour force. This presupposes that demand for something else is decreased or increased. Changes in wages and salaries influence of course also employment in the short-term and the production and supply of commodities and services in the long-term.

The interest is also only a price that expresses the difference between the value of money and claims at different times. To the extent that it has any influence on the price level, it would principally be by increasing or decreasing T by stock changes in the short run and production changes in the long run.

Notes:

1. Knut Wicksell ´Value, Capital and Rent´, 83: "Let us first of all return to the exchange of <u>two</u> commodities"

- - -

"In other words, whenever both commodities are exchanged in the proportion of 1:p, which in one way or another has been fixed in advance, then from every single possessor A, of the commodity (A) comes a certain *supply* x_r of this commodity and with it also a certain *demand* y_r for the commodity (B), where x_r and y_r, each by itself, are functions of p, which must always stand to each other in the simple relation

$$\frac{y_r}{x_r} = p \quad \text{or} \quad y_r = px_r$$

In the same way, from every possessor B_q of the commodity (B) comes a certain *supply* y^1_q of the commodity (B) and a certain *demand* x^1_q for the commodity (A)."

2. Kenneth J. Arrow in ´The Crisis in Economic Theory´, 145: "- - - (I ignore the small role

of barter in our economy, though it may be increasing because it eases tax evasion). - - -"

3. Compare Knut Wicksell ´Interest and Prices´, 23: "- - - The exchange of commodities in itself, and the conditions of production and consumption on which it depends, affect only exchange values or *relative* prices: they can exert *no direct influence whatever on the absolute level of money prices*."

Ib. 24: "- - - money prices, as opposed to relative prices, can never be governed by the conditions of the commodity market itself (or of the production of goods); it is rather in the relations of this market to the *money market*, in the widest sense of the term, that it is necessary to search for the causes that regulate money prices."

4. J.B. Say ´Traité d´Économie Politique´, 150: "Il est bon de remarquer qu´un produit terminé offre, des cet instant, un débouché à d´autres produits pour tout le montant de sa valeur. En effet, lorsque le dernier producteur a terminé un produit, son plus grand désir est de le vendre, pour que la valeur de ce produit ne chôme pas entre ses mains. Mais il n´est pas moins expressé de se défaire de l´argent que lui procure sa vente, pour que la valeur de l´argent ne chôme pas non plus. Or, on ne peut se défaire de son argent qu´en demandant à acheter un produit quelconque. On voit donc que le fait seul de la formation d´un produit ouvre, dès l´instant même, un débouché à d´autres produits."

5. Roy Harrod ´Money´ (RH), 160: "I would suggest that the essence of the quantity theory, whether in a rigid or modified form, is that the value of *P* is the resultant of changes in *M* , along with exogenous or induced changes in *V* and *T*."

Joseph Schumpeter ´Das Sozialprodukt und die Rechenpfennige´ (JS), 676: "Die Richtigkeit unserer Gleichung bedarf nach früher Gesagtem keines weiteren Wortes. Sie stellt nur eine ganz unleugbare - deshalb freilich noch lange nicht wertlose oder schon in allen ihren Konsequensen übersehbare - Selbstverständlichkeit dar. Diese Selbstverständlichkeit werde nie geleugnet und kann nie geleugnet werden."

6. Daniel Bell ´The Crisis in Economic Theory´, 50: "- - -And, as Eric Roll has written: ´If . . . we regard the economic system as an enormous conglomeration of interdependant markets, the central problem of economic enquiry becomes the explanation of the exchanging process, or more particularly, the explanation of formation of price´ - -"

Ib., 54: "- - - Thus, for Marshall - as distinct from Smith (or Marx) - the scope of economic analysis became coterminous with price theory."

7. Knut Wicksell ´Föreläsningar´, 167: "Produktionskostnadsteorin har därmed sitt fulla berättigande såsom utgörande ett element av kvantitetsteorin." (The production cost theory has accordingly its full justification as an element of the quantity theory.")

Knut Wicksell ´Geldzins und Güterpreise ´, 16, (´Interest and Prices´, 18): "- - - Walras´ Darstellung z.B. enthält im Grunde nur eine mathematische Einkleidung der unten zu besprechenden Quantitätstheorie, ohne wesentliche Entwickelung oder Weiterführung dieser Theorie selbst."

Erling Petersen, ´Macro-Dynamic Aspects of the Equation of Exchange (EP), 11: "- - -The theory of the price level will therefore not be a pure monetary theory in the most restricted sense of the term. It will also be a theory of production and output and thereby of employment."

Ludwig von Mises ´The Theory of Money and Credit´, 116: "- - - These forms of the Quantity Theory are in fact nothing but the application of the Law of Supply and Demand to the problem of the value of money. - - -"

8. Compare Irving Fisher ´The Purchasing Power of Money´ (IF1), 172: "- - - For the world as a whole the price level is not even a secondary cause, but solely an effect - of the world´s money, deposits, velocities, and trade."

Kenneth E. Boulding ´Economic Analysis´, I, 16: "- - - Where one of the exchangeables is money the ratio of exchange is usually expressed as a *price*, which is the ratio of the amount of money to the amount of the other exchangeable. - - -"

IF1, 3: "In general, a price of any species of wealth is merely the ratio of two physical quantities, in whatever way each may originally be measured."

R.G. Hawtrey ´Currency and Credit´ (RGH), 6: "- - - So long as value means value in exchange, the value of anything, whether it be a commodity or the monetary unit of account, must always be a *proportion* - a value in terms of something else. Just as every commodity has a value in terms of the unit, so the unit has a value in terms of each commodity. It may be the equivalent, say, of a shirt, or a lamp." ("pair of trousers, or of a ton of coal", the edition of 1930)..

JS, 679: "- - - Die Preise sind nichts anderes als in Geld ausgedrückte Tauschverhältnisse. - - -"

Leon Walras ´Elements of Pure Economics´ (översatt av Jaffe), 87: "*Prices, or ratios of values in exchange, are equal to the inverse ratios of the quantities exchanged*."

9. Sune Carlsson ´Affärsföretagets statistik ´, 227: "Man måste givetvis alltid hålla i minnet att ´allmänna prisnivån´ är en konstruktion, en begreppsbildning, som kan vara värdefull endast så länge vi har fullt klart för oss dess artificiella natur och hur den konstruerats." (We must of course always remember that ´the general price level´ is a construction, a concept formation, which can be valuable only as long as we keep its artificial character and the way it has been constructed fully in mind.)

10. Compare Melville Jack Ulmer ´The Economic Theory of Cost of Living Index Numbers´, 42: "As previously noted, the assumption of fixed tastes for a homogeneous group between situations compared is a necessary one for all cost of living comparisons. In constructing indices from family budget data, however, an additional assumption is necessary. This is the postulate that the families included in the budget statistics for any given point in time share common tastes despite substantial differences in income levels. - - -"

Ib. 67: "- - - This is true of those changes having to do with alterations in the variety and quality of goods offered for sale over time - probably the most important of all variations in environment from the standpoint of index number construction."

- - -

"There is, to be sure, no direct way of measuring the utility provided by any commodity; even when it is possible to express durability in precise quantitative terms, comfort, appearance and other less tangible characteristics most often play too crucial a rôle to be ignored. Hence policy must be based - insofar as possible - on objective consumer behaviour. - - -"

11. EP, 10: "The problem of the price level is therefore in this sense not a pure *quantitative* problem. It has certain *qualitative* aspects."

12. Arthur Marget ´The Theory of Prices´, I (AMI), 54: "Once the charge with respect to hidden assumptions of constancy in the family ´quantity equations´ is reduced to an allegation of incompleteness in the number of variables necessary to make the expressions involved true equations, it becomes clear that what is involved is not the validity of ´quantity equations´ as such, but merely the validity of certain expressions which, though called ´equations ´, are not true equations because their two members are not symmetrical. One has, however, merely to put the problem in these terms to observe that the missing symmetry can be provided, and the expressions involved converted into true equations. - - -"

EP, 12: "It may seem unnessary to stress these very single points, but as a matter of fact a great deal of confusion has arisen in the discussion of different equations of exchange just because the proper limitations of the equations have not been kept in mind. Most of the writers using equations of exchange have, in order to get their treatment to correspond closer to actual life, for the purpose of approximation disregarded the differences between their theoretical correctly defined terms and commonly used terms e.g. ´money in circulation´ or commodities exchanged´. Several critics of the equation of exchange have, however, tried to demonstrate the theoretical invalidity of the equations in this inexact form. The whole question is properly a question of the degree of approximation, and has no real theoretical interest."

13. IF, 16: "The equation of exchange is simply the sum of the equations involved in all individual exchanges in a year - - -."

Compare Arthur Marget ´The Theory of Prices´, II (AMII), 286, n. 136: "- - - that while there is unquestionably a sense in which we are completely justified in adding the realized demand for individual commodities in order to obtain a figure for ´aggregate demand´, it would be extremely misleading to interprete this procedure as meaning that the aggregate realized demand is what it is as a *result* of the magnitude of individual realized demands - - -."

14. RHG, 155: I have referred to the necessary truth embodied in the equation as tautological. I do so with a slight misgiving, being profoundly dissatisfied with the existing state of deducted logic. The question is how a proposition that is strictly tautological can give rise to and be indispensable for fruitful lines of thought. Thus, if we are in a position to know what changes have occured in the values of M, P and T, and there has been a net change in PT/M, we can infer that a countervailing change must have taken place in V. This seems to be a constructive proposition, and may lead on to various interesting lines of inquiry. Why has there been a change in V? A tautology of this type, if what we have here should indeed be called a tautology, which leads to fruitful constructive knowledge, has to be distinguished from an infinity of other tautologies which serve no such purpose. Have our deductive logicians been able to establish what are the special qualities of some tautologies that render them capable of leading on to constructive knowledge, while others remain perfectly barren?"

15. IF1, 157: "- - - Truisms´ should never be neglected. The greatest generalizations of physical science, such as that forces are proportional to mass and acceleration, are truisms, but, when duly supplemented by specific data, these truisms are the most fruitful sources of useful mechanical knowledge. To throw away contemptuously the equation of exchange because it is so obviously true is to neglect the chance to formulate for economic science some of the most important and exact laws of which it is capable."

See also IF1, 296 - 297.

Tor Nørretranders `Världen växer´, 140: "Naturligt urval var nyckelordet när Charles Darwin på 1800-talet lade grunden till den moderna biologin med sin teori om *evolution*, biologisk utveckling. Idén var enkel och självklar, på gränsen till vad filosoferna med vämjelse kallar en *tautologi*, ett påstående, som inte säger någonting därför att det bara säger samma sak två gånger (till exempel ´Alla ungkarlar är ogifta ´). Darwins nästan tautologiska påstående var att de mest livsdugliga överlever.

Tautologin är snubblande nära eftersom livsduglighet definieras som överlevnadsförmåga. Detta är dock mindre viktigt: det avgörande är att Darwin pekade på en enkel modell för hur form och

funktion kunde utvecklas utan någon överordnad plan." (Natural selection was the key word, when Charles Darwin in the 19th century laid the basis to the modern biology with his theory of *evolution*, biological development. The idea was simple and self-evident, on the border to what the philosophers with disgust call a *tautology,* a statement that does not say anything, because it says the same thing twice (e.g. all bachelors are unmarried). The nearly tautological statement was that the most capable of survival survive.)

(The tautology is stumbling near, because life capability has been defined as capability to survive. This is, however, less important: the decisive is that Darwin pointed out a simple model for how form and function could be developed without any superior plan.)

16. Arne Nœss ´Logikk og metodelœre´, 31: "Det som av en filosof er blitt erklœrt for selvinnlysende, er ofte blit tvilt på eller forkastet av andre.." (What by one philosopher has been declared as self-evident, is often questioned or rejected by others.).

Ib.124: "- - - Men en av de mest konsekvensrike - og kanskje mest rystende - oppdagelser menneskene har gjort, er at de ikke kan komme till enighet om hva som er selvinnlysende." (But one of the most consequential - or perhaps most shakening discoveries man has made is that he cannot come to an agreement of what is self-evident.)

17. Compare Don Patinkin ´Money, Interest and Prices´,181: "In particular, as we have seen, it is fatal to succumb to the temptation to say that relative prices are determined in the commodity markets and abslute prices in the money market. This does not mean that value theory cannot be distinguished from monetary theory. Obviously there is a distinction; but it is based on a dichotomization of *effects*, not on a dichotomization of *markets*. More specifically, both monetary theory and value theory consider <u>all</u> markets of the economy simultaneously. - - -"

AMI, 178: "- - -The relation, again" (between the ´Theory of Money and Prices´ and the ´Theory of Value´, my remark) "is not that of two mutually exclusive sets of analytical devices, but rather of successive accretions to a single body of doctrine, in the way in which flesh and clothing are acretions to the underlying skeleton. - - -"

18. AMII, 591: "- - - For, as in the case of the demand side of the problem, if we are to describe the particular market supply curve which is involved in the determination of a given realized price, it is not sufficient merely to establish the *general form* of the function $q = \sqrt{2}(p)$. It is necessary, as in the case of the demand side, to establish, among other things, the *position* of the particular supply schedule, of the general form $q = \sqrt{2}(p)$, in the system of co-ordinates of which the price axis represents *absolute* money prices. Again it should be pointed out that there is nothing in the ´general´ Theory of Value, as ordinarily expounded, which provides an answer to this question; and again it should be pointed out that, in order to provide such an answer, we need a special ´money equation´, such as is represented by the Fisherine equation $MV = PT$."

IF1, 175: "The legitimacy of separating the study of price levels from that of prices will be clearly recognized, when it is seen that individual prices cannot be fully determined by supply and demand, money cost of production, etc., without surreptitiously introducing the price level itself. We can scarcely overemphasize the fact that the ´supply and demand´ or the ´cost of production´ of goods in terms of money do not and cannot completely determine prices. Each phrase, fully expressed, already implies *money*. There is always hidden somewhere the assumption of a general price level. - - -"

AMII, 328, not 27: "It is indeed, something of a commentary on the extent to which the Walrasian system has been misrepresented that we should have had to wait until comparatively recent years for a demonstration that the Walrasian system is in fact a ´system of money- and commodityflows´ and was *not* a ´system´ based upon ´barter assumptions´ - - -."

See also Gustav Cassel ´Theoretische Sozialökonomie´, 343.

19. JS, 668: "Als Nachfrage stehen diesem Angebot die hundert Geldstücke - nennen wir sie hundert Kronen - gegenüber, für die keine andere Verwendungsmöglichkeit geben soll, als Ankauf jener Ware."

Ib. 688: "- - -das Preisniveau steigt infolge des Auftretens neuer Nachfrage in Geld. - - -"

Ib. 694: "- - - In beiden Fällen wird eine neue Nachfrage in Geld geschaffen, die zur bisherigen Nachfrage hinzutritt und so lange die Preise emportreiben muss, bis die neue Geldmenge absorbiert ist. - - -"

John Maynard Keynes ´The General Theory of Employment, Interest and Money´, 304: "Let us write MV = D where M is the quantity of money, V its income-velocity (this definition differing in the minor respects indicated above from the usual definition) and D the effective demand. - - -"

20. Henry Schultz ´The Theory and Measurement of Demand´, 61: "The statistical data by themselves give only one observation - a point - on the unknown demand curve or surface for each time interval. - - -"

AMII, 232: " - - -but as long as use is made of market demand and supply schedules in the sense here indicated, it follows, from the very nature of these schedules, that any point other than the point of intersection of these schedules will be a point at which no actual transactions involving *realized* prices can take place."

21. Irving Fisher ´Booms and Depressions ´(IF2), 219: "- - -Furthermore, if action were prompt

enough there would be no hoarding, as hoarding is the result of deflation - - -."

22. IF2, 107: "- - - That is, the real rate had been allowed to get so far away from the money rate - so light on the way up and so heavy on the way down - that the borrower were insensitive to the nominal rates."

- - -

"- - -From 1929 to March 1932, by reason of the lowering price level, the real dollar, measured by 1929, became $ 1.53 - later (third week of June, 1932) $ 1.62."

23. Chang Kia-Ngau ´The Inflationary Spiral´ CKN), 232: "The prices of all commodities rose without interruption, and no fall in prices occured. Therefore, everybody was inclined to get rid of his money and buy goods in anticipation of further price rises."

See also not 22 in chapt. 5.

24. IF1, 276: "- - -Professor Kemmerer - - - For each year, beginning with 1879 (the year of resumption of the gold standard), and ending with 1908, he has estimated the total monetary and check circulation (what we have called MV and M^lV^l) and the volume of trade (T), and from these has calculated what the price level ought to be as determined by these factors, i.e. $MV + M^lV^l / T$. This calculated magnitude, which Professor Kemmerer calls ´the relative circulation of money´, he then compares with the actual figures for price levels as given in statistics of index numbers."

- - -

"Most other writers who have attempted to test the quantity theory statistically seem to have been animated by a desire not to give it a fair test, but to disprove it. They have carefully avoided taking account of any factors except money and prices. It is not to be wondered at that they find little statistical correlation between these two factors."

25 Compare Johan Myhrman ´Penningteori och penningpolitik´, 307, in which he writes about Friedman and Schwartz (1963) treatment of the monetary history of the USA and Cagan´s (1965) exposition of the supply of money in USA. These works found the supply of money being determined independent of the demand.

CHAPTER 8.
THE SUPPLY OF AND THE DEMAND FOR MONEY

For the economists the concepts supply of and demand for money imply a lot of things. Often the concepts are used without any specification, which may depend on the users not having made the diffuse and diversified character of the concepts clear for themselves. Sometimes they mean supply of and demand for borrowed money in the bank system, sometimes they mean the central bank's supply of banknotes (sometimes completed with check and giro means) and the demand for these, sometimes represented by the supply of goods and services in the market and sometimes added to these savings, bank loans and claims such as bills and bonds on the supply or demand side.

For Milton Friedman the supply of money is the volume bank notes and coins that the central bank distributes for the national economy and the check and giro money that he considers are created by the cash holders and the banking system, while the demand for money is the claims for these volume of payment means that the society outside the bank system sets with regard to the velocity of the money and other factors. [1]. According to him, higher velocity means lower claims on the volume of money at any time. That Friedman has created a theory system, where as I see it irrelevant factors are included does not lessen the validity or the importance of Friedman's quantity equations.

But other economists have other concepts. . These become of course still more vague, if they include in the concept money not only banknotes, coins, check and giro money but also savings and borrowed means and even bonds and other types of securities. If we look at everything that the economists have put in the concepts supply of and demand for money, we find actors and decision makers with entirely different interests, influences, qualifications and policies, who furthermore change in different situations and also change their roles. In particular the demand concept as the economists use it to-day is so unclear and containing so much that it can be discussed, if it is meaningful to use it at all.

If we furtermore, as some economists do, do not count with that part of the demand, that is represented by the volume of commodities and services, we have not only a dubious concept of demand but also a very truncated one, because the lack of equilibrium between the supply of and demand for money just deals with the lack of equilibrium between the real and the monetary sector. For Friedman, however, the value of supplied commodities and services, with his designation *y,* enters as an important element in the demand for money in the equation $M = yP / V$.

I also think that economists should have been more careful with their use the concepts when considering how precisely they point out the consequences of monopoly and imperfect competition in other connections, especially as we have in this area the most pronounced and most unrestricted monopoly in the market. The economists have seldom or never tried to go to the bottom with what they mean by supply of and demand for money. I think it is necessary, to make it possible to clarify the concepts, to divide the area in its different structural departments, actors and components.

a. Division of the Material.

To start with we can try to divide the area into different parts for the most important actors. This is done in the schedule in table 8A. The state belongs, as I earlier have analyzed, both to the bank system part and the national economy outside the banks part, in addition to being responsible for the central bank functions. The state is, however, dealt with separately in the following division, regarding its borrowing in the central bank, because this is of such special and important character. The schedule is not meant to be complete but intends mainly to illustrate the differences between the most important transactions.

Regarding supply of and demand for e.g. bonds, money market instruments and other claims, I have divided the total market into different sections, one for the central bank - the bank system, (outside the central bank), one for the central bank - the national economy outside the bank system (thus that I generally use the word the cash holders for), one for the bank system - the national economy outside the bank system, and one internal for the national economy outside the bank system, inclusive transactions via the bank system. This does not mean of course that I believe that the total market in reality would be divided in this way by clear borders; it is done in order to illustrate the role of money in these different connections.

To the list in table 8A could be added e.g. the bank system's internal transactions of bonds and other claims and the bank system's purchases of goods and services from the national economy outside. Furthermore the barter in the national economy and the transactions in foreign currencies are to be added. We can perhaps imagine further types of transactions. But these 8 types of them represent strategic transactions to that extent that they determine the volume means of payment (1 - 16), savings and loans (17 - 28), and the price level (29 - 32).

b. Transaction Types 1 - 16.

The state's borrowing at the central bank, type 1 - 4 of transactions, is not supply and demand of traditional nature. It is not even a one-sided monetary transaction but only a book-keeping transaction between two parts of the state's dealings. Nevertheless it is one of the most important transactions, when it

concerns the part of money in the society. But here the law of supply and demand that presupposes an exchange between two independent parties is not applicable,

When we deal with the bank system and the remaining national economy and their borrowing in the central bank, type 5 - 12 of transactions, it is at least formally a type of exchange transactions between two parties. The normal case is, the central bank is buying (selling) bonds or money market instruments for banknotes. But if we look closer at the role of the parties, another relationship appears. First of all the central bank has a monopoly on the products banknotes and coins, which is the most unrestricted and complete monopoly in the market. Secondly the main item, the banknotes, cost almost nil to produce. It means that the central bank's cost for buying bonds and other claims lies close to 0. In reality it is therefore a one-sided monetary transaction. It is a form of taxation of the holders of money and coins that, it is true, does not affect only the receiver of the banknotes but the holders as a collective, but it is none the less a form of taxation. A claim condition has arisen without any real equivalent return from the side of the state or the central bank. The banknote volume is the claim of the national economy on the state, but nobody expects the state to pay interest or pay back the amount in anything of real value. (2). Such a process is not guided by supply and demand, just as little as they guide other one-sided processes such as gifts or stealing.

That the banknotes have almost no production costs implies also that the central bank at its own discretion can increase or at least theoretically decrease the volume banknotes and set the prices and the interest rate applicable for the products that are bought for the banknotes. It does not mean of course that the central bank can disregard the competing interest levels and rates valid in the market otherwise but the central bank is not bound by them as other parties are, for whom adequately high interest income or adequately low interest expenses is a requirement for the survival of the enterprise or the business. (3). Because it can freely determine the lending volume, and the cost of the loans often lie near 0, the interest as expense becomes unimportant from the point of view of the central bank. On the other hand the central bank can use the interest as one of its control tools. This is not a business between to any extent equal parties. It is often enough with small revisions in volume and interest rates by the central bank to attain the desired effect. And if the central bank on some occasion is mistaken about the effect of some measure, for instance of the price development, it needs to make only a marginal correction in the one or the other direction to achieve a desired effect.

The central banks have, since the gold standard disappeared, the possibility to determine the volume banknotes and coins on their own terms and they can do and have done that at almost no cost for the state. (4). Some states have sometimes regarded this as a great advantage. A doubling of the volume banknotes and coins outside the central bank means ceteris paribus that the state confiscates half the value of the outstanding banknote and coin volume. And not only that. It also means a taxation or confiscation of half the value of the states bonds and money market instruments, which reduces the state's burden of debt to the half. The more the state borrows via the banknote printing presses, the cheaper it becomes. That the inflation also redistributes a great part of the creditors' claims to the benefit of other debtors than the state, does not make the thing better. (5).

The market outside the central bank cannot affect the volume or the price of banknotes and coins outside the central bank through its dealings with it. The individual can possibly do it at the expense of someone else, but for the market outside the central bank as a whole it is a zero sum game. If we should speak at all of supply and demand in this case, which we should not, we can say that the supply is wholly elastic and the demand is wholly non-elastic. The market must accept what the central bank allots it and this is done at a price for the central bank that is nearly 0. The market can never prevent the central bank from buying (or selling) bonds or money market instruments. What the cash holders can do but nearly never do, is to through changes in the velocity and exceptionally in the volume check- and giro money modify the effects on the price development, which the changes of the central bank in the banknote volume bring about. Often the cash holders strengthen instead the effects of the proceedings of the central bank in the same direction. The quite decisive point in this connection is that the central bank with exclusive right issues the volume banknotes, as it considers to be in line with its policy, it is not a question of supply and demand..

Some economists wish to reduce the importance of the part of the central bank. They say perhaps that the central bank plays a minor role as compared with the government or the finance minister in that it follows directives of the government or silently adapts its measures to the government's policy. (6). But by that they only say that the finance minister also functions as the real manager of the central bank. (7). Others maintain that the freedom of action is limited by considerations of interest policy, currency reserve, demands from the labour market or the state finances, and that the central bank therefore follows certain lines of direction. But this cannot be correct. There are real possibilities at any time to change these lines of direction (and this happens also all the time). That a government for factual or pretended state financial reasons forces the central bank to bring about a too extensive lending, is no proof of the central bank's lack of capacity but an example of the government in its capacity to determine the decisions of the central bank, uses this power in a wrong way and bringing about inflation.

That it is the measures of the central bank that are important, we can also see from the policy becoming ineffective, if the central bank has real rights to refuse to implement the policy and executes these rights.

Most leading economists will agree with the statement that the central bank being able to increase the volume banknotes outside the central bank without restrictions and at very short notice.[8] This has also happened many times in different countries. On the other hand the reverse is not true, because any central bank head or any government trying to decrease the banknote volume on a large scale, will not be long-lived. Its always easier to be a glutton than a hunger artist.

In one domain only the market's demand for banknotes and coins can play an independent role. It is the matter of the distribution between banknotes and coins and different denominations of these. It is obvious that the central bank's choise of denominations and production of different types of banknotes and coins is strongly influenced by the cash-holder's need and choise. Otherwise the result would be that the less used denominations would store up in the vaults of the central bank. But the cash holders or the bank system have no influence on the total volume banknotes and coins counted in money units. Every attempt by the market from e.g. the bank system (and such attempts are made all the time) to change its possession of central bank money in a certain direction can at any time be cancelled by central bank steps in the opposite direction.

A wise central bank management adapts of course also the circulating volume of the banknotes with regard to seasonal requirements that changes in the supply of goods and services and other variations in the payments put. To some extent the bank system will take part in this process through short-term variations in the balances of the check accounts in the central bank and through short-term borrowing.

Some economists are presumably not prepared to agree with the statement that the central bank freely determines its lending, primarily because they think that this is so strongly affected by other lending in the society. These economists are right inasmuch as the bank's interest rates on lending and borrowing must be in line with other interest rates in the market. But they also think that the central bank's sales or purchases of bonds and money market instruments in some cases would influence interest rates and security prices so disadvantageously that the central bank would be compelled to take care of them and therefore would not be able to realize its measures. I do not think these economists have made clear for themselves how small and insignificant the steps of the central bank need to be to get the desired effect.

The increase in the volume of the banknotes in Sweden at the beginning of the nineteen ninetees amounted to approx. SEK 2 - 3 billion (milliard) per year, i.e. the Riksbank bought net bonds, certificates, 'statsskuldssedlar' and other money market instruments for about that amount per year. If we divide the increase of the volume banknotes with 300 bank days, then this is equivalent to 7 - 10 million per day. This may be compared with the total value of the stock bonds and money market instruments, which in the year 1991 amounted to more than SEK 1.500 billion and in 1995 to more than 2.400 billion or with the value of the total volume papers in the credit market, which in 1991 amounted to more than SEK 3.700 billion and in 1995 to more than 4.400 billion.[9] The turnover of bonds and money market instruments is of course lower than the stock, but on account of the fast turnover of certificates and money market instruments it amounted to more than SEK 300 billion in these years. Every year about 0,1 - 0,2 % of the net increase in the volume money market instruments, certificates and bonds was brought about by the net increase in the operations of the 'Riksbank', every bank day about 0,003 - 0,006 % was added. If we count in percentage of the annual increase of the volume, it corresponds to 1 - 2 % per year. But the increase in the stock of bonds, certificates and money market instruments would principally correspond to the increase of the society's real capital and capital market. If GNP increases with 2 %, this market would also increase by at least the same percentage. Nobody can claim that the central bank needs to be prevented to regulate the banknote volume in accordance with its own policy with regard to good development of interest rates or prices of securities. The central bank has also for this reason great freedom of action. A central bank can on the contrary in problem situations and at strategic points influence the interest rates and the prices of the securities by sales or purchases of bonds, certificates and money market instruments, as it does by short-term lending and borrowing (e.g. repo interest and discount interest).[10] But mainly the central bank of course affects the development of the interest by its supply or withdrawals of banknotes to and from the market, which directly increases or decreases the common price level and thus also presses up the nominal interest level.[11]

The central banks purchases or sales of bonds and money market instruments have thus great influence on interest levels and security prices through the common price increase or decrease effect that the increase or decrease in the banknote volume brings about. If the turnover of commodities and services rises by 2 %, while the banknote stock and by that the volume of the money (payment means) rises by 8 %, this leads ceteris paribus to a common prise rise of about 6 %. This in its turn presses up the nominal interest rate and so also the interest rate for bonds and money market instruments, while the prices of existing securities fall. This common price increase has of course serious effects and changes the property conditions for cash holders, creditors, debtors and owners of real capital, but the interest pressure in connection with new agreements will mostly change

very little. If the nominal interest rate has also risen by 6 %, the real rate has not changed. It can even have fallen, if the interest is deductible at taxation.

That a society will suffer inflation, when the central bank increases its lending too much, which has grave negative effects, has not, as we know, prevented the central banks from doing that, mostly because their management have not understood the consequences clearly. On the other hand the governments and the central banks have had a strong interest in the development of the interest rate and they have often followed a conscious policy to keep down the interest rates for real and pretended social reasons. This was the case especially after the Second World War. Because the nominal interest rates then did not increase in pace with the decrease in the money value and thus the real interest rate fell, they also succeeded to achieve this for some time, e.g. in Sweden. That it was possible that the nominal interest rate did not increase in pace with the inflation, was due to some inactivity factors and information problems, that the savers were still not conscious of the effects of the inflation (money illusions) or expected price decreases or perhaps also because of direct regulation of the interest rates. But appart from the fact that excessive lending by the central bank pushes up price levels and nominal interest rates, its purchases and sales of bonds and other securities should not have any considerable effects on interest rates and prices of securities.

If we then go to the next sector of transactions, type 13 - 16, it is 'the demand for' and ´the supply of' check- and giro means that also includes or constitutes the base for the other card- and payment systems that occurs in the society. It concerns thus the rest of the society's money and about a very large part of it, sometimes the major part. What determines 'the demand for' and 'the supply of' these means? Yes, it is the bank system that puts accounts at disposal and thus would be considered to be responsible for 'the supply of' check and giro means and corresponding 'demand for' banknotes and coins and the society's cash holders that put banknotes and coins at the bank system's disposal as deposits and thus would be considered to be responsible for the demand of check and giro means.

But as we have read in the chapter about the actors of the payment system and the changes in the volume of money, it is the cash holder who is the active part. It is he or she who takes the initiative, who decides if and when a deposit or a withdrawal is made. The bank can possibly refuse to receive the deposit, but this happens very seldom in practice. It is then the question about accounts with deposit restrictions, but these are only applicable for long-term savings and I have never come across an example of restrictions for check and giro accounts. And should this be the case, there are tens of other banks or other accounts at disposal. And the bank cannot refuse withdrawals on other occasions than bank crises. It is accordingly the cash holder alone, who determines what volume banknotes that will be deposited into these accounts. The whole procedure begins with an act of will from the depositor and he (or she) can at any time destroy the new created money by a withdrawal. (12).

But the cash holder is on his side very much dependent on the payment system and the social structure he lives in. He cannot change the volume banknotes and coins outside the bank system. (13). Any changes from his side must therefore be done just in the volume check and giro money. And he must adapt the volume to the requirements that the money liquidity and profitability set. He is obliged to put the volume check and giro money at a sufficiently high level to be able to make his payments, but he is also obliged not to keep them at a too high level with regard to profitability. The latter causes interest losses. As check and giro means render as a rule no or very low interest, there is seldom reason for the cash holder to change the division between banknote cash and check and giro money and any changes for the whole society tend to offset each other still more. All statistics show that the quotient between the volume check and giro means and the volume banknotes and coins is extremely stable. It can stay to a great extent unchanged for years and even for decades. (14). When the volume banknotes and coins outside the bank system is increased, the check and giro money also increases nearly always proportionally as much. Such a stable quotient can of course only be brought about, by the cash holders adjusting it all the time. They can change it seasonally and sometimes because of very long-term structural changes, but these are as a rule very small. The assumption that the bank system determines the volume check and giro means, is quite inconsistent with this quotient. We can say that the society and the bank system have created a structural framework, but it is the central bank and the cash holders that fill the framework with content by their measures. The cash holders, certainly, make use of the services of the bank system, but they have themselves the decisive influence, they determine the volume of payments and investments.

We cannot thus speak of a normal supply- and demand function and a normal price relation regarding check and giro means either. This is quite self-evident if we consider that it is a matter of an exchange- and bookkeeping transaction, where the cash holders change a type of money (a means of payment) for another type of money. We can say that the bank system has no influence on the volume of the check and giro money and that the bank system accepts all that the cash holders invest, but also that the cash-holder´s supply of banknotes and coins and 'demand' for check and giro means is inelastic. Has the central bank decided how large the volume of banknotes and coins outside the central bank and the bank system will be, so the central bank with the help of the cash holders also determines the volume of the check and giro money and thereby the total money

volume. That the determination of the volume check and giro money is no normal supply- and demand relation, is also shown in most cases by the absence of price calculation or interest grant. It is true that there are certain such accounts with a modest interest compensation (even if this often is reduced by charges), but in this case it is rather saving deposits that by different reasons have found their way into check and giro accounts. These constitute no problems in principle but a measurement problem in some cases. Their having a lower velocity than pure check and giro money also shows these accounts' special character.

So we have thus found that we cannot find or use normal supply- and demand relations for any part of the origin of what we call money. Mostly the transactions fall outside the market and if we can speak of 'supply' and 'demand', it is a wholly elastic one for the central bank and a wholly or nearly wholly inelastic one for other parties.

c. Transaction Types 17 - 28.

Concerning the next sector of transactions, the cash-holder´s (outside the bank system) disposal of savings and long-termed deposits, (type 17 - 20), the cash-holder's supply of money (banknotes, coins, check and giro means) corresponds to the bank system's demand for this money by its setting accounts at the cash holders' disposal. Also in this case it is the cash holders who are the active, decisive parties and who initiate both deposits and withdrawals.(15). They can choose between a large number of banks, other institutes, and accounts. The bank system can only passively receive what the depositors invest and they cannot say no to withdrawals. But also in this case the cash holders are tightly bound by the claims that the society and the payment system but also payment capacity and earning power set. The cash holders have however a somewhat greater scope to realize changes, which can be seen from the quotient between the volume savings- and long-term deposits and the volume money in the society being somewhat more flexible than the quotient between the check and giro means and the volume banknotes and coins. The first quotient is characterized by stability but not by immobility, as is the latter one. The cash holders change the quotient by increasing or decreasing their deposits. Sometimes this leads to a deposit expansion that is followed by a lending expansion by the bank system. The cash holders are however affected by the interest terms of the market for these deposits. An increased interest rate level leads ceteris paribus to the cash holders giving profitability calculations greater importance and so the long-term deposits can be increased. The bank system can change the terms but must do that within the narrow framework that the demands for money liquidity and profitability set. The bank system must then accept what the cash holders deposit. What the bank system has to invest is nearest a rest item, since the central bank with the help of the cash holders has determined the volume of payment means and deposits. What is left for the bank system, is to choose between different investment alternatives, e.g. lending or bonds. The bank system is also more restricted in comparison with the economy outside the banks, because it cannot as a rule invest in real capital. Deposits and withdrawals are therefore characterized by great inelasticity, mainly on the side of the bank system, but the cash holders have not much freedom either. Neither is it a question in this case of normal demand- and supply relations.

I have already in chapter 2 described why savings and time deposits do not function as money.

Deposits in savings accounts and time deposits create no money. On the other hand the deposits claim money and thus to some degree they compete for the money. As all relevant money is in principle exchangeable for each other free of cost, the price for it is the same at the same point of time; any piece of them has the same value in the same currency area. This is also true of savings and time deposits.

But the same is also true for all other financial utilities, if we disregard certain small fees, deductions, or additions that can take place in connection with interest rates. Transactions in money and financial utilities cannot therefore influence the value of the money unit, because they mean a change of value of x money units against another value of x money units. Supply and demand have always the same value. The value of the money is directly affected only by payments of goods and services. Apart from the utilities that is included in the period interest, the price formation is not affected by exchanges and financial transactions.

The savings and the time deposits belong therefore only indirectly to the area, where demand for and supply of money are determined, in the sense that the deposits lessen the sphere to make other payments that influence the value of money. The same is true also for all other monetary and financial transactions, such as banks' lending and purchases of bonds, money market instruments, bills and other claims.

The next type of transactions (type 21 -24) regards mainly banks' lending. Some economists seem to consider this as the source of the main part of the supply of money, which is set against the demand of the economy. (16). But the lending does not create a single penny worth of money. Every penny or other unit that the lending comprises, is money that either the central bank has contributed in the form of banknotes or coins or that the cash holders have created by earlier deposits into check and giro accounts or by other deposits. On the contrary, the lending is based on earlier created money, even if it in this case concerns the bank sector's share. Instead of adding payment possibilities the lending competes for the space that existing money has created. But as I said earlier, the means that the bank sector is lending is mostly a rest post. As in the case of deposits the

quantity exchanged is always equal. *x* units money are exchanged against a claim, a debt for *x* units. Only the interest is influenced by supply and demand.

As regards the bank's lending volume, this is as we have found earlier, limited to its volume by the deposit volume. The bank system cannot affect the total frame (without the assistance of the central bank). If the commercial banks or some other party of the banking system try to accomplish a self-governed lending expansion without supply from the outside, this affects immediately its possession of banknotes and coins, a more strained liquidity situation is created (as we have found already in chapter 4). On the other hand the bank system can respond to a deposit expansion with an equivalent lending expansion within the frame of the deposit expansion. But this is not an independent adaptation. The scope for an independent expansion is also limited by the fact that the bank system's possession of banknotes and coins is so small. It is a question as a rule of a few percent of the total volume banknotes and coins outside the central banks.

But cannot the bank system increase its note volume up to normal level by a loan or by using its cheque account in the central bank? Yes, of course if the banknote volume decreases at a bank, it will do that. But by that the situation has changed. The volume banknotes and coins outside the central bank has increased. In most cases the central bank has perhaps no reason to adjust this, especially if it is a question of seasonal or other temporary requirements. But even in this case it is true that the bank system has no independent ability to increase the banknote volume and thus the credit volume. All the time the central bank must assist. (17). And yet it is true in most cases that even if the central bank had assisted, the bank's liquidity situation has mostly become strained. There is in most cases an incentive to go back to the earlier volume at the cheque account or to repay the temporary loan.

The holding of banknotes and coins in the bank system is thus usually at an unchanged volume all the time, some few percentage points of the total volume outside the central bank. The bank system satisfies the need for seasonal or other temporary contributions by changes in the balances in accounts in the central bank or by short loans from other banks or from the central bank, in Sweden now mostly by 'repolån' with securities as collateral. The bank system can thus somewhat vary its holding of different liquid resources, but if this does not mean an increase of banknotes to the cash holders, these will not increase their deposits, neither of check and giro money, nor of time deposits. The bank system can affect the amount of banknotes and coins held by the cash-holders in only one way - by changing its own. As the bank system as a rule refrains from this, it means also that when the central bank changes the volume banknotes and coins outside the central bank, this mostly breaks through wholly at the cash holders, who as a rule change their deposits and so also the lending volume.

Cash reserve rules aim mostly and under normal conditions at securing the bank system's payment capacity and solidity and the depositors' claim for security in most countries. Perhaps these rules can somewhat sharpen the requirements that the bank system sets for the lending. But often they will correspond quite well to the requirements that the bank system would have set, even if there had been no such rules. Even so they realize that especially during uncertain periods of time it can be necessary not to bind a too great part of the assets in lending that cannot easily and quickly be realized or that involve too great risks. It concerns e.g. credits for consumption or investments with insufficient safety in securities and mortgages, but it also of course concerns long-termed loans that cannot, if necessary, be realized as money market instruments and bonds with short remaining term can be. As a rule the banks are keen to be able to meet the depositors' requests for withdrawal. Not be able to do so, is disastrous for a bank (18). But the bank bubble in the beginning of the nineteen-nineties in Sweden shows on the other hand that a good control of the liquidity and solidity of the banks can be necessary also to-day.

A bank must as any other enterprise permanently evaluate the liquidity claims against profitability demands. (19). If the share deposits at sight increases, they are obliged to shorten or decrease the lending. That the cash-holders increase their check and giro money, does therefore not always mean increased lending. Instead the holding of securities on demand or other reserves may be increased. On the other side the lending can sometimes be increased by a reduction in the banks holding of bonds and money market instruments. So also if the bank system cannot normally act on the total volume of lending and possession of securities, it can to some degree choose between different investments. And the bank system is of course affected in its investment policy by cash reserve rules and similar regulations. In the countries, where there has been a conscious endeavour to regulate the volume of the lending and its distribution, the distribution between lending, reserves and holding of securities has been strongly affected. But no matter how this is changed, it does not affect the volume of money outside the bank system.

That it is not the lending that is important in an inflation situation but money and deposits. is also shown by the fact, that when there is plenty of money, it can often be difficult to obtain a loan, most people will instead want to borrow. That the lending is perceived to be at too low a level then shows that there is an excess of money.

It means also that every attempt to affect the money volume and the purchasing power by influencing the bank system is doomed to failure. What can be attained by e.g. stricter rules is to prevent the bank system from fully making use of an increase

and an expansion in the deposits by an equal increase and expansion in the lending. At least concerning liquidity quotients, disposal duties and limits on advances most economists will now agree that these have no effect on the volume of money. (20).
By whatever channel the means flows out through, flow out they do . . . Due to all innovations and the internationalization of the capital movements, the governments and the central banks of all developed countries have become aware of the futility of all attempts to regulate the relation between the bank system's deposits, lending and holding of securities beyond the claims that solidity, liquidity and the depositors reasonable safety requirements put on the bank system. Only the cash holders' additions of banknotes and coins are important for their possession of money.

It speaks for itself that the concept of the lending as the source of money is not consistent with the supply- and demand functions that Milton Friedman has used. For him M^S is the means that the central bank sets to the disposal of the market plus giro, cheque- and savings means at the commercial banks. He also maintains that the central banks (the monetary authorities) determine the volume of central bank money and that the cash holders (the public) and in his case also the banks determine the deposits. (21).

The concept of the bank's lending as the basic source of money can possibly be expressed in the terms of the quantity equation, but it conflicts with most correct assumptions of how the actors behave in different situations. This concept is responsible for a part of the weaknesses that the theory systems have to-day, a great deal of their contradictions and lack of accord with reality. This is true for e.g. the artificial demarcation between commercial banks and other institutes or between lending or other investments the banks are making. Why should the loan from the commercial bank and not the bond loan have expansive qualities? Or the loan from the savings bank or the finance company? Or the student loan or the loan from the multiple chain store? But it concerns however most of all the concept of the bank system's decision power that a careful analysis shows it obviously does not have. To maintain that the commercial banks or the bank system as a whole by its lending have a real influence through the central bank or a decisive influence through the cash holders, when dealing with the money volume of the society, has nothing to do with reality.

However, this concept explains all the attempts to regulate the loan volume that we have seen during the after-war time. They managed to regulate the loan volume in some cases, but the effect on the purchasing power or the inflation failed to materialize or became the opposite. A positive effect has yet been that such attempts to regulate the loan volume and even the concept that this would affect the demand in the society, have fallen into disrepute. The commercial banks' lending volume has even still less relative importance in our modern, internationalized economy, in which bonds, certificates, money market instruments (among them a long line of new types), insurance and pension savings, unit trusts (mutual funds, investment funds), interest funds and new types of money and capital instruments increase their share of the market.

That this 'priority road in the anti-inflationary measures', as it was called still in the nineteen-seventies and the nineteen-eighties, could disappear from the agenda in only a few years, is still another example of how little confidence we can set to these then and unfortunately also now predominant theories that are hanging on persistently despite all their defects. The economists were e.g. forced to abolish the concept 'credit policy', because the 'bank bubble' in the beginning of the nineteen-nineties made the concept ridiculous, even though it was frequently used only a few years earlier. Still worse would it be, if it was the evaluation, volume and turnover of e.g. bonds, which should control the society's volume of expenses, income and buying power. (22). If this would be the case, the society would really be a toy in to-days internationalized and unregulated economy of, but that is of course not the case.

The economists find it also difficult to explain the fact that the volume money, demand and the price level are expanding over all boundaries in a hyperinflation, when all loans as well as long-term deposits disappear at an early stage, partly because no new deposits are made and no new loans are granted and partly because the inflation obliterates all old values. In the last phase there are only the banknotes left of the own country's currency, so long as someone is prepared to take it.

As in the case with the deposits, the lending from the banks cannot directly affect the value of the money. The demand and the supply are always equal. On the other hand the interest of the lending affects of course the total interest amount of the economy. This interest rate is suited after the interest rate for the deposits. The banks demand a margin to cover the costs and the risks that the bank system takes on. The interest rates for the loans are equal to the interest rates for the deposits plus the interest margin.

In the same way as the bank system the cash holders of the society can invest in bonds, money market instruments, bills and other claims (the transaction types 21 - 24, but of course also 9 - 12 and 25 - 28). In the same way as for the deposits in the bank system, the volume of these investments will be mainly dependent on the preferences of the cash holders for different alternatives of banknotes, check and giro money, other claims and real capital. Every cash holder and every enterprise and administration has a preference system, often not outspoken and still more seldom written down, but all the time conclusive for the volumes of different values that the cash holders determine to hold. This is true for a single individual and equally true for a group or for all cash

holders in the society. The variations are of course considerable between single persons and can likewise vary strongly between different times and different periods. But the mean value picture is very solid, which is foremost an expression for the preferences of the cash-holders being so firm and for separate differences and changes to the greater part taking out each other.

A combination of investments for the society's cash holders (thus outside the bank system) may be: SEK 100 billion in banknotes and coins, 200 billion in check and giro means, 400 billion in savings and time deposits and 700 billion in investments in bonds, money market instruments, bills and other claims. If the central bank increases the volume banknotes outside the bank system by SEK 1 billion, the cash holders increase as a rule the other assets proportionally as much, even if there is sometimes some delay. This is among other things a consequence of the changes mostly being caused by a deposit expansion via the bank system, followed by a lending expansion; these processes take time. As I said earlier, the quotient between the volume check and giro money and the banknotes is very stable. Other quotients are also stable, but not to the same extent. There is thus a greater freedom of action for the investments of the cash holders in other assets. This can also show itself in the changing relative proportion between savings and time deposits in the banks and other investments, e.g. bonds. This depends among other things on the earning power of the different investments, which also is influenced by the inflation rate in the society. Another adjustment that continually occurs is that the parties, the bank system and the society outside (as of course the central bank) alternatively appear as buyers and sellers of bonds, money market instruments and other claims, when this is necessary to meet their preferences.

If the cash holders have some options, these of the bank system are more limited. This is built into its very structure, because its task among others is to make possible often long-term investments, based on often short-range savings, which gives small margins. If a production- or a distribution enterprise has arranged its long-term financing, it can with some safety dedicate itself to its main activity for a long time. The bank system has taken over some part of the responsibility for the perhaps unsafe financing. This makes that it is more difficult for the bank to calculate its running income- and expense streams. The bank can never relax. It is all the time hard-pressed between the different claims that liquidity and earning capacity set, between Scylla and Karybdis. (22). If the volume check and giro money increases proportionately, then this makes shorter investments necessary. If the volume long-term deposits increases, the bank is forced to increase lending in order to increase earning power. When the society's cash holders have determined the volume of their investments, the volume of the bank system's investments is also determined to the greater part. It is mainly the question of a rest post, even if the bank system has a certain freedom in the choise between different types of investments.

Loanable funds and loan contracts cannot be used for payments, neither can bonds and money market instruments. It is true that it is possible theoretically to pay with a bond, but this happens in practice so seldom outside the bank system that it practically does not play any role. There is no money created for the cash holders at transactions with bonds and money market instruments. Instead earlier created money is made use of and the transactions compete thus for them. On the other hand, money is created at the central bank's purchases of bonds and money market instruments, because these lead regularly to an increase of the banknote volume. But then these changes are the primary ones. The purchases and sales of the securities in themselves do not create any money.

Also concerning bonds, money market instruments, bills and other claims, it is true that except the supply and demand of the services that the interest is paid for, there are no supply and demand functions concerned, which is self-evident at an exchange of a value of *x* money units (received money) against another value of *x* money units (the claim that is established). If supply of and demand for monetary and financial utilities are equal, the money value cannot be affected.

d. The Transaction Types 29 - 32.

If we then go to something that really represents the demand for money, we come to the supply of commodities and services that the transactions 29 - 32 represent. The changes in the price level that these transactions result in, represent furthermore regularly a great part of the changes in the society's interest rate levels. This exchange of goods and services against money occurs nearly entirely outside the bank sector, but as for the amount it is often a wholly dominating factor for the interest rate levels. Taking an example from the time after the Second World War. If we suppose that the nominal interest rate level in a number of highly developed countries has been about 8 % per year as a mean and the average inflation seldom has been below 5 % per year that means that more than half of the interest level has been determined by the inflation, which is a result of transactions of the type 29 - 32. Of f 186 annual figures for interests in the USA and Great Britain during the time 1945 - 1975 on short-term papers (commercial papers, call money and three months bills) and long-term papers (high grade corporate bonds, high grade industrial bonds and consoles) only 20 exceeded 8 % (in the last years). And the common price level increased nearly constantly by more than 5 % through this period. (See Friedman - Schwartz 'Monetary Trends in the United

States and the United Kingdom', p. 122 - 137). Already Alfred Marshall was aware of the great direct connection between the price level and the interest level. (23).

Of the deposit interest rate levels in banks the inflation accounts for a still larger part. Of the remainder a great deal is compensation for risks, administration and taxes. What we call remuneration for waiting would often represent a very small part of the interest level (often a negative part). (24). In spite of that the economists have often disregarded the inflation (deflation) and its influence, someone have not even distinguished between nominal and real interest. Furthermore they have often treated it, as if it to the great part were compensation for waiting. Others have claimed that the interest played an important role even in cases where its effect was microscopic. The interest can of course play an important role for savings and investments and therefore for production and supply of goods and services long-term , but its influence on the price development on short-term or medium-term (1 - 7 years) will be small.

In principle the money value is dependent not only on the price of new produced commodities but also of the price of goods that are resold a second or a third time. To these belong for instance goods that are sold by second-hand shops or auctions firms. It is often the question of works of art, collectors commodity groups or vehicles. But it concerns also flats, buildings, enterprises, or parts of these as well as shares that as we know are parts of a joint stock company. It can also be immaterial assets as for instance trade marks, patent rights, or goodwill of companies. If for instance art objects or shares have increased extra much in price, it is clear that also this must have effected the money value. But the problem is that it is very difficult to get a concept of this price rise, because it is very difficult to distinguish between what is a price increase and what is a volume increase. We are therefore obliged in practice to leave out most of these not recently produced commodities and assets at index computations, even if some second-hand products ought to be possible to include in an index.

If we see to the groups that the second-hand- and third-hand purchases represent, it is true that the great majority will develop in pace with the development of the industrial and distributive apparatus and the infrastructure of the society. They are in other words structurally characterized. It means that also if the volumes and prices perhaps increase more than what they do for recently produced commodities, the swings in volumes and prices are probably moderate in most cases and go in parallel with those for recently produced goods. Shares are of course an exception.

The demand for money, represented by the offered volume commodities and services is given an important role also by Milton Friedman in the equation $M = kPy$. (25). It is true that he restricts the volume to the quantity '*y*' that is a part of the GNP-conception, but this doesn't change anything in principle. The quantity equation is valid both for '*y*' and the wider conception volume commodities and services.

e. Financial Transactions and the Role of Interest.

Before I try to make a summary of the 'demand for' and the 'supply of' money, I shall do a degression about the implications of the monetary and financial transactions and what the interest is that is paid at these. I make here a very restricted treatment of the role of the interest that only has the aim to review its place in the price determining process.

What is then the interest? It is a compensation for that the value of a money volume, a financial utility, or a commodity or service being lower at point of time 2 compared with point of time 1.

Many of these transactions are made at a fixed interest rate. That is the case for bonds (with the exception of index bonds and certain other that are converted during the duration of the loan), certificates, most money market instruments, bills and discounted loans and certain other promissory notes and claims. Others have interest rates that are running adjusted by bank institutes and official authorities. To them belong deposits and loans in banks and many other claims and loans.

At some transactions the interest is paid in advance. It is so for bills and discounted loans and claims. But mostly the interest is paid in arrears.

But no matter which loan or which claim it concerns and if the interest is fixed in advance (bound) or adjusted successively during the loan time or whether it is paid in advance or in arrears, the following is valid:

The interest is remuneration for:
Risks (substance, rate, system, liquidity risks or calculation faults etc.),
Administration (compensation for costs for labour, material, localities, cash costs etc.),
Inflation (deflation),
Tax losses (tax profits) and
Waiting (delayed consumption). (26).

Inflation strikes the creditor, deflation the debtor, partly direct via the interest, partly via the taxes. Inflation reduces the debt to the disadvantage of the creditor and to the advantage of the debtor, the deflation does the opposite. The creditor suffers furthermore often a loss at inflation because he must take up a fictive income for taxation, at deflation he makes often a profit, because he needs not pay taxes for the increase in the money value. The debtor makes often a profit at inflation, because he may make a deduction even for a fictive expense, at deflation he makes often a loss, because he may not make a deduction for the increased money value of the claim.

The differences there are in the interest rates for short-term and for long-term loans and claims, are to a great extent determined by risk factors and inflation. When future is uncertain, it is natural that a lender demands higher compensation, especially it is so of course, when they are waiting inflation. Then they will of course have a compensation for the decrease of the money value.

What some economists do not account for is as I said earlier that the concept interest is very diversified, ambiguous and unclear.(27). They account seldom for its elements. They treat often the interest as I said, as if it mainly were a compensation for waiting, in spite of the fact that this part often is very small, in some cases negative. They make often no adjustment of measured interest rates and interest amounts. Sometimes they do not even differ between nominal and real interest, though the greatest part will often be the compensation for inflation, thus the difference between the nominal and the real interest. This part will be of course still greater, if we compare it with the share for waiting, for delayed consumption through decreasing the real rate with the costs for risks and administration etc. Milton Friedman is however careful in distinguishing between real interest and nominal interest. He also notes how small the differences are in the level of the real interest during normal periods.(28).

It is not difficult to find an unrealistic view of the role of interest. In the American FRB administration in the nineteen-thirteeth someone maintained that the interest rate situation was light, because the nominal interest rate lay many times at 0 - 3 %. At the same time USA and the world were experiencing a deflation that some years exceeded 20 %. The rate level was nearly prohibitive. (29). Or take as example all economists, who maintain that rising interest rates lead to decreasing investments without making clear that this applies for the real interest. Increasing nominal interests need not at all counteract investments. (24). If the inflation keeps in step with the nominal interest or more, the result will rather be the opposite, because the debtors profit not only from the decrease of the value of money but also often from the increased deduction possibilities. This was what happened in Western Europe during the nineteen-sixties and seventies, when the real interest was often 0 or negative.

Economists and politicians have also often been wrong, because they do not differ between different tendencies that perhaps act in different directions. It was e.g. possible to conduct an extreme low interest policy in Sweden after the Second World War, because the Riksbank increased strongly the banknote volume through bond purchases, which pressed down the short-term interest levels, whereas the cash holders waited for price decreases, had money-illusions or by routine did not look after their loans and deposits, which acted in the same direction. But the most important tendency were not these two, but the fall in the money value, which was often much greater than the changes in the nominal interest rate, and therefore was more important than the other tendencies together. (11). When the stock-exchange is waiting for interest rate increases, the share's price often fall, because the investors expect that bonds will be a more profitable investment. But they are wrong, if the increase in the nominal interest level and the interest of the bonds are smaller than the decrease of the money value.

The economists argue instead many times, as if the concepts interest and interest on money would be unequivocal. If we try to analyse, what is usually called interest, we find that it is not paid at momentary transactions, it is paid only for some time. Realized supply and realized demand are in principle always equal in money-changing and financial transactions, and the price is all the time = 1 (as distinguished from trading goods and services). What is paid more, is compensation for interest, which in realized examples is paid only for a period of time. (On the other side we can of course speak of the concept and the term alternative interest, when we try to count different yields). Of course it is also correct to talk about supply and demand for different currencies and for claims with different substance values.

The interest on money or a loan at point of time 1 (a periods beginning, e.g. the beginning of a year) is equal to 0, the interest *r* on a loan during a period differs from this in that it responds to a negative value, it corresponds to the decrease in value between point of time 1 compared with point of time 2. This is of course a somewhat unusual way of counting - with the interest as a deduction post. But if we look at the interest elements, the assumption is very natural. The costs for risks, administration, and taxes are all deduction posts that will decrease the value of the loan. The same is true for the inflation. What remains is then the addendum for waiting, which is a compensation for the creditor having to abstain from immediate consumption. For doing that he will have an amount of money that makes it possible to increase his consumption later, that he can buy a greater volume of goods and services later.. It means that the value of the loan at the latter point of time must be set to a smaller value than at the earlier one, when the loan was given, and that the difference plus other costs are covered by the interest.

This reflects also that the money is the monetary assets that the cash holders value the highest. The cash-holders are prepared to abstain from sometimes high interest income in order to be able to keep money. This high valuing is even more usual during inflation periods, when the cash holders besides the normal interest losses also lose due to inflation. They keep it even though they often do not get a penny in interest.

Claims have thus a lower value on sight, which means that they must be given an interest addition to be able to compete with money. The

interest renders a compensation for the creditor's expected loss, which can be considered to correspond the value of his delayed consumption, but it also as a rule includes a compensation for other costs and a possible profit, whereas the debtor estimates that the benefit for him exceeds the costs.

Suppose that the creditor has calculated in the following way, when he has approved a loan: Risks 0,3 %, administration 0,2 %, inflation 3,0 %, taxes 3 % and waiting, which also can include a profit margin 3,5 %, then totally 10 %. Suppose also that the debtor has calculated in the following way, when he took the loan: Inflation 2,8 % makes that the real rate is only 7,2 %. From this 3 % is to be deducted for taxes and 0,1 % is to be added for risks (the creditor can e.g. in unhappy circumstances set him in bankruptcy), and 0,1 % is to be added for own administration. The debtor estimates then the real cost to 4,4 % .

Afterwords we know how the real costs turned out. The inflation became 2 %, the capital tax was 30 % on the gross amount of the interest income, the payment was effected, so the risk costs fell off, the costs for administration were for the creditor 02 % and for the debtor 0,1 %. The creditor then received 10 % in nominal interest, from which 2 % in inflation was to be deducted, which meant a real interest of 8 %. Further 3 % in tax, 0 % for risk and 0,2 % for administration were to be deducted, so he got 4,8 % in net interest (remuneration for waiting and profit). The debtor then payed 10 % in nominal interest, from which 2 % for inflation was to be deducted, which meant a real interest of 8 %. Further he could make a tax deduction of 3 %, but he had no risk costs and an administration cost of 0,1 %. He thus payed totally 5,1 % in net interest.

It is of course true that we can discuss if we shall deduct tax. Taxes are of course not only negative, they also bring about a positive value for the society. But de facto the taxes as also the inflation mean a redistribution between the parties of the loan transaction. And if both the profit and the loss are counted, the total result will be 0 for the society as a whole. And most parts surely count with the tax in their private economic calculations and I think we should perhaps start from that. Of course there are many cases, when deductions cannot be made and the income is not taxed, in which cases the interest cost of the debtor increases by the same amount as the interest income of the creditor.

Loans and claims are admittedly bought and sold in the market, but the prices to be payed, the interest rates, are essentially the only values that are market determined, the only value that are determined by supply and demand. In other respects the values of the objects (the loans and the claims) are not affected, substance changes of course disregarded. This is said in awareness of the bond market recalculating the market (course) values with regard to interest changes, which recalculations do not in the least changes the value of the claim that the bond constitutes, but only makes a comparison between different alternatives of loans possible, inclusive bonds vith interest.

When the bond courses fall below par on account of a deflation or bank crises, it is often due to a change of substance. An extreme example of this was the fall of the bond courses for enterprise bonds in the US in the beginning of the thirties. From March 1931 to June 1932 the courses fell from index 100,0 to 72,2 on account of the investors distrusting the payment ability of the enterprises. The business´ bonds had become insecure claims. Federal and state bonds not falling during the same time but deviating insignificantly from par show that it was so.

What one pays for a bond, is the worth of the claim in money that the bond represents originally and the worth of the accrued interest. These two together make a nominal account that, disregarding changes of substance, can be affected only by the interest growing as time goes on. If now the common interest rate level is changed, one can also consider that the rate of interest of the bond has been affected. If a one year certificate (the bonds are as a rule for at least 2 years) of SEK 1.000 with 5 % nominal interest is owned at a point of time, when the common (nominal) rate of interest level rises to 6 %, one can say that the course has fallen owing to the interest rate for the remaining duration being adapted to the common interest level. Suppose that the certificate has a remaining duration of 12 months, this implies that the owner makes an interest loss of SEK 10 compared with if he had been able to invest his 1.000 kr. at 6 % interest rate. This is in practice expressed in that the course value falls to SEK 990. But it should be noted that this does not mean a price change of the combined worth of certificate or bond plus interest but a shift between the original claim and the interest of this. Instead of SEK 1.000 + 50 as in the original situation the holder owns thus 990 + 60. The total value of certificate (bond) and interest can apart from substance changes never change within its own currency area. It is thus not the value of the certificate (bond) that changes but the value of its interest, when one approves the course development. And when one looks back at the transactions at the end of the period, the holder has got back his SEK 1.000:- + 50:- in interest. As all other monetary and financial utilities, the bond (certificate) follows the changes of the home currency. It is always worth the equivalent as 1 in relation to this, if the substance value has not changed.

The interest rates are of course also determined in different markets, even if these are often characterized by monopolies and other limitations of competition, foremost from the side of the central bank and the government. But these markets are very different compared with the markets, where demand in the form of money meets the offer of goods and services. One difference is that while the common

price level can be changed to any extent, the interest rates always return to earlier levels. Long term the changes in the interest rates = 0, they take out each other. Changes in the real interest rate are, as for example Milton Friedman has found, very small in most fairly stable countries and periods.[28].

The differences between different financial transactions are of course very great with different parties, types of money and transactions, direction, area etc., but in two respects there is a great deal of congruence. That is the case concerning the valuing and the interest calculation. Ít is the case for deposits in banks, borrowing in banks and buying of bonds, money market instruments, bills, promissory notes, IOUs and all other loans and claims. The resemblance in these respects is so great that we can let them all be represented by one only example, in which a person (physical or juridical) at point of time 1 lends an amount of money to another person (physical or juridical), which pays back the whole amount at point of time 2 or at the points of time 2 to *n* with interest. All these transactions can, regarding price and interest, be visualized by a simple schedule with three components, table 8B.

Table 8B.

Point of time 1. (e.g. the beginning of the year).	Point of time 2. (e.g. the end of the year)	Point of time *n*.
x money units are changed against a claim of *x* money units	A claim of *x* money units are payed by *x* money units at one or more points of time 2 to *n*.	

The interest *r* for the loan is paid with *y* money units at the point of time 1, 2 to *n*, either totally at point of time 1 or 2 or divided in the periods 1 to *n*. Sometimes no interest is to be paid, then that component disappears.

There are to be exact counted three different transactions. At the two first no prices are affected, not for money nor for claims, offers and demands for these are equal , so we can say that they fall outside the area for supply and demand. Only the third type of transaction implies that a price is set on a service. In the interest rate any charges are then counted. This schedule may seem simple but it sums up all that happens at a financial transaction; besides the units of the transaction no other units are affected. Every financial change transaction has these three components but no others (when no interest is payed 2 components). Regarding one-sided financial transactions, the schedule is still simpler. At point of time 1 *x* money units or a financial utility with the value *x* money units is handed over from person *a* to person *b*. No interest is paid and the transaction is concluded with the effected delivery.

Even regarding change of money the schedule is very simple. At point of time 1 *x* money units or claims of *x* money units are changed against *x* money units or claims of *x* money units. No other point of time is affected and no interest is paid. The transaction is concluded at the same time as it occurs.

Regardless of the number of financial and monetary transactions, they cannot affect the prices of these loans and claims (compare with the often enormous value changes of shares), that is, the price always follows the value of the money unit. This is of course a truism, but it is nonetheless important to remember. If there is inflation, the value, the price, of monetary and financial utilities is reduced exactly as much as the value of the monetary unit. The price is always 1. On the other hand the interest part is in most cases affected by inflation. Nor can the transactions directly affect the prices of goods and services and thus the price of money (the money value). On the other hand the money value at the point of time 2 is very important for instance for a claim- or bond holder. A high inflation of e.g. 10 % means that he must deduct 10 % units from an interest income of 5, 10 or 20 %.

The value of the money units at point of time 1 and 2 is determined only by what volume of money and what volume of commodities and services that are offered against each other and realized in purchases at the two points of time or during a period; it is not in the least affected by banking accounts deposits and withdrawals, loans and loan payments or purchases of bonds and other claims, even if these purchases are done outside the central bank sector. On the other hand these transactions can of course like payments of interest affect the price of money indirectly by taking up money and thus reduce the space for payments of goods and services. [30]. In cases of accrued interest, this transactions do not occur in many cases, because the interest is added to the capital and does not cause a transaction. The interest payments can also influence indirectly in such a way that they comprise and compensate for administrative expenses as insurance, salaries, material and local rents. But these parts of the interest are given account in the market for changes of goods and services against money.

Now we can of course maintain that differing between capital amounts and interest does not agree with the practice of the bank and credit system. It if of course no wrong to argue that the loan or claim grows with the interest amount. But if we are to make clear the cause connections in the price formation process for goods and services, it is an important basic rule that we must only include cause factors and that identities therefore have to be cleared out at this process. And monetary and financial utilities are characterized by that supply and demand being always

equal. They cannot directly affect the price of goods and services, only the interest is affected. The real causal connections can therefore be considered summarised and measured by the interest and the interest amounts. Therefore it is not only permitted but also very important to clear out all monetary and financial magnitudes in the same way that we clear away the price *P* in the exchange equation, because it is only an identity, the real causal factor is *MV / T*.

f. Summing up of the Division.

The role that different payments and transactions play, when it concerns ´demand for´ and ´supply of˝ money within the society and the meaning they have, can be summed and visualized as done in table 8C. We can begin by making a division of ´demand for´ and ´supply of˝ money in three or four big areas. In the first one that deals with the supply of banknotes and coins and the cash-holders exchanges of banknotes and coins against check and giro means, in short with the supply and offer of money, it concerns an area that lies wholly or nearly wholly outside the market. The production of money is done in principle at no costs and the volume can be freely determined by the central bank; banknotes and coins do not render any interest, the central bank is the national economy´s most pronounced and unrestricted monopoly. The state´s loans in the central bank is only a book-keeping transaction. The central bank´s purchases of bonds or other loans and claims from the banking system and the market outside are in reality a form of taxation, a one-sided monetary transaction, also if the tax is collectively paid by the banking system and the national economy outside that. The exchanges that are effected, e.g.. deposits into and withdrawals from check and giro accounts are a form of exchange transactions and are in principle done at 0 % interest rate. Bookkeeping transactions within the same company or administration concern a single party, one-sided monetary transactions concern certainly two parties but go only in one direction and fall therefore outside the market, as also e.g. gifts and taxes do. Has the banknote volume been determined by the central bank, then also the cash-holders firm quotas between check and giro-means and banknotes and coins mainly determine the total volume money. The law of supply and demand is therefore not valid for the supply of money. On the other hand the money as demand for commodities and services meets the offers of these in the next sector or area.

The most important (in reality the only) part of the demand for money, is the national economy´s offer of commodities and services, which can be said to make area 2. The turnover in this sector is the core of the national economy and the economics. The purchases in this sector affect also highly the interest rates of loans and claims because the nominal interest rate level over the real interest rate level is to a great extent determined by the changes in the common price level. It is true that the nominal interest level is often somewhat lower than it should be, in order to give the creditor full allowance for the inflation. This can be an effect of routine, locking effects or lacking-insight, but on the whole the nominal interest rate level will now compensate for inflation. As I have shown earlier, this might have been the quantitatively greatest part of the interest rate level during the afterwar time even in developed western societies.

The third and fourth sphere, which the economists use to deal with, concerning supply of and demand for money, are the bank sector and the national economy outside, regarding deposits, loans, bills, bonds, money market instruments and other claims, that is the monetary and financial transactions in the national economy (besides supply of and exchange of money, as I already have dealt with. Such exchange transactions consist as I earlier have shown), of two or three different parts. They consist partly of an exchange of *x* money units against a claim of *x* money units at point of time 1 (the starting point), partly of an exchange of *x* money units in return for this claim of *x* money units being liquidated at point of time 2 or the points of time 2 to *n* (sphere 3). Partly they consist of an interest transaction, when *y* money units are paid for the interest due *r* at the points of time 1 to *n* (sphere 4). The sphere 3 is not affected by supply and demand. Of course one could maintain that, because there is a supply and a demand for the monetary and financial utilities, but because these always are the same, follow each other, one can as well maintain that the transactions fall outside the market.

That however does not apply for the interest transactions that are connected with the exchange in monetary and financial transactions. The value of a claim at one point of time compared with that at another point of time can vary considerably. But this value decrease (increase) corresponds to the interest *r*, which is paid as remuneration for the costs for the loan (sphere 4). The interest payments are an important market, even if the price of loans, the interest, in many ways differs from the price setting concerning commodities and services. And because there are loans and claims of many different types with highly varying values and value developments, *r* as designation for the interest of loans and claims can assume quite different values.

The interest is not the price of money, which is the same as the inverted value of the price level, neither is it the price of financial assets (loans or claims), which always follows the price of money. [(31).] We use to call the denomination of the money or the claims for their absolute price, but very often we have to count with the relative price of goods and services, their buying power, which is measured by indices at different points of time or through foreign exchange quotations. By the price level we as a rule mean the common price level in a special country, often presented as a consumption price index. The price of

money is in itself an uncomplicated concept, but becomes complicated by the difficulties to count price levels. The price of money is determined by supply and demand only in so far as the common price level is affected, i.e. to the extent that we buy goods and services.

The interest is on the other hand the difference in value between money, claims and loans at different points of time. It is often a very composite and complicated concept that is determined by demand for and supply of different claims and loans for different periods and different points of time. (27).

Regarding the earlier referred transaction groups, they have very different importance. The group 1 - 4 and 9 --12 might be among the most important, because these transactions mainly produce the monetary base in the national economy. Against it the transactions in the group 5 - 8 might be mainly an adjustment in different directions of the values in the groups 1 - 4 and 9 - 12. Changes in the values of groups 5 - 8, do not either claim money for the national economy outside the bank system, they mostly occur by clearing and the internal payment system of the banks and the central bank. But here we examine only the transactions with banknotes and coins and the national economy´s check and giro system. The group 13 - 16 is also very important, because these transactions produce the check and giro means, i.e. the remainder of the money. The most important group of all is of course 29 - 32, because it deals with the purchases of goods and services and the development of the price level.

What the economists with a sum concept call demand for and supply of money, are thus in many cases transactions that fall outside the market, because they are only bookkeeping transactions for the government or state or because they are one-sided monetary transactions in the form of collectively born taxes or because they are exchange transactions and therefore are not affected by supply and demand. Only the offer of goods and services and the interest- and charge part of the financial transactions fall wholly within the frame of the market. Regarding the demand for money that the supply of goods and services represent, this is of course the core in the context. But on this market the most unrestricted and influential monopoly is responsible for the supply of money, which at the same time is the demand for goods and services. The quantity equation deals with and measures how this demand meets the supply of goods and services. One cannot treat the process by common talk about supply of and demand for money. In the same way, as the supply of money is a demand for goods and services, the supply of goods and services is also s demand for money. This is a truism; it is a question of mirror pictures. We do not gain anything by using these. We can safely reject these and let the money represent the demand and sold commodities and services the supply.

g. A Comparison Between Friedman´s Concept and that of the Quantity Equation.

Milton Friedman uses as many other economists do the concepts and the terms ´demand for and supply of money´ (M^D and M^S). $M^D = M^S$ denotes the condition of equilibrium in different demand and supply functions for money. In his demand concept, he foremost discusses it as a function of variables such as interest, income, wealth and national income and he also includes variables such as savings and investments in his system.

I dare say that these variables have a very restricted, in many instances microscopic influence, regarding the demand for money and that this influence moreover often lies far back in the causal chains. If we shall start from my table for different transactions in and outside the market (and thereby impact on the price formation process), the real offer of goods and services makes the absolute major part of the demand for money and the rest is to find in the financial sector and deals only with the demand for the services, for which interest is paid. All that otherwise is called demand for money is without relevance, because it is a question of book-keeping transactions, exchange transactions or one-sided monetary or financial transactions. that fall outside the market and / or for which the law of supply and demand is not valid.

But Friedman also uses another demand concept that has relevance in the context. He has taken it from the so called Cambridge-school and it is expressed in his equation 6.

$$M = kPy$$

about which he says: "Equation (6) can be regarded as a demand function for money, with P and y on the right-hand side being two of the variables on which demand for money depends, and with k symbolizing all other variables, so that k is to be regarded not as a numerical constant but as itself a function of still other variables. For completion, the analysis requires another equation showing the supply of money as a function of other variables. The price level or the level of nominal income is then the resultant of the interaction of the demand and supply functions."

This appears later in Friedman´s equations (14) $M^D = M^S$, (19) $M = Py / V$ and (20) $P = MV / y$. He also uses equation (15) $Y/P = y = y_0$, which is wholly consistent with the formulas and concepts of the Cambridge school. (32).

It is the meaning of and the fitness for use of these concepts and formulas that I will discuss. It is consequently the question of a criticism of not only Friedman´s concepts but also of the Cambridge school that he has fetched his formulas from and refers to. The concept (but not the symbol) $k = 1 / V$ was used first by Alfred Marshall and enters as an element in

the description of ´the cash balance approach´. It has thereafter been used by a number of economists.

In this connection we can disregard the income concept being theoretically less satisfactory than the expense concept (or in many cases totally wrong). We can confine us to recording that Friedman with *y* means the transacted real volume commodities and services and by *Y* means *Py*. That he uses the concept and the term *y* instead of Fisher´s concept *Q* (quantity commodities and services) or *T* (trade) needs not mean any principal difference, only that he limits the analysis to that part of the payments of the national economy that is within the frame of the national budget. *Q* and *T* can of course be divided in the part that is within this frame or in the part that comprises other payments of goods and services and which also affects the common price level. We can thus count the total volume or replace it with the part that is within the national budget sphere, or the part outside that. We can also as *T* count with the total volume goods and services that are bought within a certain sector of the society, or the totally transacted volume of a certain commodity or service or the private person´s bought volume of a certain commodity or service or of commodities and / or services. The quantity equation has universal validity. On the other hand it is of course important that the used entities have relevance in the single case, that they are used within their sphere of application.

On the other hand one must, as I have said earlier, make another reservation. When we start from the equality $M = yP / V$ it is important to remember that *P* must be equal to 1 (or equal with 100 at index countings) to get a relevant demand for money, M^D. It must fulfil the equilibrium demand $M^D = M^S$. Otherwise it will be undecided and the concept meaningless. If we shall give the concept demand for money a meaning, we can express it as ´that which put claims on money´. But it is not enough either, it is also too undetermined. If you mean that the demand for money is greater during inflation and smaller during deflation than during price stability, the concept will not be useful. Had the demand for money increased thousandfold in Russia between the years 1989 and 1993? Of course not, most people would not have the ruble at all. They got ride of their banknotes, as fast as they could. The demand for money had instead decreased strongly, because the production and the offer of goods and services had decreased strongly. Had the demand for money been smaller in Sweden between 1928 and 1930? Of course not. As the supply of goods and services had not decreased, it was for this reason unchanged. Instead it was the supply of money that was not sufficient enough to buy the offered volume goods and services at unchanged prices.

David King makes himself a spokesman for the exact opposite view than Friedman in ´Banking & Money, p. 71: "It should be noted that in the exposition of the two theories of the demand for money (Keynes and Friedman, my remark) it will be assumed that there is no inflation; inflation means that money loses value over time and this acts as a deterrent to holding money, so the demand for money is likely to be much less when inflation is high than when it is low." The demand for money during inflation will not ceteris paribus be greater, as Friedman´s formula $M = yP / V$ shows, or smaller, as King says. So long King´s statement is however a recognition that the formula makes the demand for money undetermined.

Let us set out from the quantity equation, Friedman´s equalities and the numbers below. In order to facilitate the comparison I use the term *y* instead of the term *T* in the quantity equation. This does not change anything in principle. Here we have also excluded all monetary and financial transactions that influence the price-making process only indirectly.

The quantity equation: $M \times V / y = P$ Friedman´s equations: $M = yP / V$ $M^D = M^S$

$$\frac{1.000 \times 50}{50.000} = 1 \qquad 1.000 = \frac{50.000 \times 1}{50} \qquad 1.000 = 1.000$$

Suppose ceteris paribus that the values instead are changed to (the condition *P* is 1 is discarded):

$$\frac{100.000 \times 50}{50.000} = 100 \qquad 100.000 = \frac{50.000 \times 100}{50} \qquad 100.000 = 100.000$$

It is thus the question of a violent inflation, the price level has been changed a hundred times. If they mean that M^D has changed a hundred times, then M^D and M^S have changed equally much, which ought to mean price stability

Or suppose that the values at the original point of time (ceteris paribus) have changed to:

$$\frac{800 \times 50}{50.000} = 0{,}8 \qquad 800 = \frac{50.000 \times 0{,}8}{50} \qquad 800 = 800$$

In this case it is thus the question of a violent deflation with a price decrease of 20 %. If they mean that M^D has decreased with 20 %, M^D and M^S have decreased equally much, which ought to have resulted in price stability.

If the inflation during a period of unchanged supply of goods and services means a price increase of *x* % because *M* has increased by about *x* %, it is meaningless to say that the demand for money has increased by *x* %. In this case supply and demand increase by the same amount, which ought to result in price stability. The same money is ceteris paribus enough to turnover the supply of goods and services during the period, the demand for money has not changed. [(33).] The inflation depends in this case by the supply of money having increased by about *x* %, while the demand for money has remained the same.

An $M^D = yP/V$, where P can assume any values, leads thus to unreasonable consequences. Only when $P = 1$, there can be equilibrium between M^D and M^S, only then they are equal. The concept ´demand for money´ has principally come into being to explain the lack of price stability. For it being meaningful, the normal situation must therefore mean the demand for money at price stability. For the concept M^D to mean a meaningful and useful demand for money, it must thus meet the term $M = yP / V$, where $P = 1$ or simpler M / yV.

Friedman´s formulas for demand and supply are thus realistic in so far as they start from a quantity equation $M = yP/V$. At price stability, $P = 1$, is the ratio $M^D = M^S$ meaningful. The quantity equation and Friedman´s and the Cambridge school´s formulas agree thus with each other, they are equally correct as mathematical terms and count both the same facts from reality.

But what can we use them for? Which expressions is most useful? If we suppose that we talk about a person who turns over his cash of 1.000 crowns (shorter cr.) 90 times per year to buy the necessitates of life of 90.000 units of goods and services at the price 1 during period 1, is it then most correct and useful to speak of a supply of money of 90.000 units and a demand for these in the form of 1.000 cr. 90 times or 90.000 cr. Or is it most correct and useful to speak of a demand for money of 90.000 / 90 = 1.000 cr. and a supply of money of 1.000 cr.

If e.g. the velocity increases to 100, the supply of and demand for money need not be affected, if one uses Friedman´s concepts M^S and M^D. They can both still be 1.000 cr. This says nothing about the parties´ interests and dispositions, only that $M^S = M^D$ and realized values $M^S = 1.000 = M^D$ as before. If one uses Friedman´s concept M^S and M^D, substantial changes can take place in the variables lying behind, without this being reflected in M^S and M^D. There can even be an inflationary development without this being registered in M^S and M^D, which the example below shows.

The quantity equation: Friedman´s equations:

$$\frac{1.000 \times 180}{45.000} = 4 \qquad 1.000 = \frac{45.000 \times 4}{180} \qquad 1.000 = 1.000$$

If we use supply and demand in the terms of the quantity equation, the change is registered directly in the numbers of the equation. It is also not so correct to register a supply and a demand of only 1.000 cr. as in Friedman's concepts, when the total turnover lies at 40.000 - 50.000 cr. The natural thing is to think of a supply and a demand per period and not at a point of time (even if this were an average for the period), as it is, when we use Friedman´s concepts. It is also not so correct to use a magnitude that the cash holders hardly can influence at all instead of a magnitude that they have a not insignificant influence over. The average cash holder cannot at all affect the volume of banknotes and coins and also if he can affect the relation between the volume check and giro means and the volume banknotes and coins, he, as a rule, does not do this in reality.

The buyer has a direct interest in MV being so small as possible, of y being so large as possible and the price being as low as possible. The seller has the opposite interest. Nothing of this finds expression in the equations $M = yP / V$ and $M^S = M^D$. M^D does not represent the seller´s interest in the purchases, because yP/V denotes disparate interests and M^S does not represent the interests of the buyer, because it at least for the average cash-holder denotes a factor that he hardly at all has any influence over. For $M = yP / V$ to really represent the seller´s interest, V should be as large as possible, but the seller does not rule over factor V ; the buyer does that instead. In the buyer´s interest lies on the contrary that MV shall be as small as possible. This does not find expression, when V is taken out and instead included as a factor in the expression $M = yP / V$. What is left is only a factor M^S that the buyer hardly at all has any influence over. Friedman and the Cambridge school have thus replaced an equation that directly gives expression for the interests and lines of action of the parties with an equality in which the buyers´ cash is compared with the amount that the cash should reach for them to be able to buy the sellers´ supply of goods and services at no higher than unchanged prices, which in turn would be dependent on the sellers´ supply of goods and services and the velocity of the buyers´ money. We can also express it so that for the seller´s price to be as high as possible, the sellers should make sure that the buyers turn over their cash as many times as possible, something that the sellers have no influence over.

Both the quantity equation and Friedman´s formulas have in themselves correct variables, but whereas the quantity equation sets apart the cash-holders in their roles as buyers and sellers, Friedman ´s M^D-concept comprises the cash-holders both as sellers of y and buyers of y. To discuss supply of and demand for something, we must carefully keep apart the parties in their roles as buyers and sellers. Milton Friedman says in ´The Monetary Framework´, p. 8: "The essential feature of a money economy is that it enables the act of purchase to be separated from the act of sale." This the quantity equation does directly, but the concept is wholly lost, if we use the equations $M = Py / V$ and $M^D = M^S$.

The quantity equation $MV / y = P$ or $MV / T = P$ describes in a logical way the sellers interest for MV and P to be as high as possible, while the opposite is in the buyers interest. If the concept $M = yP / V$ is used, the seller has still an interest in y being as low as possible, and P and V being as high as possible, i.e. the concept describes disparate interests. It can be in nobody´s interest that numbers in both the numerator and the denominator become higher. We also reach a better consistency in the macro level, if we use the

common quantity equation, because MV represents the totally realized purchasing-power and does this in a better way than M^S that only represents potential purchasing-power. Then we also take in consideration that the supply of money is determined by the central bank with a certain assistance of the cash-holders. The quantity equation gives a better and clear supply and demand concept than other theory constructions, besides the fact that its usefulness is in a wholly different class.

The quantity equation gives thus directly expression to not only what the cash-holders pay and receive in volume and money units but it also describes the result of their behaviour patterns in accordance with their own opposite interests. Keynes criticised once Irving Fisher because the quantity equation and the quantity theory did not show, how the price formation process came about in practice. A very curious criticism considering that this is exactly what the equation does. Behind every variable and every transaction, when we use quantity equations, there are one or more cash-holders as buyers or as sellers. (34). There against it is nothing in Keynes theories and neither in a lot of other economists´ theories that shows how diffuse concepts such as interest, income, wealth, savings and investments affect the cash-holders and the price formation process in the single cases, at least not in a measurable way. There we can really talk about mechanical and over-simplified concepts.

h. The Concept ´Real Quantity of Money´.

That Milton Friedman went so wrong, is perhaps often due to his starting from and thinking of the concept ´real quantity of money´. Friedman´s thesis that the cash-holders strive to hold their ´real quantity of money´ as a meaure is not a good explanation, to the greater part it is wrong. (35). There is a small core of truth in the thesis, insofar as the cash-holders try to hold a cash that corresponds to the requirement for payments. But this requirement stands in relation to the nominal volume of the payments and not in relation to the real value of a certain cash. And if we examine, how it is in different situations, it is evident that the cash-holders act in rather the reverse way of what Friedman presupposes. (36).

Now it is not quite clear, what attitude Friedman has to his ´real´ cash. But for the concept to have any meaning, any logical function, it must mean that he believes that they try to keep their ´real´ cash unchanged and / or that they try to restore a changed level to an earlier position that may be considered to respond to their preferences. See e.g. ´Milton Friedman´s Monetary Framework´, p. 42: "(a) A unit elasticity of the demand for money with respect to real income."

Suppose that there is a society with a volume of money that consists of 0,5 billion (in Sweden milliard) crowns of banknotes and coins and 0,5 billion of check and giro means and that there is an influx from the central bank of 100 million in banknotes in the course of a period of time. According to Friedman´s way of looking at things both the nominal and the real volume of money increase in this way, which the cash-holders respond to by trying to reduce the volumes by giving out more money in order to restore the earlier real volume.

But that does not agree with reality at all. What the cash-holders do at first, is to increase the deposits at check and giro accounts, so that the earlier relation between the volume of banknotes and coins and the volume of check and giro means is maintained, which meets their preferences. This quota between the check and giro means and the banknotes and coins is one of the national economy's most stable relations. It is an expression of one of the most powerful forces of the economy. The quota can stay unchanged for many years and sometimes for decades. The cash holders deposit thus all the time banknotes and coins at check and giro accounts (or withdraw them in the opposite case) until the desired relation is reached. As they cannot influence the volume banknotes and coins (which Friedman agrees to), the process goes on by a deposit expansion (contraction) in check and giro accounts until the earlier relation is reached, which in the above example means that both volumes amount to 0,6 billion. Besides, the cash-holders try to increase the volume long-term deposits, which also means an increase of the volume money and claims in relation to the volume real capital. That would thus imply that the real money volume increases really all the time. Now this does not occur, because the price level is influenced at the same time, so that the real volume money rests at the same level. But instead of trying to restore an earlier level to the initial position, the cash holders thus de facto try to deviate from this level all the time. The cash holders do this because it is in their own interest to adapt at first the levels of notes and coins and check and giro money to each other but also in relation to the volumes of long-term deposits, other claims and real capital. The concept ´real money´ does not exist at all in the philosophy of the cash-holders, when they make these investments. That the cash-holders also count long-term with the real value of different resources is a different problem. It does not belong to this context. On the short term the nominal volume money is also the real one.

The above example can also be expressed in numbers and figures. We can then also suppose that y = 50 billion (milliard) crowns, that V = 50 and that P = 1 at the initial position.

The quantity equation:

$$\frac{(M_1 + M_2)\,V}{y} = P$$

The ´real´ cash:

$$\frac{M_1 + M_2}{P} = \frac{y}{V}$$

The initial position in figures, *B* states billion crowns:

$$\frac{(0{,}5 + 0{,}5)\text{B} \times 50}{50\text{B}} = 1{,}0 \qquad \frac{(0{,}5 + 0{,}5)\text{B}}{1{,}0} = \frac{50\text{B}}{50} = 1{,}0\text{B}$$

After the contribution 0,1 billion kr.:

$$\frac{(0{,}6 + 0{,}5)\text{B} \times 50}{50\text{B}} = 1{,}1 \qquad \frac{(0{,}6 + 0{,}5)\text{B}}{1{,}1} = \frac{50\text{B}}{50} = 1{,}0\text{B}$$

After the cash-holders have adapted the volumes, so they correspond to their preferences, the figures will be.

$$\frac{(0{,}6 + 0{,}6)\text{B} \times 50}{50\text{B}} = 1{,}2 \qquad \frac{(0{,}6 + 0{,}6)\text{B}}{1{,}2} = \frac{50\text{B}}{50} = 1{,}0\text{B}$$

Now the picture is not complete, before we have also examined, how *y* and *V* affect and are affected. Let us do this.

Suppose that we have the same figures as in the preceding example and that it thus is a society, in which the volume of money in average for a period (e.g. 1 year) amounts to 1 billion cr., where the turnover of goods and services *y* (or *T*) amounts to 50 billion or units per period, where the velocity *V* thus is 50 and the price level on these goods and services *P* = 1. We can also suppose that it besides these payments financial and monetary transactions occur for 100 billion that are not changed. We can also here disregard the division in M_1 and M_2, which we have dealt with in the foregoing example. B denotes as in the earlier example billion cr. The initial position (period 1) is then:

The quantity equation: The ´real´ cash:

$$\frac{MV}{y} = P \qquad \frac{M}{P} = \frac{y}{V}$$

$$\frac{1\text{B} \times 50}{50\text{B}} = 1{,}0 \qquad \frac{1\text{B}}{1{,}0} = \frac{50\text{B}}{50} = 1\text{B}$$

Suppose that the realized supply of goods and services during period 2 ceteris paribus decreases from 50 billion units to 48 billions units. We then get the following equalities:

Alt. 1a.

$$\frac{1\text{B} \times 50}{48\text{B}} = 1{,}04 \qquad \frac{1\text{B}}{1{,}04} = \frac{48\text{B}}{50} = 0{,}96\text{B}$$

The ´real´ cash has thus decreased from 1 billion cr. to 0,96 billion cr. and according to Friedman the cash-holders now would try to increase it to be able to return to the earlier level 1 billion cr., which represented their need of real cash in the initial position. But this does not agree with reality. What the cash-holders notice is that their nominal cash is unchanged and for them it is also the only real cash. What they notice too is that there is a tendency for higher prices. Most of them have no idea that the realized supply of goods and services has decreased, neither have the experts until after a time, when there is statistics available. If the decreased real volume of goods and services turned over depends on building up of stocks, the cash holders probably assume, if they are aware of it that this is a sign of the sellers expecting still higher prices. So if the cash-holders make any changes, it is to increase *V*, before further price increases have come to pass, that is they try to decrease their real cash volume further, not to increase it or try to restore it, as Friedman maintains. And the cash-holders do not care a bit about, if the volume of their or the society´s ´real´ cash or the ´real´ cash volume with an imagined cash-holder in a national economic function has increased or decreased. The result during period 2 can instead be:

The quantity equation: The ´real´ cash:

Alt. 1b

$$\frac{1\text{B} \times 51}{48\text{B}} = 1{,}0625 \qquad \frac{1\text{B}}{1{,}0625} = \frac{48\text{B}}{51} = 0{,}941\text{B}$$

that is the cash-holders can decrease the ´real´ cash still more to 0,941 billion cr.

Or suppose that the following change has occured during period 2 of the initial position.

Alt. 2a

$$\frac{1{,}04\text{B} \times 50}{50\text{B}} = 1{,}04 \qquad \frac{1{,}04\text{B}}{1{,}04} = \frac{50\text{B}}{50} = 1\text{B}$$

The ´real´ cash holdings in the society have thus not been changed. But the society has by the increase in the nominal cash holdings been hit by an inflation process. The cash-holders expect because of the price increases probably further price increases and they find as well that the cash holding itself has resulted in an inflation loss of 4 %. In this situation there are tendencies to higher velocity. This means that the ´real ´ cash levels begin to decrease. Quite contrary to what Friedman maintains, the cash holders then endeavour to get away from the ´real´ cash level. The result in period 2 can instead be:

Alt. 2b

$$\frac{1{,}04\text{B} \times 51}{50\text{B}} = 1{,}06 \qquad \frac{1{,}04\text{B}}{1{,}06} = \frac{50\text{B}}{51} = 0{,}98\text{B}$$

If we furthermore suppose that the sellers on account of the price increases hold back the supply of goods and services waiting for still more inflation, the development can be accentuated.

Alt. 2c

$$\frac{1{,}04\text{B} \times 51}{49{,}5\text{B}} = 1{,}07 \qquad \frac{1{,}04\text{B}}{1{,}07} = \frac{49{,}5\text{B}}{51} = 0{,}97\text{B}$$

Or suppose that the following change in relation to the initial position has occured in period 2:

Alt. 3a

$$\frac{1\text{B} \times 52}{50\text{B}} = 1{,}04 \qquad \frac{1\text{B}}{1{,}04} = \frac{50\text{B}}{52} = 0{,}96\text{B}$$

Through an autonomous rise of the velocity *V,* which the cash-holders have brought about, the ´real´ cash-holdings have decreased down to 0,96 billion crowns. In this situation Friedman thus expects that the cash-holders will try to restore the earlier level 1 billion cr. through decreasing *V*. But why would they try to restore a level that they earlier have forsaken autonomously? That would be the same as to say that they have no real power to act upon *V*, which all correctly made studies show that they have. Moreover, the price level has risen, which means that the cash holders probably expect further price increases and definitively have no interest of decreasing *V*; the opposite is true. The course of events will not be different, if the change in *V* is not autonomous, that is directly brought about by the cash holders, but has occured in the payment system for institutional, structural reasons. Also in this case the change in *V* leads to a price increasing process, which the cash- holders use to respond to by a further increase in *V*. The result can instead be:

Alt. 3b

$$\frac{1\text{B} \times 53}{50\text{B}} = 1{,}06 \qquad \frac{1\text{B}}{1{,}06} = \frac{50\text{B}}{53} = 0{,}94\text{B}$$

Moreover, if the price increase process leads to the sellers keeping back their supply of commodities and services, the development can be accentuated.

Alt.3c

$$\frac{1\text{B} \times 53}{49{,}5\text{B}} = 1{,}07 \qquad \frac{1\text{B}}{1{,}07} = \frac{49{,}5\text{B}}{53} = 0{,}934\text{B}$$

The reverse in alternative 1, 2 and 3 is true at deflation.

A change of one factor in the quantity equation can thus go simultaneously with not only a price change but also with a change in other factors, but this means often that above described changes are strengthened. Of course they can also be modified in some cases. But that does not change the effects of above described *tendencies*. That the cash-holders can increase their expenses by purchases of a greater quantity goods and services or by higher velocity, does not mean that they try to restore an earlier ´real´ cash level to the level, before the changes occured. Irrespective of the incentive to these coming from *V* or *y*, they act in the quite opposite direction and if the incentive to the change comes from *M*, the cash-holders try to change the ´real´ cash balance, which the change in *M* have not upset. They do that, not because the ´real´ cash balance is a target for them or play a role in their personal philosophy but because it is in their interest for other reasons.

How will now a single cash-holder look upon changes in his cash volume and in his purchases and sales? The average single cash-holder cannot change or in any other way affect the volume of his banknotes and coins. A single person can do that, but that results only in another person´s cash decreasing or increasing. The average cash-holder can, it is true, affect the volume of check and giro means by increasing or decreasing the quota between the volume of these and the volume of banknotes and coins, but as a rule he does not do that. The quota rests mostly firm from year to year. It is the velocity *V* of his money that he has most influence over, even if this factor is very stable too.

Suppose that the society (the state) is experiencing a severe inflation because the central bank has increased the volume of the banknotes by 10 % in a year and consequently also increased the total money volume *M* with 10 % from 40 billion crowns to 44 billion cr. This has in its turn led to an increase of *V* , which has risen from 100 to 102 per year. Suppose also that the volume goods and services *y* (or *T*) turned over is also unchanged, 1.000 billion cr. (or units), and that its share of the total transaction volume also is unchanged, 25 %. This means that *V* for goods and services has increased from 25 to 25,5. In this case the price level has increased from 1 to 1,122, that is by 12,2 %. We then get the following equalities, in which B = 1 billion cr.

The quantity equation:

$$\frac{M \times V}{y} = P$$

The ´real cash´:

$$\frac{M}{P} = \frac{y}{V}$$

To:

$$\frac{40\text{B} \times 25}{1{,}000\text{B}} = 1 \qquad \frac{40\text{B}}{1} = \frac{1.000\text{B}}{25} = 40\text{B}$$

To:

$$\frac{44\text{B} \times 25{,}5}{1.000\text{B}} = 1{,}122 \qquad \frac{44\text{B}}{1{,}122} = \frac{1{,}000\text{B}}{25{,}5} = 39{,}22\text{B}$$

How is then the private cash-holder affected by this inflationary development? Suppose that it concerns a cash-holder, average for his group and for the whole society. We can suppose that he has a cash of banknotes and coins of 1.000 cr. and of check and giro means of 2.000 cr. This means that during the year he gets an increase of 10 % or 100 cr. to the banknote cash, which means that he increases the volume of his check and giro means by 200 cr. Every day he gets thus an average extra addition of about 0,3 cr. in banknotes. This is thus during a severe inflation process. Now Friedman and some other economists maintain that the cash holder would perceive this, as if he had got a higher ´real´ cash volume than in the initial position and that he therefore would try to return to the earlier volume 1.000 cr.

What Friedman has not realized, is that what he call the real balance has not been changed (not increased), because the rise in *M* results in a price increase that leaves the ´real balance´ unchanged. (In above example it has even decreased, but that depends on the change in *V*.) If the incentive to the change comes instead from *V* or *y*, it is true the ´real balance´ is shifted, but that does not mean that the cash-holder would be inclined to restore it. He aims instead in precisely the opposite direction away from the equilibrium level, not because he cares about this ´real balance´, but because it is in his interest for other reasons. He tries, it is true, to increase his expenses, as the cash-holders often do during a price increase period, but this means an effort away from the original position. Day 1 the nominal banknote cash was 1.000:- crowns and day 2 it was $1.000{:}_{30}$ cr. Day 1 the total nominal cash was 3.000:- kr. and day 2 it was $3.000{:}_{90}$ kr. For the cash-holder this nominal cash is also the only real cash. That a statistician perhaps (how would he be able to?) succedes to calculate a ´real cash´ that day 2 is some ´öre´ (1 öre = 0,01 cr.) smaller or larger than 3.000:- kr., is completely ignorable from the cash-holder´s point of view.

The volume of the change alone should have made the economists realize that the difference is of no importance at all. It concerned moreover a period with an abnormally large addition of money. Is the addition instead 2 % per year, it is equivalent to about 3 öre in banknotes and 9 öre totally per day. And are the changes in *M* very small in the decision situations, which the cash-holders experience from one day to another, then the changes in *V* and *y* are still smaller. Often they constitute only a tenth or a hundredh of the changes in *M*.

But in reality the difference between what Friedman calls nominal and real cash, is not only extremely small but also nearly completely concealed. In reality the changes do not come in even levels of the example but vary from day to day, go in different directions and neutralize each other. They are concealed too by the average changes disappearing among the seasonal changes. Then they also vary from person to person and from enterprise to enterprise. There is nothing that the average cash-holder experiences as a difference between nominal and real cash level. For him there is only one, the nominal that he also interprets as the real one. On the other hand he has a conscious aspiration to bring about a balance between his different assets. He endeavours to uphold what he interprets as a normal division that meets his preferences. To the extent that his banknote cash increases, which the average cash-holder thus has no influence over, he increases also his check and giro means, deposits, securities, and real capital, because he probably experiences himself as more money-liquid than earlier. Often this happens however with a certain delay. The deposits at check and giro accounts will be made the fastest, thereafter changes in savings and easily sold securities, after that perhaps purchases of goods and services for consumption and latest investment goods and long-term investments in securities and real properties. But the cash- holders both as individuals and as a group are not interested in holding the cash at an absolutely determined level but in having cash that makes it possible for them to pay their expenses. This means a certain relation between their cash and other assets. If we will put the accent on the cash-holders cash, as some economists will do, then it is the quota between the volume banknotes and coins and the volume check and giro means, which is the important one and which we have dealt with earlier. The cash holders have as we know no influence on the volume banknotes and coins in their cashes. But a change in the cash-holder´s preferences and lines of conduct leads also to changes in the velocity *V* and these changes do not find expression, when we only count with cash volumes.

The greatest fault with Friedman´s concept ´real quantity of money´ is however that it builds on a phenomenon that represents only a small deviation from a normal situation and wholly disregards the strong tendencies in the context. If the central bank increases the volume banknotes and coins at the cash-holders, this generally leads to their at first increasing the volume check and giro means. If it results in inflation, this generally leads to the cash-holders increasing the velocity somewhat. If the cash-holders experience an increased offer of goods and services at otherwise unchanged terms, the result will be a price reduction, which can result in the cash-holders trying to reduce the velocity. In all these cases the cash-holders act in quite opposite way to what Friedman presupposes. Compared with these strong tendencies the changes in the volumes of the ´real cash´ (the quota between the volumes of the cash-holders money and the price level) are insignificant and concern furthermore a stable mean in the long-term. Besides, any changes would be split between a whole spectrum of assets from banknotes and coins to different types of real capital.

The concept ´real quantity of money´ gives a wrong description of the role that the cash-holders

play and of what actually happens in other respects in the process of price formation and it puts the emphasis on the wrong variables. [36] One can ask, why certain economists persist in adhering to a concept such as ´real cash´ that is not only theoretically unsatisfactory, nearly devoid of content and unrealistic but also completely inferior to the quantity equation as an explanation model. It does not contribute anything that common quantity equations do not describe better. It is a bad method, not capable of development and it only contributes to obscure the concepts. It should be removed from the economist´s theory systems and conceptual frameworks. The same remark can be directed against all ´cash balance approaches´ that count with ´real balances´.

i. Value Preserving Capacity Respectively Payment Capacity.

Friedman maintained that there are two points of views, Fisher´s and others, who in the usual quantity equations stressed the transactions with money, and the Cambridge school and others that stressed the money´s role as value preserver. [37] And it makes of course a crucial difference, if it is the price determining process and the general economic trend that we want to assess. A quantity theorist must maintain that the transaction aspect is completely decisive as compared to the value preserving aspect.

But this does not mean that the cash holding, the money´s role as a cash asset, is less important than its role as a payment medium. The quantity theory puts the accent on the money, both because it makes payment transactions possible and because it is a source for payments. There is no conflict between these two functions. They are intimately associated with each other. An amount makes the cash one day, performs a payment the next day and is an item in someone else´s cash the third or the fourth day. On the contrary it is so that a correct use of the quantity equation stresses more money´s role as cash than as a payment medium. It is the balance on the check and giro accounts that make check and giro means fullfledged money. It is the lack of special accounts and cashes allowing payments from other people that make cash cards money of an inferior order. On the other hand a correct point of view of the quantity equation distinguishes significantly between money and not-money such as savings means, because these cannot normally effect payments. In a recession there are often high volumes of savings means, bonds and money market instruments, but that does not help the national economy, if the volume money is insufficient to preserve enough buying power and to prevent price reductions.

Those who stress the value-preserving power have not realized the bottleneck character of the money, that there is a fundamental difference between check and giro means that allow payments according to simple, cheap and routine methods, and deposits in savings accounts that do not allow that. This is also reflected in the cash-holders being prepared to pay so expensively for the possession of money. They loose by that not only perhaps 5 - 10 % in interest income but perhaps also a number of percentage units to inflation, as compared with real capital. Nevertheless they hold large quantities of money. This appreciation is also reflected in the cash-holders´ constant choises between money and savings or other investments, in their transaction motive and their earning power motive, in their need of money-liquidity and their requirement for the assets to give a surples

.

Of course we can also speak about a requirement for long term liquidity, but this need is as a rule met by so many different value preservers that it does not represent any greater problem. It is met directly by money, deposits and bonds, and money market instruments as well as some other assets like exchange quoted shares and easily mortgaged house properties. The same is true for the solidity motive, the need to preserve the value of one´s assets. That money can be an excellent value-preserver, I suppose no one will object to. But there are many more values that function better in these roles. Art objects, metals, shares or forest properties can be it to a higher degree. And during inflation times the money is downright a bad value-preserver. If the cash-holders would see to the money´s role in this respect, very little would be placed in money.

No, it is a more acute and important choise that the cash-holders make. They choose between meeting the transaction motive, which makes them keep their money as a reserve for future purchases, and the earning power motive that makes them buy something that meet their needs. The earning power motive must thus be taken in a very wide sense. Mostly they buy to meet their daily needs of goods and services, but they can also invest in something else that give a surplus, a gain, a benefit, a profit, from savings to bonds and shares. To meet the value-preserving motive can of course be difficult sometimes, but it is mostly not an acute problem. It absorbs seldom the cash-holders thoughts in a current choise situation. If the transaction motive and especially the earning power motive are met in a the right way, we get mostly also the value preserving motive met at the same time, whether we make the one or the other choise. The Cambridge school emphasized motives that in most cases play a very small role in the cash-holders decisions. Even if the value-preserving motive is important for the development of our prosperity long-term, it has as a rule little importance for the development short-term and medium-term. Compare also with my report on the transaction- and solidity motives in chapter 3, p. 1 - 2.

That it is the payment ability and not the value-preserving ability that is wholly decisive for the development short-term and medium-term (1 - 7 years) is also reflected in the results of the central

bank´s lending and its supply of banknotes and coins, which directly affects the society´s payment capacity. [33]. It is also reflected in the determined quotas, which the depositors give the check and giro means and the savings deposits in relation to the volume banknotes and coins. If the cash-holders were to meet the value-preserving motive, nothing would be placed in money, as the value increase is 0 or negative.

j. The Role of the Velocity

A reason for Friedman's failure with his theory building is that he seems not to have understood the role of the velocity and thus the cash-holder´s unique and strategic role. He has not understood that *V* so to say lives its own life, that it follows certain determined laws and is a very stable factor. Above all he has not understood that the cash-holder´s preferences and behaviour are expressed in its changes. Sometimes he can accept its role, for example when he maintains that changes in *V* often go in the same direction and strengthen the effects that changes in *M* bring about and least do not counteract them. [38]. He repudiates theories that assert that *V* passively adapts itself after other variables, which Keynes and some other economists must claim to be able at all to maintain any validity in their theories. But Friedman concludes for example that *V* decreases during war times which as a rule is quite wrong. And as we have said earlier Friedman´s ´real quantity of money-theory´ does not agree with the way the cash-holders increase or decrease *V* in reality and neither how they experience and affect their cash balances. They have capacity, even if a rather limited one to increase or decrease their expenses by a change of *V*. The effect on this variable is wholly lost, if one uses the concept ´real cash´ and even the formula $M^D = yP / V$ is a bad tool, among other things because it does not separate the cash-holder´s different roles.

Furthermore Friedman´s formula $M = Pyk$ is even poorer than the formula $M = Py / V$, because Friedman in the concept and formula *k* not only includes 1 / V but also other variables that he considers affect the price formation. The velocity is a variable so important, if not to say strategic and quite decisive that it of course ought to be treated separatedly from other variables. As we know, it is precisely in *V* that most of the influence of the cash-holders is expressed. Besides Friedman violates the logic in the formula $M = Py / V$ or $MV / T = P$. In any case the latter formula is wholly universal, it comprises all factors that act in the price formation process. All other factors work through one of those. Consequently it is illogical to treat other external factors on an equal basis, which Friedman makes with his concept *k*. It would be the same as to put in the formula $Ma = k$ further factors besides acceleration in a kind of collective concept *a*.

k. Friedman´s Formula 7.

Still more empty of content are the concepts M^S and M^D, *M* and M / P, if we do not express them in the variables of the quantity equation but in other factors within the economics. To state them as functions of a great numbers of factors that do not stand in any determined relation to the variables of the quantity equation, is to use factors that nearly always are outside the frame of an economic analysis or at least a measurement If we start from Friedman´s formula

$$\frac{M}{P} = f(y, w; r_m, r_b, r_e; 1dP / P\, dt; u) \quad (7),$$ [39].

we find soon that nearly all of these factors have a small or insignificant influence on the variables of the quantity equation and in the price formation process; they have little relevance. Now the function regards a single person and disregarding the first and the last but one variable, Friedman does hardly develop it further in his theory system. .

The cash-holder is obviously not affected by interest terms, when he or she determines the quota between the check and giro means and banknotes and coins, because the former as a rule are free of interest; equally little is his velocity affected by interest changes. On the other hand a price increase process that often goes in parallel with an increasing nominal interest level can affect *V*, but then it is expectation about rising prices that is wholly determining. The interest level can on the other hand be of importance for the volume of goods and services turned over, but this is true first long-term as the interest development affects savings and investments and thus indirectly the offer of goods and services in the future. The interest can however influence the stock-keeping that in its turn can affect *T* or *y*, but the volume goods and services is perhaps affected considerably less by this than most economists believe.

Neither will provably variations in single person´s wealth have more than an insignificant impact on the variables of the quantity equation. On the other hand the income of the single person and the society has an impact as synonymous and equivalent with its expenses, with *MV*. But this is better, more exactly and more reasonably expressed in the *MV* of the quantity equation, which we know can be directly quantified. This does not mean that the single person's changed wealth lacks importance for his expenses. He may for instance try to increase his purchases by a higher velocity. But if others do not do the same, it needs not mean increased *V* for the whole society. The changes go often in different directions and cancel each other.

The expenses would on the other hand increase, if the enlargement in the fortunes resulted in

the cash-holders increasing their check and giro means in relation to banknotes and coins, but there is nothing that indicates measurable effects of this kind for the whole society. And in this case, this effect is measured of the quota M_2 / M_1.

It does not matter, if other factors show violent changes or are characterized by great variations, it this does not result in changes of *T (y), M* or *V*. That is true for example for savings that are done on check-and giro accounts. They result in an increase of *M* and can be directly expansive. But if they are considered and used as savings, their only result will be lower velocity. But, of course, long-term savings can improve the long-term liquidity at least for single individuals. But savings and investments will have a rather small impact on the supply of goods and services during the periods of 1 - 7 years, which the economists examine, when they look into the price formation process and the business conditions. The same thing is true for the interest (the nominal and the real), which comes still further back in the causal connections, because it mainly affects savings and investments. But the interest changes are often small and a rising nominal interest level is as a rule no obstacle for investments, because it does not often mean a higher real interest. In these cases it does not compensate the lender fully for the inflation and it may be an obstacle for the savings, especially if the nominal interest is wholly an object for taxation. On the other hand the interest may have effects for the stock-keeping in trade and industry that affects *T(y)*. Savings and investments are also of course important for the development of production, expenses, income and wealth long-term.

l. The Importance of the Factors.

The factors that Friedman includes in the above function have not at all the same dignity (power) as the variables of the quantity equation, which are the last links in the causal chains. Most of them are not only of slight importance but lie also mostly far back in these chains. Compared with the accumulated values of the quantity equation, other factors are insignificant. This is certainly the most important reason to the fact that Friedman´s theory system does not keep up. He has not understood the role that the variables of the quantity equation play against all other factors in the price formation process. The variables of the quantity equation stand so to say on their own legs and their measured values are valid independent of the background. Whether for example the offer of goods and services is affected by high or low capacity utilization, changes of stocks, inflation or deflation, high or low investments, high or low nominal and real interest etc., it is valid that the quantity goods and services *T* or *y* turned over, is just what together with *MV* determines the price, the prices or the price level at the actual time or during the actual period. The variables of the quantity equation are the only exact and the only definitive measures of behind lying factors and changes. Friedman has not been aware enough of the fact that the variables of the quantity equation being the factors that all others are working through and that the accumulated values of the quantity equation are the wholly dominating cause factors.

Is the money volume *M* during period 1 equal to 20 billion (milliard) crowns, then this is quite decisive compared to a change of 20 or 200 million crowns during period 2. Is the velocity *V* during period 1 equal to 90, this is quite decisive compared to the cash-holders autonomously, of their free will, increasing it to 91 during period 2. Is the offered volume goods and services during period 1 equal to 1.800 billion units, then this is wholly decisive compared to the cash-holders increasing their purchases of goods and services by 18 billion units during period 2. But the changes in *M*, *V* and *T* are of course also important as being those factors that bring about the price changes. The most important factors are thus the variables *M, V* and *T (y)* themselves in the preceding links or preceding period. It is of course also important to take into account their mutual influence. The result is also strongly affected by *V* and *T (y)* being so powerfully stable and, as said before, by their changes being so small compared to their accumulated values and as a rule also compared to *M*:s changes. Sometimes it is also necessary to concentrate on variables that show great changes, as for instance in *M* during the post-war time. [(40).] While *M* has been increased strongly in nearly all countries, sometimes by several hundred or thousand percent during a 50-year period, the volume of goods and services turned over has been characterized by yearly changes of some single percent unit and its influence on the price level has furthermore often been offset by small annual changes in *V*.

The changes in *M* are also the most important ones, because they are determined by human will, method and planning to such a high degree. Compare with a steersman at sea. That he can handle the helm, tackle successfully the ship through heavy storm and fog, through the rage of the elements that will heave the ship at different directions. The human being and the rudder are the most important factors. [(41).]

All other factors must thus, to be able to affect the price, affect *M, V* or *T* or some of their part components (M_1, M_2, a single cash, V_a, V_s, V_t, V_y, *y*, etc.). Irving Fisher expressed it so in ´The Purchasing Power of Money´, p. 74: "Thus far we have considered the level of prices as affected by the volume of trade, by the velocities of circulation of money and of deposits, and by the quantities of money and of deposits. These are the only influences, which can *directly* affect the level of prices. Any other influences on prices must act through these five. There are myriads of such influences (outside of the equation of exchange) that affect prices through these five.- - -" [(42).] And on page 150 he says: "- - -The value of our

analysis consists rather in simplifying the problem by setting forth clearly the five proximate causes through which all others whatsoever must operate. - - -".

But Irving Fisher was wrong when he maintained the existence of a causal connection directly between *M, V* and *T* on one side and *P* on the other. The relation between them is that of the identity. $M_r, V_r / T_r \equiv P_r$ and *M, V* and *T* can therefore never cause *P*, just as little as the time or the velocity can cause the length of distance. But at the same time it is true that what causes changes in *M, V* and *T* also causes changes in *P*.

That means also that influence can never be executed in the opposite direction. *MV* cannot momentarily or by time be affected by *P*, the exploited purchasing power $M_r V_r$ determines the society´s expenses and thus also its income. The relation between M_r, V_r and the society´s income is also that of the identity. But it is always the factors that are behind the expenses that determine not only them but also the income. *The causal relation goes never momentarily from income to expenses.* This is of course a truism, but fit is nevertheless important to remember. To make clear the causal chains, it is important to cleanse out all variables that only make the one term in an identity, another name for a variable, as *P* for *MV / T* or the variable seen from another angle of approach such as the income. The income is as we know the same amount as the expenses, but is seen from the receiver´s point of view. The consumers and others' income is certainly important, but it is determined by other cash-holders than themselves. On the other hand earlier expenses, *MV*, that also is the earlier income of the society, affect its expenses and income in the present situation or later, in the same way as earlier prices, that is *MV / T* earlier, can affect *M, V* and *T* in the present situation or later. That the expenses of the society determine its income, is easy to understand, if we think of the cash-holder´s different roles when purchasing and selling. The buyer is supreme in quite another way than the seller. If the buyer makes decisions for certain purchases and a certain level of expenses at the prevailing price level and has the necessary money, nobody is likely to stop him. But the seller cannot, now matter how much he desires it, reach the desired sales volume at the prevailing price level, if he misjudged the buyers payment capacity and buying willingness. That I use the concepts and the terms GNP or NNP does of course not mean that I give the income concept any own value in the price formation process. It is all the time the expenses that are primary. But because the income is all the time equal to the expenses, we can sometimes use a measure of the former as a measure of the latter.

What many economists have not understood concerning the quantity equation is its universal and -unique character. Above all, this might depend on their ignorance of the absolute passive role of the price in this connection. The price is in reality only, and cannot be anything else than, a quota between M_r, V_r and T_r or between D_r and S_r. They have not either understood that the causal relation always goes via the expenses to the income and never the other way round; what determines the expenses determines thus also the income. The variables of the quantity equation is always the tight section, the bottleneck that all other factors work through.

If we go back to Friedman´s above function 7, so are most variables ambiguous, undetermined, difficult to define and very seldom measurable in a way that set them in a determined relation to variables in the price formation process.

In some other contexts of economic theory, the use of such functions can perhaps serve as a starting-point, that one states a number of factors, a number of questions that can form the beginning of an analysis. (43). But this is definitely not applicable for the above function. The analysis does not become better by letting the function enter into a system with the number of equations being the same as the unknown. Brunner-Meltzer (See ´Milton Friedman´s Monetary Framework´, p. 74) reports for example that Friedman may probably need to add further more unknown factors to his equation system. It may not be difficult to find further variables that ought to be in the system in order to make it more comprehensive, especially as some of the most important and closest at hand are not there. If the variables are undetermined, the analysis will not be better, because the equation system can be solved mathematically. By stating a variable as only a function of other variables, we have often gone several steps backwords in the causal chain. (44). What must be done instead is to define factors that are of immediate importance for solving the problems and to define how these factors behave in relation to the result factors and to each other. (45). Often this is not either sufficient. We must often measure the factors and their relation to the result factor to be able to solve the problems. See also the citations from Marget, Petersen, Worswich and Schumpeter about the meaninglessness of using the microeconomics' apparatus of concepts within the money theory. (46).

A value is also more correct, the more exact it is, if this does not affect its universality. The value $W = mc^2$ is a better value than $W = f(m, c)$. ´The force = the mass x the acceleration´ is a better value than ´the force = *f* the mass, the acceleration´. ´The work = the power x the time´ is a better value than ´the work = *f* (the power, the time)´. Fisher´s value $M + M^1$ (my measures $M_1 + M_2$) is a better value than Friedman´s M^S and the latter´s value *Py /V* is a better measure than M^D. But both $M + M^1$ and *Py / V* are bad measures, because in reality the buyer determines both the quota M^1 / M (my measure M_2 / M_1) and the velocity *V*. On the other hand he does not determine Friedman´s value *M*. The most exact and most universal concepts and terms are of course *MV* and *T(y)*. That the use of the concepts and the terms M^S and M^D is rather unnecessary, is also shown by the fact

that most economists who have worked with the price formation problems, among them nearly all quantity theorists, have preferred to do it with the help of the variables of the usual quantity equations and behind them lying factors. [47] But it is true that variables such as Friedman´s M^S, M^D and $M = Py / V$ are more realistic than variables such as interest, wealth, savings and similar concepts. $M/P = y / V$ is anyhow a better measure than

$$\frac{M}{P} = f(y, w; r_m, r_b, r_e; dP / p\, dt\,; u)$$

But M / P itself is a bad measure, because it does not at all correspond to or measure the cash-holders´ behaviour or line of action. This realized line of action of the buyer is against it measured exactly by the volume MV in the same way as the sellers' line of action is measured exactly by the volume $T(y)$. But Friedman´s equation 7 does not serve any useful purpose. It can quite safely be discarded.

As a terminal point, regarding Milton Friedman´s work, it can be said that he made an enormous contribution, when he together with Anna Jacobson-Schwartz wrote ´A Monetary History of the United States, 1867 - 1960´, ´Monetary Statistics of the United States´ and ´Monetary Trends in the United States and the United Kingdom´ and pointed out the starvation politics of the Federal Reserve Board in the beginning of the nineteen-thirties. Compare also with Friedman´s indication that economists belonging to the Chicago school during all the early thirties argued for FRB to use systematically operations in the open market, [48] Friedman´s works had probably highly contributed to the greater realism that characterized economic theory and the national economies during the eighties and the nineties as compared with earlier decades. This is of far greater importance than Friedman´s failed theory building.

Is it the economists´ deep honour for the supply and demand concepts, that these have such a strong positive charging that has caused the concepts M^S and M^D to be used , in spite of their being nearly empty of content, when we speak of money, and do not allow any specification or further development, (if we exempt their interpretation in the terms of the quantity equation) and of course no measuring or even counting. Sometimes one cannot disregard a feeling that certain economists believe in a higher value of general functions compared to equations and algebraic expressions, as if the universality of the concept must not always be weighed against what the concept says and specifies. [49] One does not understand that what one wins in universality, one looses many times over by losing closeness to the questions propounded, to the problems and behind lying factors and by less possibility to count and quantify. One does not realize either that the mathematic superstructure is not worth an atom more than the theorems and premises it is built upon. [50] An important factor in economics is fairly the unwillingness to think in new trains of thought.[22, 51]

On the contrary the quantity equations are an excellent means of assistance for the analysis of the price formation process, that is the core of the economics, for interpreting and measuring the cash-holders´ handling their money and their offers of goods and services. [52] Their nominal cashes can be measured continuously in real time and in the past time to the least little detail both in the micro plan and in whole markets and macro levels. In the same way the cash-holders´ institutional setting and different degrees of activity, when it is the question of making use of their cashes, can be measured by the changes in M and MV as well as the sellers´ reactions are exactly measured by $T(y)$.

The quantity equation can also be divided into different means of payment, different types of V and different markets and parts of markets. Only deficiencies in statistics restrict the possibilities. The area where this restriction is most valid, is at present the quota between the transaction volume MV_t and the volume goods and services turned over MV_v. The measures of the quantity equation are also very much safer than the measures of behind lying factors. We can, it is true, measure for instance interest, savings and investments, but we cannot measure, how these affect T or y. There against we know that their effects are expressed in T or y. The variables of the quantity equation are the only safe measures also of behind lying factors. When we work with the quantity equation, we get also directly the interactions between these variables. If V increases with 2 %, the price or the price level increases equally much, if this effect is not neutralized by changes in M or $T(y)$ and this quite irrespective of how behind lying factors are affected. All that is required is that the comparison is made between comparable values. The quantity equation has universal validity, but only within its own application area. But this is true for all calculations and all sciences without exceptions.

It is striking how strong the relations and factors are that I have described earlier in this work. It is true for the central bank´s regulation of the banknote volume and the bank system´s part of this, it is true for the connection between the volume check and giro means and the banknote volume outside the bank system, it is true for the development of the velocity in relation to its long-term structural values and it is true for the connection between the transaction volume and the volume goods and services turned over. The connections are so strong that they characterize all correctly executed studies, in spite of all deficiencies in the statistical material or the lack of statistics. This is evident not least from the tables and diagrams in Appendix 4.

Notes.

1. Milton Friedman ´Milton Friedman´s Monetary Framework´ (MFI), 9 o. 10.

2. See a text-book like Lars-Erik Thunholm ´Svenskt Kreditväsen´, 1960 (LET60): "- - - I själva verket innebär denna upplåningsform ingenting annat än att staten själv tillskapar de pengar som den behöver för sina utgifter, och man brukar därför beteckna den som en finansiering genom sedelpressarna.- - -" (As a matter of fact this form of borrowing means only that the state itself creates the money it needs for its expenses, and one therefore usually calls it a financing via the printing presses.- -")

3. LET60, 276: "Statens möjligheter att påverka kreditmarknadens utveckling sammanhänga med dess kontroll över kreditinstituten och deras kreditgivning. - - - Konkret uttryckt innebär denna kontrollmöjlighet, att staten själv inom vissa gränser kan bestämma till vilken räntesats och på vilka villkor i övrigt den vill låna på marknaden. Visserligen måste staten i en viss given situation liksom alla andra låntagare acceptera marknadens för tillfället gällande villkor. Men i olikhet med andra låntagare kan regeringen via riksbankspolitiken förändra penningtillgången och därigenom också påverka marknadens villkor. Det är framför allt denna förmåga som ger staten dess särställning som låntagare på kreditmarknaden." (The possibilities of the government to affect the development of the credit market is connected with its control over the credit institutes and their credit granting. - - - Concrete expressed this control possibility means that the state itself within certain limits can determine at what interest rate and to what terms otherwise it will borrow in the market. Of course the government must in a certain given situation like all other borrowers accept the for the moment prevailing terms. But unlike other borrowers the government can via the central bank policy change the supply of money and thus also affect the termes of the market. It is above all this possibility that gives the state its unique position as a borrower in the market.)

4. David King ´Banking & Money´ (DK), 46: "- - -Of course, the fact that the Bank of England can print as many notes as it likes and have a negligible cash ratio means that in principle there is little constraint on the amount of money it could create in either cash form or deposits. - - -"

Ralph George Hawtrey ´Currency and Credit´ (RGH), 91: "The note-issuing authority which regulates the supply of paper currency is in a position to increase or diminish the reserves of the banks at will. This is in general true, even when the note-issuing authority is a Government defraying its own liabilities with notes fresh from the printing press. The notes, as fast as they are spent by the recipients, will pass into the hands of the banks, and swell their reserves."

5. Irving Fisher ´Inflation?´ (IF3), 64: "- - - That is one of the many damages that affect society as a whole; that is, at the end of a deflation period, the *wrong people are in charge*, and recovery is just that much delayed, and less successful, when it comes. - - -".

IF3, 67: "Whithout doubt we all suffer from other social harms besides those inflicted by the unstable dollar. But it is hardly possible to make too much of the unstable dollar. ´A mere unit of measure!´ says one critic, ´it is the things measured that are out of gear!´

But how could the things measured be otherwise than out of gear if they have been measured *wrong* - especially time contracts, on which modern business is so dependent, and more and more dependent as society becomes more and more highly organized? - - -"

6. DK, 69: "First, who are the monetary authorities? Ultimately, decisions over the appropriate level for the money stock are taken in the UK by the Treasury, which is under the direction of the Chancellor of the Exchequer who, in turn, is concerned with pursuing the economic politics approved by the Cabinet and Parliament. In principle, the Bank of England is charged with implementing the policies and decisions made by the Treasury; this relationship was formulized in 1946 when the Bank of England was nationalized, for the Treasury was then given powers to issue directions to the Bank. - - -"

7. Compare Lars Jonung ´Penningpolitik och kreditpolitik´, Ekonomisk revy 1972, 252: "En annan huvudorsak till att riksbanken har betonat kreditpolitik står att finna i de restriktioner som statsmakterna lagt på riksbankens verksamhet. Riksbanken har blivit ålagd att försörja bostadssektorn och staten med krediter till en räntesats som enligt politiska normer är tillrådligt låg. Dessa restriktioner begränsar riksbankens penningpolitiska handlingsutrymme och tvingar riksbanken att inrikta sig på att påverka den privata sektorn - - -" ("Another main reason for ´the Riksbank´ having emphazised credit policy stands to find in the restrictions that the government has laid on the activity of the Riksbank. The bank has been obliged to support the housing sector and the state with credits at an interest rate that according to political standards is advisably low. These restrictions limit the money political scope of action of Riksbanken and force the bank to concentrate on affecting the private sector. - - -")

8. Friedman-Schwartz ´A Monetary History of the United States´ (F-SI), 51, see n. 4-2.

9. Statistisk Årsbok 1998, 99, 295 - 305 etc., Kapitalmarknadsstatistik 1991, 1995, Sveriges Riksbank 1996, 62 etc.

10. J.S.G. Wilson ´Banking Policy and Structure´ (JW), 400: "- - - On those occasions when financial institutions are obliged to fall back on the ´cushion´ of their longer-dated securities by selling for the purpose of obtaining the liquid resources necessary

to support their lending programmes, they will become sensitive to any operations that affect the medium- and long term parts of the rate structure. It is in this way that debt management can be used by the authorities to influence the wider structure of liquidity."

11. Allan H. Meltzer ´The Crisis in Economic Theory´, 43: "We know that, in the short run, expansive monetary policies tend to reduce interest rates and restrictive monetary policy to raise them But in the long run, in a full employment economy, expansive monetary policies foster greater inflation and encourage borrowers to make even greater demands on the credit markets. Over the long run, therefore, expansive monetary policies may not lower interest rates, in fact they may raise them appreciably. This is the clear lesson of history that has been reconfirmed by the experience of the past several years."

12.Erich von Schneider ´Einführung in die Wirtschaftstheorie´, III (EvSIII), 29: "Einzahlungen aus dem Nichtbanken bei Kreditbanken führen also zu einer Giralgeldschöpfung, Auszahlungen an den Nichtbankensektor zu einer Giralgeldvernichtung.

Die Anstoss zu der Giralgeldschöpfung bzw. Giralgeldvernichtung, wie wir sie in Fall 1 kennengelernt haben, geht allein vom Bankkunden aus. Die Bank selbst verhält sich passiv. Welchen Teil der im Nichtbanken-Sektor befindlichen Zahlungsmittelmenge - also einer gegebenen Zahlungsmittelmenge - die zu diesem Sektor gehörenden Wirtschaftssubjekte in Form von Zentralbankgeld und welchen Teil sie in Form von täglich fölligen Forderungen an Kreditbanken zu halten wünschen, bestimmen allein die Wirtschaftssubjekte des Nichtbankensektors. Die Kreditbanken verhalten sich bei den aus *´diesen´* Wünschen resultierenden Giralgeldschöpfungen und Giralgeldvernichtungen völlig passiv. - - -"

13. F-SI, 697: "Each man believes he can determine how much of his wealth he will hold in money; yet the total amount of money available for all to hold is outside the control of all holders of money taken together - - -."

14. Irving Fisher ´The Purchasing Power of Money´ (IF1), 308, see n. 4 - 10.

F-SI, 678: "The relation between money and other economic variables has been not only close but also highly stable in form and character.- - -"

15. EvSIII, 52: "- - -Die Entscheidung darüber, welche Teile ihre Geldvermögens die Kunden in Form von Sichtdepositen oder Zeitdepositen halten wollen, liegt ja allein in den Händen der Gläubiger der Kreditbanken."

16. DK, 69: " - - - The purpose of this chapter and the next is to consider what factors determine the size of the money stock and then to see how the authorities can influence those factors to alter its size. In fact, the size is determined by the forces of demand and supply, that is by the demand for money by the public and the extent to which the banking system is willing to supply it. - - -"

17. EvSIII, 26: "Ob und wann und in welchen Mengen die Zentralbank primäre und sekundäre Aktiva zu erwerben oder abzustossen wünscht, bestimmt allein die Zentralbank. Ob ein Aktivum, das nicht Geld ist, gegen Zentralbankgeld umgetauscht werden kann, d.h., ob es liquid ist, beruht allein auf einer Willensentscheidung der Zentralbank. - - -"

EvSIII, 61: "*Ein Anwachsen der Giralgeldmenge im Kreditbankensystem ist nur dann möglich, wenn den Banken neues Zentralbankgeld von der Zentralbank zur Verfügung gestellt wird.* - - -"

Claus Köhler ´Der Geldkreislauf´, 41: "- - - Nur solange die Notenbank als Quelle des Zentralbankgeldes bereit ist, den Kreditinstituten die notwendigen flüssigen Mittel bereitzustellen, ist eine ständige Erweiterung des Kreditvolumens möglich."

18. LET89, 96: "Vidmakthållandet av en tillfredsställande likviditet är över huvud taget en av grundprinciperna för en banks förvaltning. En bank, som bedrev en lättsinnig likviditetspolitik, skulle ganska snart börja förlora inlåning och därmed undergräva grunden för sin kreditrörelse.- - -" (The maintaining of a satisfactory liquidity is on the whole one of the basic principles for the administration of a bank. A bank that maintained a careless liquidity policy, would quite soon begin to loose deposits and thus undermine the basis for its credit activity. - - -)

19. LET89, 196: "Likviditetspolitiken består framför allt i en viss disposition av bankens tillgångar. Delvis kommer detta till uttryck däri att banken tillämpar vissa allmänna likviditetsnormer för placeringen av sina medel över huvud taget, dvs. den inriktar sig på formellt kortfristig långivning eller placeringar i relativt kortfristiga värdepapper som vid behov kan omsättas på marknaden, men söker undvika att binda någon större del av sina medel i illikvida engagemang. Framför allt består emellertid likviditetspolitiken däri att banken bland sina tillgångar håller en betryggande reserv av *likvida medel*. - - -" (The liquidity policy consists above all in a certain disposition of the assets of the bank. Partly this comes to expression in the bank applying certain common liquidity standards for the investment of its means on the whole, i.e. it concentrates on formally short-term lending or investments in relative short-term securities that at need can be sold in the market, but tries to avoid to bind any greater part of its means in non-liquid engagements. Above all the liquidity policy, however, consists of the bank among its assets holding a satisfactory reserve of *liquid means.* - - -)

LET89, 199: "- - - Att hålla en likviditet som skulle täcka ett sådant ytterlighetsfall skulle därför vara orimligt; i praktiken kan en bank nöja sig med en väsentligt lägre likviditetsreserv. Hänsynen till räntabiliteten tvingar för övrigt banken härtill. Likviditeten kostar ju pengar, eftersom den innebär att

banken avstår från att låna ut en del av sina medel till god ränta och i stället håller dessa medel i form av kassa, som över huvud taget inte ger någon ränteavkastning, eller i sådana likvida placeringar som kortfristiga statspapper, som vanligen ger en ränteavkastning understigande utlåningsräntorna. En bank måste därför i sin placeringspolitik alltid väga likviditets- och räntabilitetssynpunkter mot varandra." ("- - - To hold a liquidity that would cover such an extreme case would therefore be unreasonable; in practice a bank can restrict itself to an essentially lower liquidity reserve. It is besides the consideration to profitability that compels the bank to this. The liquidity costs, as we know, money, because it means that the bank abstains from lending some part of its means at good interest and instead holds this means in form of cash that does not render any interest returns at all, or in such investments as short-term government securities that usually render an interest return lower than the loan interests rates A bank must therefore in its investment policy always weigh liquidity and profitability aspects against each other.")

Niels Thygesen ´The Sources and Impact of Monetary Changes´, 224: "- - - As we move to the microeconomic level the exogenous factor to the individual bank is the flow of deposits rather than reserves; adjustment consists in changing reserves and earning assets in response to the flow of deposits. - - -"

See also p.. 221, 225 snd 235.

20. Compare also Johan Myhrman ´Penningteori och penningpolitik´, 398: "Såsom jag visat både med exempel och i en teoretisk modell (Myhrman 1973) *har likviditetskvoter och utlåningstak ingen effekt på penningmängden* Det helt avgörande för effekten på penningmängden av *bankernas* beteende är deras val av reservkvot eller kassakvot. Oavsett vad bankerna gör med de medel som inte hålls i kassa, har det precis samma effekt på penningmängden." - - -"Medlen kan flyta ut genom den ena kanalen eller den andra, ut flyter de i alla fall." (As I have shown both with examples and in a theorethical model (Myhrman 1973) *liquid reserve quotas* and *ceilings on bank lending have no effects on the money volume.* The wholly decisive factor for the effect on the money volume by the behaviour of the banks are their choises of reserve quota or cash quota. No matter what the banks do with the means that is not held in cash, it has precisely the same effect on the money volume." - - - "The means may flow out through the one channel or another, out it flows in all cases.")

21. MF1, 10: "The factors determining the nominal quantity of money available to be held depend critically on the monetary system. For systems like those which have prevailed in the United States and in the United Kingdom during the past century, they can usefully be analyzed under the three main headings that we have termed the proximate determinants of the money stock: (1) the amount of high-powered money - for any one country this is determined through the balance of payments under an international commodity standard, by the monetary authorities, under a fiduciary standard; (2) the ratio of bank deposits to bank holdings of high-powered money - this is determined by the banking system subject to whatever requirements are imposed on them by law or the monetary authorities; and (3) the ratio of the public´s deposits to its currency holdings - this is determined by the public (Friedman and Schwartz 1963b, pp. 776 -98; Cagan 1965)."

22. JW, 385, see n. 3 - 11.

LET89, 195: "Även om varje företag, av vad slag det än är, har sitt likviditetsproblem, är likviditeten just för bankerna en särskilt central och viktig fråga. Skillnaden i detta hänseende mellan å ena sidan ett handels- eller industriföretag och å andra sidan en bank ligger framför allt i möjligheten att beräkna hur förhållandet mellan inbetalningar och utbetalningar kommer att ställa sig under den närmaste framtiden - - -."("Even if every company of any kind has its liquidity problem, the liquidity just for the banks is an especially central and important question. The difference in this respect between on one side a merchant or industrial company and on the other side a bank, lies above all in the possibility to count how the relation between the inpayments and the outpayments will be in the nearest future.- - -")

23. Alfred Marshall ´Money, Credit and Commerce´,74:

LET89, 229: "Den allmänna räntenivån påverkas också av graden av stabilitet i den allmänna prisnivån. Man skiljer mellan *nominell* och *real* ränta. - - -" (The general interest level is also affected by the degree of stability in the general price level. We differ between *nominal* and *real* interest. - - -)

JW, 113: "Inflation accelerated the pace of financial innovation through its impact on interest rates. Inflation has become an important determinant of the level of interest rates, because the level of interest rates reflects anticipations of future inflation and anticipations more or less follow recent experience with inflation. In this environment, lenders sought higher interest rates as compensation for the depreciating purchasing power of their savings and borrowers competing for funds have been willing to pay higher interest rates because they could expect corresponding increases in income from investments financed through borrowings. Consequently, rising rates of inflation led to higher interest rates. High interest rates increase the opportunity cost of holding non-interest-bearing assets and encourage the economizing of such assets."

JW, 258.

24. Christina o. Lars Jonung ´Den svåra riksbankspolitiken´, 450, n. 2: "Det kan påpekas att riksbanken under hela efterkrigstiden bedrivit en lågräntepolitik. Med hänsyn till inflationsförväntningar och skattesystemets utformning är realräntan vanligtvis negativ för de flesta ekonomiska agenter i den svenska ekonomin."

(It can be pointed out that the Riksbank during all the after-war time period has maintained a low interest rate policy. With regard to inflation expectations and the design of the tax system, the real interest rate is usually negative for most economic agents in the Swedish economy."

25. MF1, 9: "- - - We can therefore write

$$M = kPy, \qquad (6)$$

where *M, P,* and *y* are defined as in equation (4), and *k* is the ratio of money stock to income - either the observed ratio so calculated as to make equation (6) an identity, or the ´desired´ ratio so that *M* is the ´desired´ amount of money, which need not be equal to the actual amount. In either case, *k* is numerically equal to the reciprocal of the *V* in equation (4), the *V* in one case being interpreted as measured velocity and in the other as desired velocity."

y or $Y = Py$ occur also as variables in the equations 7, 8, 9, 11, 12, 15, 17, 18, 19, 20, 21, 22, 23, 24 etc. (See p.13, 23, 29, 31 - 34 etc.).

26. Compare Alfred Marshall ´Principles of Economics´, 588: "- - - The interest of which we speak when we say that interest is the earnings of capital simply, or the reward of waiting simply, is *Net* interest; but what commonly passes by the name of Interest, includes other elements besides this, and may be called *Gross* interest.

These additional elements are the more important, the lower and more rudimentary the state of commercial security and of the organization of credit - - -."

27. LET89, 231: "Det bör också observeras att ´räntenivån´ inte är något entydigt begrepp. Det är fastmer fråga om ett spektrum av olika räntesatser, där sådana omständigheter som krediternas löptid, den tekniska utformningen i marknadshänseende, riskmoment m fl faktorer ger anledning till en betydande differentiering och där inbördes förskjutningar i utvecklingen av sinsemellan olika räntesatser kan inträffa. - - -" (It should also be observed that ´the interest level´ is no unequivocal concept. It is rather the question of a spectrum of different interest rates, where such circumstances as the duration of the credits, the technical performance in the market, risk elements, etc. factors give reason to an important differentiation and where mutual dislocations in the development of among themselves different interest rates can occur.- - -")

LET89, 241: "- - -I verkligheten finns ingen enhetlig räntenivå, utan en mängd olika räntenivåer, en konstellation av olika räntesatser. Kreditmarknaden sönderfaller i olika delmarknader för kredit av olika slag, med avseende bl.a. på kredittidens längd och den säkerhet som ställs för krediten. - - -" ("- - - In reality there is no uniform interest rate level, but a lot of different interest rate levels, a constellation of different interest rates. The credit market is devided into different partial markets for credits of different kinds, with regard to among others the length of the credit period and the security that is given for the credit. - - -")

28. MF1, 37: " - - -We have interest rate data over very long periods of time, and these indicate that rates are very similar at distant times, if the times compared have similar price behaviour (Gupta 1964). More recently, the Federal Reserve Bank of St. Louis has been estimating the ´real rate´, and their estimates are remarkably stable despite very large changes in nominal rates."

MF1, 144.

29. Irving Fisher ´Booms and Depressions´ (IF2), 38: "- - - In a depression, therefore, when interest is *meant* to be low, the real interest amounts, sometimes, to over 50 per cent per annum! - - -"

Ib, 38, not 5.

Chang Kia-Ngau ´The Inflationary Spiral´, 62: "- - - Penelized by an artificially low rate of interest, the banks could scarcely meet their constantly rising expenses; they could not pay dividends in line with commodity price levels - - -". (During the Chinese inflation in the late nineteen fourties the nominal interest rate amounted to 23 - 26 % per month in 1948, i.e. more than 5.000 % per year. In spite of that it was the question of extreme low interest rates, because the inflation was at millionth %) (own remark).

30. Gottfried von Haberler ´Prosperity and Depression´ (GvH), 61, see n. 6 - 9.

AMI, 523: "- - - The essential point of the argument is that - in the words of on writer - the holders of the various types of cash balance ´compete for purchasing power´ with the holders of other types; or, to paraphrase Edgeworth, that each type of transaction against which cash balances are held ´absorbs or exercises a pull upon, the currency´, and thus affects the amount that is available for use in other types of transaction. - - -"

31. F-SIII, 26: " - - -The ´price´ of money is the quantity of goods and services that must be given up to aquire a unit of money - the inverse of the price level. This is the price that is analogous to the price of land or of copper or of haircuts. The ´price´ of money is not the interest rate, which is the ´price´ of credit. - - -"

32. MF1, 9, see my note 25.

See also MFI p. 29, 30, 31 and 33.

33. Compare Johan Myhrman ´Svensk kapitalmarknad inför morgondagen´, 175: "- - - Tillräckligt mycket pengar är den mängd som behövs för att genomföra alla reala transaktioner till de priser som råder. Om man tillverkar mer pengar än vad som av dessa anledningar behövs uppstår ett efterfrågeöverskott på varor och värdepapper. Följden blir stigande priser på dessa varor och värdepapper, även om det dröjer en tid innan denna effekt slår igenom." (- - - Sufficient amounts of money is the volume that is needed to carry through all real transactions at the prevailing prices.. If we produce

more money than necessary for these reasons there will arise a demand surplus for goods and securities. The consequence will be increasing prices for these goods and services, even if it takes time before this effect is realized.")

34. AMII, 100, see my note. 5 -4.

See also AMI, 143.

35. MF1, 1: "In all its versions, the quantity theory rests on a distinction between the *nominal* quantity of money and the *real* quantity of money. The nominal quantity of money is the quantity expressed in whatever units are used to designate money - talents, shekels, pounds, francs, lire, drachmas, dollars, and so on. The real quantity of money is the quantity expressed in terms of the volume of goods and services that the money will purchase."

At p. 13 Friedman uses the symbol *M/P* to denote ´the real quantity of money´.

Kenneth J. Arrow ´The Crisis in Economic Theory, 145.

F-SIII, 18.

36. Compare AMI, 436: "- - - Mr Hawtrey - - - as objecting to the ´real balance´ variant on the ground that it did not give a realistic picture of the type of calculation which, according to all variants of ´ the cash balance´ approach , is engaged in by administrators of cash balances in order to determine the size of the cash balance which they wish to keep by them."

37. MF1, 8: "- - - For the transactions version, the most important thing about money is that it is transferred. For the income version, the most important thing is that it is held. - - -"

MF1, 9: "The transaction approach makes it natural to define money in terms of whatever serves as the medium of exchange in discharging obligations. By stressing the function of money as a temporary abode of purchasing power, the cash-balances approach makes it seem entirely appropriate to include also such stores of value as demand and time deposits not transferable by check, although this approach clearly does not require their inclusion (Friedman and Schwartz 1970, chap. 3)."

38. MF1, 27: " - - - But we have argued that the effect on *k* is empirically not to absorb the change in *M,* as the Keynesian analysis implies, but often to reinforce it, changes in *M* and *k* frequently affecting income in the same rather than opposite directions. - - -"

MF1, 139, n. 8: "The factually wrong part is the assertion that the quantity of money and velocity tend to move in opposite directions; generally, they move in the same direction."

39. MF1, 13.

40. Compare Arne Næss ´Filosofins historia ´, 83: "En årsakslære blir håpløst komplisert hvis ikke årsakene kan tilbakeføres till noen fåtallige arter av grunnleggende årsaker, som gir forskjellige virkninger alt etter i hvilke kvantiteter de opptrer. Av to foreslåtte årsakssystemer som ellers står likt, men hvorav det ene opererer med færre eller lettere kvantifiserbare størrelser enn det annet, bør altså det første foretrækkes. Et meget komplisert system gir oss ikke muligheter for å bringe en forståelig orden i fenomenes mangfoldighet." ("An aetiology will be hopelessly complicated, if the causes cannot be brought back to a few types of basic causes that give different effects depending on the quantities, in which they appear. Of two proposed cause systems that otherwise stand alike, but of which one operates with fewer and more easy quantifiable magnitudes than the other, the first ought to be preferred. A very complicated system does not make it possible to bring about a comprehensible order in the manyfold of the phenomenon.")

41. IF2, 124: "- - - Nor need we take seriously the common objection that any control must be futile because ´other factors besides money and credit´ also have a influence. According to this reasoning the use of a rudder in steering a ship is futile, because, besides the influence of the rudder, there is the influence of wind and wave!"

See also Gustav Cassel ´Teoretisk Socialekonomi´, 24.

42. AMI, 67: "It must be immediately obvious, therefore, that there is no foundation whatever for any suggestion to the effect that these ´quantity equations´ are valid only upon the condition that certain magnitudes which are not given an explicit place in the equations are held constant. There is no question of holding anything ´constant´, either within or outside the equations in question. So long as the terms of these equations are defined in such a way as to make both members refer to the same things - and only to these things - over a period of time properly chosen in each case, the equation must be a true one. This, of course, is only another way of saying that all changes which can be shown to affect the ´prices´ in which we are interested must necessarily be reflected in one or more of the other variables in the equation."

See also AMI, 81 and 143 and Joseph Schumpeter ´Das Sozialprodukt und die Rechenpfennige´, 677.

43. AMII, 280.

Compare also my note 7 - 18, AMII, 591.

AMII, 379, note 65: "- - - For the temptation indicated may in many cases be much less serious than another temptation: namely, the temptation to avoid the labor of finding out, by actual observation of the functioning of the economic process, what the possible economic variables are. It is an open question, certainly, whether the mere setting down of algebraic symbols for a series of variables whose economic character and even identity has not been clearly understood has carried us as far on the road to an adequate understanding of the nature of the forces which make economic magnitudes what they are, as have those ´partial´ analyses whose very

inadequacy to explain the whole of observed reality has in many cases led to the discovery of new variables which economic analysis can show to be capable of affecting the final result. - - -"

Erling Petersen ´Macro-Dynamic Aspects of the Equation of Exchange´, 7: "As a guide for any business cycle policy, however, the mathematical treatments have usually been too abstract to be of much practical value. The mathematical economist often regards his problem as solved when he has reduced it to *measurable* quantities, without attempting any introduction of *measured* quantities in his formula. That is to say he will express a phenomenon *A* as a function of two or more factors

$$(1) \qquad A = f(a, b, \ldots)$$

without paying much attention to the actual form of the function. Mathematically a treatment like that can be defended, but economically the main importance may be found in the relation between the variations in *a, b* etc. That is to say that in econometric reasoning it is often more important to determine the relative importance of the factors and their variations than to trace each one of them which may have only an insignificant influence on the quantity investigated.

A determination of the absolute or relative importance of different factors influencing a certain quantity requires actual statistical data."

- - -

"- - -To make economic science a system of not only measurable, but actually measured quantities, will at the best take generations."

- - -

"The advantage of a descriptive system of this kind is, however, so evident that even a rough approximation might be of value. There also is a method which to some degree can bridge over our lack of exact knowledge, In many cases where no statistical figures can be had that will fit the mathematical formula, some information can be had by using hypothetical figures of various probability, In that way at least fairly definite *limits* may be laid down."

44. Compare Paul A. Samuelson ´Foundations of Economic Analysis´ , 172, not 43: "It is clear that every assumption either places restrictions upon our empirical data or is *meaningless*. A price must be paid for any simplifications introduced into a basic hypothesis. This price is the limiting of the field of applicability and relevance of the theory because of the extra empirical restrictions to be imposed on the data. Many writers do not appear to be aware of this; in any case few have indicated the costliness of their assumptions or have adduced any evidence to support a presumption of their admissibility.

There is a further serious difficulty. Despite the fact that developments in this field are not recent, and that mathematical methods of exposition have been employed, ambiguity still permeats the contentions of many writers. This ambiguity can go unnoticed precisely because there has been so little interest in the operational significance of these assumptions. To put the matter somewhat harshly, ambiguously defined assumptions are used to give a semblance of deriving theorems which are themselves inconclusive."

45. Milton Friedman ´Essays in Positive Economics`, 18: "However, it does not always pay to use the more general theory because the extra accuracy it yields may not justify the extra cost of using it, so the question under what circumstances the simple theory works ´well enough´ remains important."

46. AM1, 146:"From a Walrasian approach, ´abstractness, generality, and mathematical elegance have in some measure become ends in themselves, criteria by which to judge economic theory. Facts are to be described, not explained. Theory is to be tested by the accuracy of its ´assumptions´ as photographic descriptions of reality, not by the correctness of the predictions that can be derived from it´ (Friedman 1953, p. 91). If the real interest enters one part of the model it must be used in all, hence it is logically inconsistent and presumably invalid to regard it as constant for one purpose but as variable for another.

The economic principle of equating marginal costs in all directions in order to achieve minimum cost for given output applies to the use of theory just as much as to other productive activities. Generality reduces cost in one direction, specificity in another. Just where the right margin comes is a matter of judgement about which scholars may differ. Presumably, we all tend to develop our own methodological style or bias. - - -"

G.D.N.Worswich ´Is Progress in Economic Science Possible?´, ´The Economic Journal ´, March 1972, 73 - 86:

Ib., 83: "- - - Too much of what goes on in economic and econometric theory is of little or no relevance to serious economic science? - - -"

Ib., 78: "There now exist whole branches of abstract economic theory which have no links with concrete facts and are almost indistinguishable from pure mathematics. - - -"

Ib., 74: "- - - The standards are high, the intellectual battalions are powerful, but notwithstanding the appearance of formidable progress in techniques of all kinds the performance of economics seems curiously disappointing, the moment one puts a few test questions. - - -"

"That economic science may not provide complete answers to such questions is understandable and acceptable, but are we nearer to answering them than we were ten or twenty years ago?"

Ib., 84: "Does the fact that some economists play abstract games of little relevance and others engage in meretricious quantification prevent serious economists from going about their business."

AMII, 347: "XVI. Taken by themselves, market demand schedules of the Marshallian type, and the body of analysis, which they are designed to summarize, are intended to deal only with *discrete situations*, in each of which a price is determined by the intersection of the market demand and supply schedules prevailing at the moment the relevant price is realized. Nothing in these market demand and supply schedules tells us how we *pass from one discrete situation to another.*"

Joseph Schumpeter ´Journal of the American Statistical Association´, 1936, 792: "- - - the old supply and demand apparatus renders its very limited service only if applied to individual commodities . . . and that it either loses or changes its meaning if applied to comprehensive social aggregates."

47. Don Patinkin i MF1, 115: "- - -In particular, the Chicago school - as exemplified especially by Henry Simons - was basically not interested in the demand function for money (Simons never even mentioned this concept!) and carried out its analysis instead in terms of Fisher´s *MV = PT* equation.- - -"

48. MF1, 163: "- - -´Frank H. Knight, Henry Simons, Jacob Viner, and their Chicago colleagues argued throughout the early 1930´s for the use of large and continuous deficit budgets to combat the mass unemployment and deflation of the times´ (Davis 1968, p. 476).

They recommended also ´that the Federal Reserve banks systematically pursue open-market operations with the double aim of facilitating necessary government financing and increasing the liquidity of the banking structure´ (Wright 1932, p. 62). - - - "

F-SI, 693: "- - - At all times throughout the 1929 - 33 contraction, alternative policies were available to the System by which it could have kept the stock of money from falling, and indeed could have increased it at almost any desired rate. - - -"

49. Knut Wicksell ´Value, Capital and Rent ´, 53: "It is, by the way, evident that the *ekonomic* aspects must be the determining ones everywhere: economic truth must never be sacrificed to the desire for mathematical elegance. - - -"

50: Stephen Toulmin ´The Philosophy of Science´, 81: "- - - Now and then there may have to be second thoughts about matters which had been thought to be settled, but when this happens, and the lower courses have to be altered, the superstructure has to be knocked down, too, and a batch of concepts in terms of which the scientist´s working problems used to be stated - ´phlogiston´ and the like - will be swept into the pages of the history books. - - -"

51. Fritz Machlup ´Essays on Economic Semantics´, 96: "I have sometimes observed that to grasp an argument that leads to conclusions hitherto rejected is much more difficult than to grasp an argument supporting a preconceived conclusion. Where I do not like the results, I am more eager than otherwise to question the validity of the premises, the consistency of the argument, the clarity of the concepts. Concepts perfectly ´clear´ to those who accept the conclusions often seem vague, empty, or self-contradictory to the opponents. - - -"

52. AMII, 734: "- - - The first of these further contentions is that, of *all* the formal algebraic frameworks that have been proposed thus far, the one that has shown the greatest flexibility, the greatest comprehensiveness, and the greatest possibilities for further constructive elaboration, is also the *oldest* of these algebraic framework. namely the type of framework represented by a series of ´stream´ equations of the general Fisherine form. And the second contention is that the power and comprehensiveness of the type of formulation is demonstrated by a further consideration: namely, that although the alternative frameworks *have certainly brought illumination to, and have certainly necessitated elaborations and refinements of, the ´oldest´ type of framework just indicated* , the superiority of the latter type of framework is evidenced by the fact that it has been able, with one notable exception, to *incorporate* all that is essential in the alternative formulations, and, at the same time, and with no exception whatever, to provide a necessary *analytical control over* these alternative frameworks. - - -"

APPENDIX 1

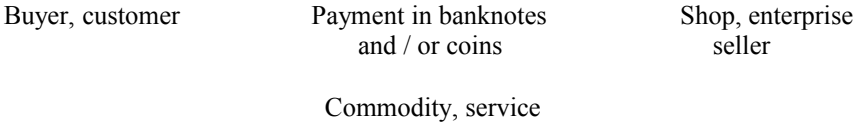
To the chapters ´Means of payment, Different Types´ and ´Payments and Transactions´.

DIFFERENT TYPES OF PAYMENTS AND TRANSACTIONS.

A great part of the transactions in the society consist of financial payments (for instance for a bond or a money market instrument or another claim) or merely changing instead of payments for goods and services. For my diagrams this implies as a rule only that a claim or a type of money (means of payment) takes the place of the goods or the services and that the part transactions in other respects go on, as if the purchase would have concerned a commodity or a service. But in most cases the changing and sometimes also the financial payment is only an element in the payments of goods and services.

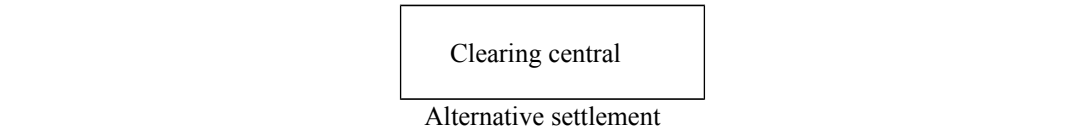
Payments by banknotes and coins.

A banknote- and coin payment:
Diagram 9A.



Payments by check.

A check payment:
Diagram 9B.

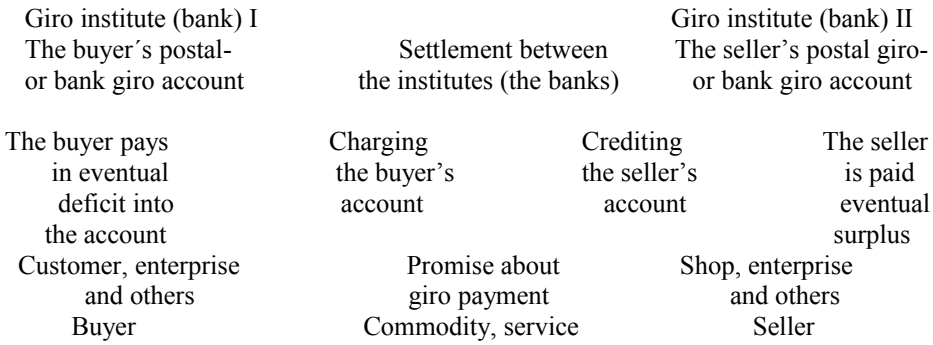


Bank I and II can be replaced by the buyer´s and the seller´s accounts at the same bank.

Nowadays a great deal of the check settlements are made by automatism. The checks can be coded in advance by optic code, magnetic tape or chip in order to facilitate handling, control and records. These statements can then be transferred to and from a central computer by magnetic tape, disc or cassette via messenger, post, telephone or computer on certain occasions, for instance at the end of the day (off-line) or directly via computer (online). This can for example be done from computer registers in shops and service points or via the banks.

Payments via bank- or postal giro.

A giro payment:
Diagram 9C.



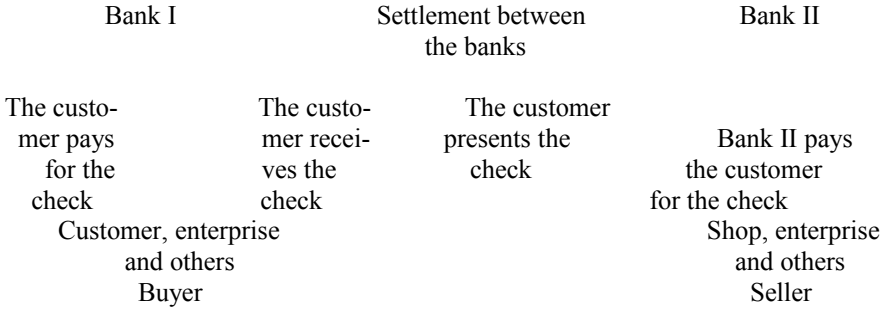
If the payment is effected as an out-payment, institute II is excluded, and if it is made as an in-payment, the institute I is excluded. If two banks are affected, a clearing institute may be added. If the parties have the same giro institute (bank), No II is excluded.

The contact with the giro institute or the bank is nowadays often made by telephone, by fax, or by computerized telephone transmission from computers or computerized registers in shops, service enterprises or offices, which of course makes the process faster. This is true for among others the great volume payments with account cards, for instance by registration on a magnet tape or by a direct transmission, where the transferred amount is drawn from the giro account of the holder. To the extent a transfer, in-payment or out-payment is initiated by a visit at a bank or a post office, the continued handling within the payment system is often effected by a far forced electronic automatism. But the most important quality of the giro systems, accounts from which transfers and other drafts can be made and where transfers can be made directly from the accounts of other persons, companies and administrations, is not changed.

The banks have nowadays common accounts for both giro- and check payments, which probably facilitates the transfers. By crediting checks can also be received on giro accounts and giro remittances can be received into check accounts.

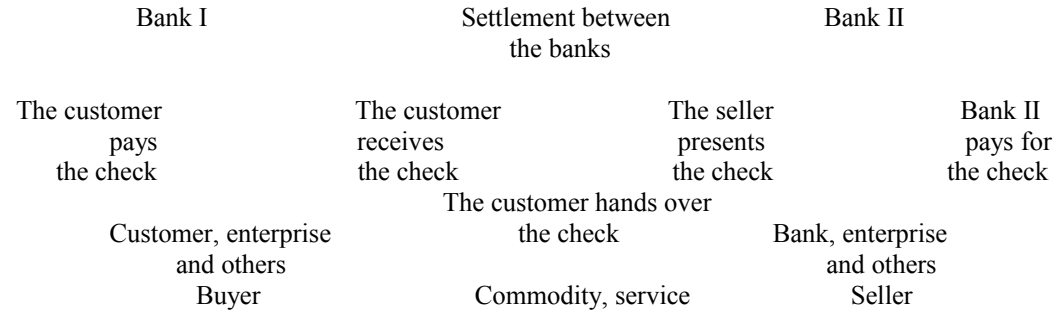
Payments by bank drafts and money orders and others..

Such a payment (in many cases):
Diagram 9D.



I use here the expression check for the bank check, money order, cashier´s check or other such remittances without an own account. In this case it will not even be the question of a purchase of goods and services for the economy outside the bank system but only a number of changing operations.The check can of course also be presented at the bank, where it has been bought, at a post office etc. Instead of paying for the check the customer may of course also have sold a commodity, a service or a document of value to the bank. But then the check is a payment means for the bank system and not for the economy outside, which I am dealing with here. Settlements between the banks are generally effected via a clearinghouse.

Such a payment (in other cases):
Diagram 9E.



If the parties have the same bank, the bank II is excluded. In exceptional cases the check may be the object for an extra transfer to a new seller.

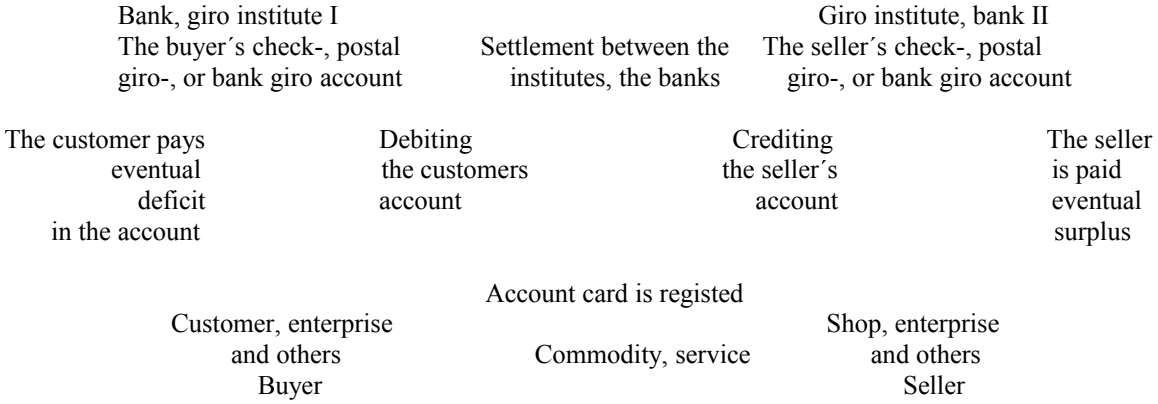
Payments by account cards (payment cards).

These payments mean as a rule that one or two more intermediate links have materialized in the chain of check- and giro payments. The payments take a longer vay but not always more time.

a) Direct debits of check and giro accounts.

The parties receive from the bank / card institute periodically statements of made purchases and payments together with other entries in their check- and giro accounts. For the seller this can be the same bank or card institute, but the transaction can also be affected by another bank or card institute, if buyer and seller use different intermediaries / cashing banks. When the buyer´s deposited amount in the check- or giro account is approaching 0 in a debit account or the credit limit in an account with credit, he must furnish further means into the account, unless other parties have made or make sufficient payments into this account.

An account card payment as to a.
Diagram 9F.

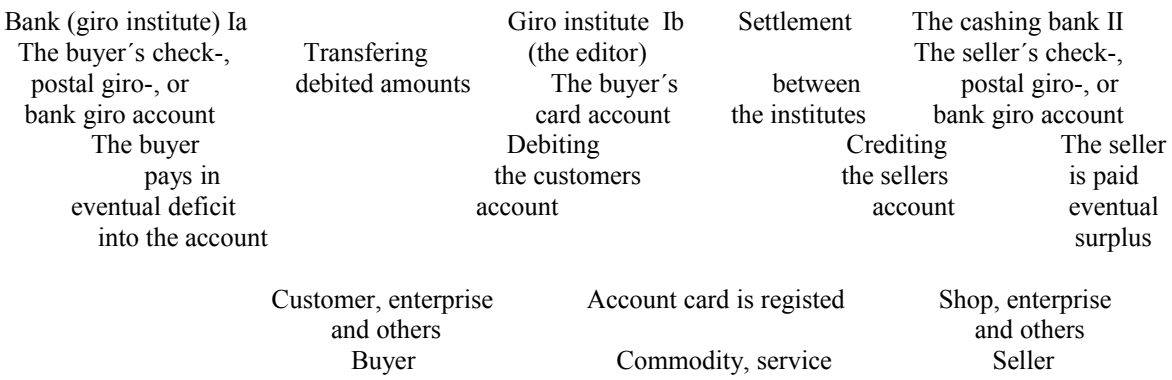


If the parties have the same giro institute (bank), No II is excluded. If two banks are affected, a clearing institute may be added. At a card payment via the account card function of a bank the routines do not differ worth mentioning from other giro payments. They do not differ either, when the bank cooperates with an account card institute (card issuer, for instance, the Swedish. Nordea's cooperation with Visa). On the other hand transactions between the bank and the card institute will have to be added..

b) Debit of a separate card account.

The buyer gets from the card institute / the bank periodically statements of purchases and payments made from the special account. The seller gets on the other hand in most cases his payment and accounting via the check- and giro account, which has been selected for receiving the payments from the customer´s account cards and accounts. When the buyer´s deposited means in the account approaches 0 in a debit account or the credit limit in an account with credit, he must furnish further means into the account, as a rule from his check- or giro account. It is then upon this one that the real payment demands are put. Other parties cannot as a rule supply means to the card account. Exceptions are entries of interest and corrections by the card institute (the bank). For bank II the expression ´inlösare´ (cashing bank) is usually used.

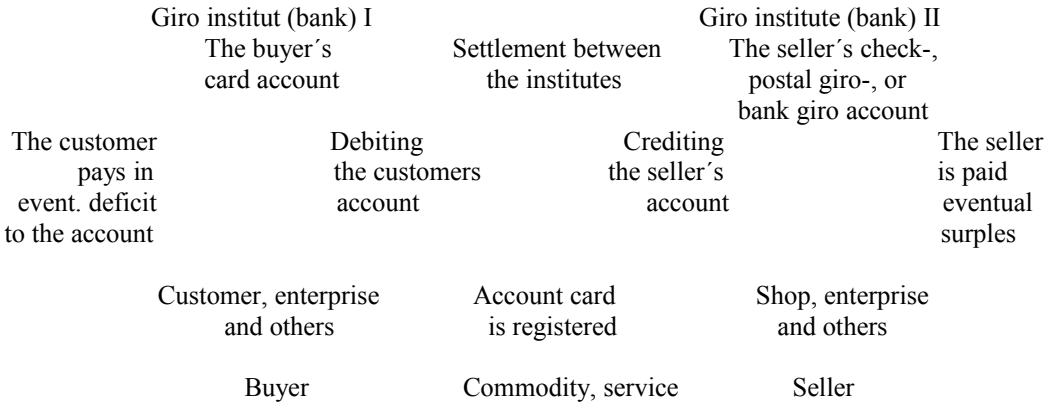
An account card payment as to b:
Diagram 9G.



c) Debiting of a separate independent card account.

If it would be possible that payments to the buyer´s card account could be made by outsiders, then we could consider the card institute as a complete giro institute that then could effect in-payments and out-payments for one and the same card account owner. This is not the case to-day, as far as I know. In all cases with separate accounting from the card institute, the buyer´s account can be supplied means only from the holder´s own check- and giro accounts (apart from interest and corrections). And when it is a question of accounting from the card institute to the seller (if there is such a direct accounting), the payments are made via the seller´s check- and giro accounts, even if such a separate account may have been set up just for receiving the card payments. If it would be as in alternative c , a common check- and giro account of the buyer would not have to be charged for every accounting, as balance brought forward and payments from outside perhaps would cover the out-payments of the period. In that case we would thus be able to talk about an independent card account as a part of or in excess of check- and giro accounts. But this is not the case to-day.

An account card payment as to c:
Diagram 9H.

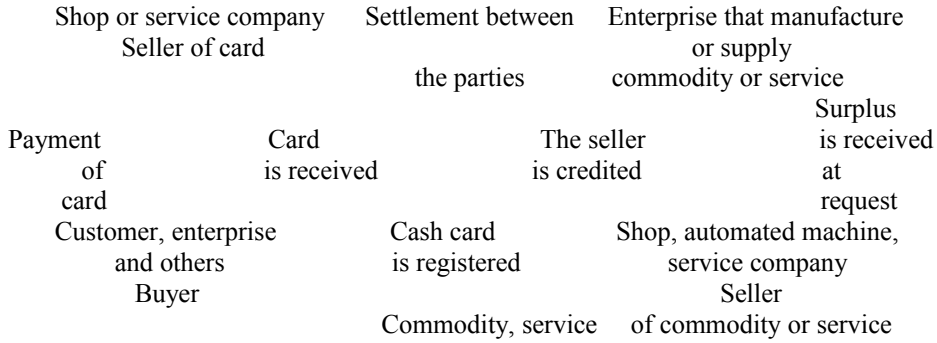


In all three cases (a, b och c) an online payment debiting and crediting of the parties occurs at the same time at the registration of the purchase by the use of the customer´s account card. The four (three) arrows for this can be replaced by an arrow rectangle (arrow triangle).

Observe that all these transactions up to now can denote only a single purchase of goods and services. Even if payments of this type are very rational, they involve thus a lot of transfers and quotations. We have moved rather far away from the only two-sided purchase with banknotes and coins in a single transaction.

Payments by cash cards (memory cards).

A payment by a cash card:
Diagram 9J.



The cash card can be used, as long as it still carries an amount of money. The card can be loaded again in most cases. In many cases it is the same enterprise that manufactures and sells a commodity or distributes a service that also distributes the cards. In such cases one link in the chain is omitted.

APPENDIX 2. To chapter 3 ´Payments and transactions´.

DIFFERENT TYPES OF PAYMENTS AND TRANSACTIONS.

It may be of interest to specify closer the different types of payments and transactions beyond the specification in diagram 1B ´The main features of the payment system´ in chapter 1 and in table 3B. ´Different types of payments and transactions´ in chapter 3. In the following a division has been made of these with regard to whether and in what way the bank system is concerned or not concerned and between what kind of actors payments and transactions are made. In this list it is unavoidable that some actors, payments, and transactions are counted more than once, sometimes several times. But this will be of no importance, as long as it does not concern volume measurements. Important in this connection is, however, that as far as possible all important types of actors, payments, and transactions are counted, the connection in which they occur, to what group they belong, and the demarcations between them, because these are often decisive for the kinds of demands that are put upon respective actor and type of money. Especially important, is as we know, the demarcation between the bank system and the cash-holders outside. In the list ´cash-holders´ stand for these of the public, the enterprises, and the administrations.

The list is also influenced by Swedish conditions. But it should not be difficult to make a corresponding list for another country. Sometimes it is probably enough to change the name of a type of transaction. The list does not at all claim to be faultless or complete. Further examples can surely be quoted, especially from the banking system. But because the transactions within the bank system are not of main interest for this study, this should suffice. The list is chiefly an example of transactions that because they belong to the area of the bank system, as I have defined it, are not of special interest in the same way as those transactions concerning the area of the public, the enterprises, and the administrations..

The classification of the list is made according to the division stated below.

Division of payments and transactions.

<table>
<tr><td colspan="2">One-sided monetary transactions</td><td colspan="2">Monetary exchange transactions</td><td>Payment of goods and services against money</td><td>Payments in kind, barter</td></tr>
<tr><td>Only monetary. Only in money</td><td>Financial. Only in other claims</td><td>Only monetary. Money against money</td><td>Financial. Other claims against money [x]</td><td></td><td></td></tr>
<tr><td colspan="2"></td><td colspan="2">A.
Between the bank system and the central bank</td><td></td><td></td></tr>
<tr><td colspan="2">B.
Within the bank system</td><td colspan="2">C.
Within the bank system</td><td>D.
Within the bank system</td><td></td></tr>
<tr><td>E.
From the bank system to the cash-holders</td><td>F.
From the bank system to the cash-holders</td><td>G.
From the bank system to the cash-holders</td><td>H.
From the bank system to the cash-holders</td><td>I.
From the bank system to the cash-holders</td><td></td></tr>
<tr><td>J.
From the cash-holders to the bank system</td><td>K.
From the cash-holders to the bank system</td><td>L.
From the cash-holders to the bank system</td><td>M.
From the cash-holders to the bank system</td><td>N.
From the cash holders to the bank system</td><td></td></tr>
<tr><td>O.
Between the cash-holders via the bank system</td><td>P.
Between the cash-holders via the bank system</td><td>Q.
Between the cash-holders via the bank system</td><td>R.
Between the cash-holders via the bank system</td><td>S.
Between the cash-holders via the bank system</td><td></td></tr>
<tr><td>T.
Between the cash-holders outside the bank system</td><td>U.
Between the cash-holders outside the bank system</td><td>V.
Between the cash-holders outside the bank system</td><td>W.
Between the cash-holders outside the bank system</td><td>X.
Between the cash-holders outside the bank system</td><td>Y.
Between the cash-holders utside the bank system</td></tr>
</table>

[x] In exceptional cases only financial exchange transactions, thus without money (means of payment).

One-sided monetary transactions.

Here are given examples of one-sided monetary transactions.

TYPE OF TRANSACTIONS	SECTORS IN THE LIST				
	B. Within the bank system	E. + F. From the bank-system to the cash-holders	J. + K. From the cash-holders to the bank system	O. + P. Between the cash-holders via the bank system	T. + U. Between the cash-holders outside the bank system
Gifts		X		X	X
Scholarships, grants		X		X	X
Inheritances				X	X
Wills, testaments				X	X
Group contributions	X	X		X	
(Bankruptcy, distribution)	X	X	X	X	
(Composition, distribution)	X	X	X	X	
Income taxes	X	X	X	X	
Wealth (capital) taxes	X	X	X		
Real estate taxes	X	X	X		
Employment taxes	X	X	X		
Other social payments	X	X	X		
Customs, duties, export duties	X	X	X		
Purchase, turnover taxes	X	X	X	X	X
Stamp duties	X	X	X		
Transfers, subsidies		X			
Claims for damages, compensat.	X	X	X	X	X
Penalties, fines	X	X	X		
Confiscations	X		X		
Investm. in gambl., lotteries, etc				X	X
Profits from lotteries, etc				X	X
Thefts, stealing, pilferage		X			X
Frauds	(X)	X	(X)	X	X
Burglaries, robberies		X			X
Improper exploitation	X		(X)		X

Observe that a cross does not denote the active party, but that party that is affected or has to pay. At a burglary in a bank there are one or more ´cash-holders´ who are the active parties, but it is the bank that is affected and has to pay. Observe also that I consider that the state (government) belongs to the bank system (besides ´Riksbanken´, the Swedish central bank) as a tax authority, loan and insurance party and as a clearing institute, but among the cash-holders as a state administration at purchases for public consumption or investment. Tax transactions can be made between two cash-holders (payment of ´moms´ (transaction tax is Sweden) on goods and services), between the cash-holders and the bank system (in-payment to the tax authority), within the bank system (from bank to tax authority) and between the bank system and the cash-holders, e.g. via SCR (the state group accounting) or Cassa Nova (outpayment to the public administrations of granted and budgeted amounts, mainly tax money.

In several of the above cases it can be discussed, whether a case is about a one-sided monetary transaction or not.. We can e.g. look at stamp duties as compensation for a service, a certain performance by the public administration. To the extent that social security contributions are tied to a certain person, it is perhaps rather the question of an insurance fee, thus compensation for a service or part of a capital amount instead of a tax. Stakes in plays and lotteries can also be seen as compensation for diversion and the wins as compensation for the stakes. It can also be discussed, if withdrawals from one own enterprise or dividends from a joint stock company are one-sided or not. Withdrawals can of course correspond to an achievement by the businessman and dividends can be compared with interest and risk compensation.

One-sided monetary transactions can of course also mean something else than transfer of money, which is denoted in above schedule with crosses below the letters F, K, P and U. A person can give away a bank balance, write of a debt, give away a bond or a money market instrument. Furthermore we can say that all one-sided monetary transactions, also one-sided monetary transactions, are by nature really financial transactions. To give

away an amount affects the parties' financial situation unlike two-sided monetary transactions (exchange transaktions), as these two latter ones only make an exchange between two types of money, which does not affect the balance sheet. It would thus be possible to integrate the transactions of the types E, J, O, and T with the transactions of the types F, K, P, and U into only one type.

Monetary exchange transactions

In the table for monetary exchange transactions the money (means of payment) answers for one or both links in the transaction except in those less common cases, when value papers such as bonds, money market instruments, bills, promissory notes or other such claims are exchanged against each other. Money for the public and the enterprises are banknotes, coins, check and giro means, payment cards, bank checks and money orders, which I have accounted for earlier. For public administrations, utilities, and enterprises, including those that belong to the bank sector, SCR (The National Group Accounting) and ´Cassa Nova´(The state´s part of ´Postgirot´, the Swedish postal giro) have to be added. The payments of the banks are made besides via their own bank giro, also through the data clearing, the RIX-system, and other such systems and the Nordic clearing system and the Target of the EMU. The bank system, especially the commercial banks, and the state, also use their accounts in ´Riksbanken´ and ´Riksgälden´ (the National Debt Office). The bank system can also as a last resort use lending from Riksbanken, but avoid this as much as possible because this credit often means high interest costs. Earlier this happened to a large extent by rediscounting of trade bills (acceptances, commercial paper), but these have decreased continuously in volume and instead a large part of the borrowing is nowadays done in the form of ´repor´ (repurchase agreements, RPs) with different value papers as security. Instead of borrowing at Riksbanken, the bank system uses deposits in and lending of other banks, which often can be done at lower interest costs than for loans at Riksbanken.

Other companies within what I count as the bank and the payment system, such as ´kreditaktiebolag´and ´finansbolag´ (joint stock credit companies, finance companies), insurance companies, ´aktiefonder´ (unit trusts, mutual funds),´räntefonder´ (interest funds), etc. also pay via the commercial banks besides via the bank giro and the data clearing. This is true also for smaller savings banks, savings associations, credit (loan) societies, exchange offices, brokers (jobbers, dealers), except that these also use ´Postgirot´. Earlier savings banks, rural credit societies, and mortgage institutes often paid via their central bank, which often nowadays applies for the separate offices, since regular banks have been created in these sectors. Also for the department offices of other banks it is of course true that the clearing is often made via the head offices. Postgirot and Postbanken account for the clearing of their own and for ´Postverket´ (the Swedish Post Office´) besides the clearing for outside companies and administrations via Postgirot.

The bank system uses banknotes and coins to a very small extent for its transactions. In so far as this occurs, it is mainly at transactions that concern the public and the small companies. However the bank system can use customer´s accounts within the bank and postal giro for the public, the enterprises, and the administrations for payments to these by crediting their accounts.

In the following part of ´Monetary exchange transactions´ I proceed to treat the second link of the transaction, the one that deals with what we get in exchange for the money (means of payment).

Monetary exchange transaktions. Between the bank system and the central bank and v.v.
(transaction type A i the list).

Exchange of bank notes and coins in domestic (Swedish) currency, checks, money orders, bank checks etc. or vv.
Deposits and withdrawals from the accounts in Riksbanken by the bank system.
Day-to-day loans (demand loans) and the payments of these.
Rediscounting av bills (drafts) and honouring (payments) of these.
Loans as R.Ps and payments of these.
Other loans in Riksbanken and payments of these.
Emission of Riksbanken certificates
Purchases and sales of bonds and unsecured debentures (förlagsbevis)
Purchases and sales of treasury discount notes (statsskuldsväxlar), certificates, and money market instruments.
Purchases and sales of treasury bills (skattkammarväxlar, abroad and earlier in Sweden).
Transactions and clearing for Riksgälden, SCR (the State´s Concern Account System) and Cassa Nova, the state´s housing, real estate, and financing companies, ´Investeringsbanken´ (the Investment Bank) and ´ATP-fonderna´ (funds for common service pensions).
Transactions in the RIX-system and the clearing for the bank system etc., mainly for the commercial banks, to a large extent of checks and money orders..
Purchases and sales of gold and foreign currency in domestic currency.
Transactions via the Nordic clearing system and EMU.s Target in domestic currency.
Remaining transactions with foreign banks and central banks in domestic currency.

(Transactions in foreign currency.)

Formally the lending of the central bank to the state is a monetary exchange transaction, but because the state is borrowing from itself and pays interest, amortizes, and makes the final payment to itself, the lending is really only a book keeping transaction within the same ownership unit. Formally seen the lending of the central bank to the bank system and the society outside the bank system is a monetary exchange transaction, but because the banknotes cost almost nothing to produce, it is really the question of a one-sided monetary transaction, where the receivers of the banknotes collectively pay a form of tax to the state. This is however true only for the net lending of banknotes. To the extent that the central bank keeps payment in its own banknotes, the one-sided monetary transaction goes in the opposite direction. The importance for the social economy (the economics) is however so great that their value in the following handling can be set as equal to their nominal value. The buyer (payer) transfers on the seller (receiver) a claim on the state. It can be treated as a value paper among all others and in the following they thus often constitute the one link in a monetary exchange transaction and often as well for the demand at the purchase of goods and services..

The essential principle of division is, between what parties banknotes and coins and check and giro means are exchanged over and how their volume develops. If e.g. Riksgälden borrows a certain amount from the bank system by sales of own bonds, the volume banknotes and coins in or outside the bank system (if Riksgälden is supposed to belong to this) is not affected, because the volume outside Riksbanken is not affected.

Monetary exchange transactions. Within the bank system.
(transaction type C in the list).

All transactions below that are not effected by the central bank or directly with the cash-holders of the public, the enterprises, and the administrations. The most common state of affairs is that two parties in the economics outside the bank system are concerned once for every payment outside the payment system and that this payment creates two monetary consequential transactions between the bank system och the cash-holders outside and sometimes one or more consequential transactions between different parties within the bank system. (Exceptions: Transactions between the cash-holders that do not at all concern the bank system (transaction type T, U, V, W och X). To this are added then all payments within the bank system that have not their origin outside the system.

Exchange of banknotes and coins in domestic currency.

Exchange of checks, bank giro remittances, bank checks (incl. e.g. traveller´s checks), money orders, giro transfer forms, in-payment and out-payment forms, and other remittances for Postgirot and Personkontot, ´postanvisningar´ (a special form of post remittance without accounts, now declining), cash cards, and account discrepancies for other payment cards and for checks.

The clearing for the banks, ´Bankgirot´, ´Sparbanksgirot´ (the giro of the savings banks) and the RIX-system for the commercial banks and their offices, the credit companies, the finance companies, the savings banks and their offices, the cooperative banks and their offices, the mortgage banks and their offices, savings associations and credit and loan societies, payment cards companies, exchange brokers, the stock exchanges, and the VPC (value paper central), stock brokers (jobbers, dealers), life- and capital insurance companies, share investment funds, interest funds, and mixed funds, etc.

The clearing of Postgirot and Postbanken for the post giro, the post bank, and the post offices but also to a large extent for the parties enumerated under the banks, the bank giro, the savings bank giro och the RIX-system.

Postgirot´s, Cassa Nova´s and SCR´s (the state group accounting) clearing for the ATP-funds and other pension funds, state loan institutes and financial companies as SPAFI, SBAB, ´Investeringsbanken (a Swedish investment bank), ´Studiemedelsnämnden´(the student grant committé), NUTEK (the National Swedish Board for Industrial and Technical Development), Utvecklingsfonden (the Development fund), tax authorities and the sector for general transfers to the extent the clearing is not effected via Riksbanken, Bankgirot, the banks, and the RIX-system.

Earlier also ´Sparbankernas bank´ for the participating savings banks and their officies, ´Föreningsbanken for participating agriculture credit associations, and ´Hypoteksbanker´ for the mortgage societies and institutes. Because most of these have been transformed to regular banks, they can nowadays be included among other banks and their offices.

Deposits into and withdrawals from accounts in Riksgälden.

Account deposits, depositions och withdrawals that a bank institute makes in other banks and institutes.

Loan transaktions within the bank system.

Purchases and sales of gold and foreign currencies in domestic currency.

Transactions via the Nordic clearing system or EMU's Target in domestic currency.

Other transactions with foreign banks and institutes in domestic currency.
Emission of statsskuldväxlar (treasury discount notes) (outside Riksbanken).
Emission of certificates (Teleinvest, Stadshypotek, SPAFI, SBAB, SFF, credit companies, banks, municipalities, etc.) (outside Riksbanken). .
Emission of money market instruments including repos, futures (term papers), options, and swaps (outside Riksbanken).
Emission av government bonds (Riksobligationer, premieobligationer etc. (outside Riksbanken).
Emission of other bonds, debenture loans, FRN-loans etc. (Teleinvest, SPAFI, SBAB, Stadshypotek, Investeringsbanken, finance companies, banks, municipalities, etc.) (outside Riksbanken)..
Daily commerce with treasury discount notes (statsskuldsväxlar), certificates and money markets instruments including repos, futures, options, and swaps.
Daily commerce with bonds and debenture loans, etc..
Redemption and conversion of bonds, debenture loans, certificates, and money market instruments of different types (outside Riksbanken).
Discounting, renewal and redemption of bills (of exchange) (outside Riksbanken).
Acceptances and payments of letters of credit and other claims of the foreign trade in domestic currency.
Subscriptions, amortizations, and payments of promissory notes, and other instruments of debt.
Payments of fees, premiums, and brokerages.
Interest additions, interest deductions, redemption of interest coupons after tax reduction and tax repayment, if they are not added to or decreased from the capital..
Dividends on shares after tax reduction and tax payments.

Some of these transactions are, however, not only monetary and financial but also compensation for service transactions..

As I said by way of introduction, this enumeration is valid only for transactions that do not have the cash-holders outside the bank system as a party, e.g. they are true only for follow-up transactions to a transaction betweeen the cash-holders or between the cash-holders and the bank system plus such transactions that do not at all concern the cash-holders. The listing applies also only for transactions in domestic currency in parties' own or both links. Transactions with Swedish and foreign persons, banks and institutes in foreign currency have thus to be added, but lie outside the scope of this study.

Monetary exchange transactions (not for goods and services).
From the bank system to the public, the enterprises, and the administrations.

Exchange transactions (transaction type G in the list).

Exchange of banknotes and coins.
Withdrawals from the customer´s check and / or giro accounts.
Withdrawals from the customer´s card accounts with separate accounting, mostly of small amounts.
Cashing of checks, giro remittances or out-payment forms.
Cashing of bank checks, money orders, ´postanvisningar´, etc.
The customer´s sales of gold and foreign currencies.

Financial exchange transactions (transaction type H in the list).

Withdrawals from customer´s savings accounts, other long-term bank accounts or accounts in other savings institutions.
Out-payment of bank loans or loans, (including student grants) from other financing institutes.
Purchase of bonds or debentures from customers (at emissions, commerce or redemptions)
Purchase of treasury discount notes, certificates or other money market instruments from the customer (at emissions, commerce or redemption).
Take over of bills of exchange (discounting).
Payment of letters of credit or other claims at export in domestic currency.
Take over and redemption of promissory notes and other claims.
Payment of capital amounts, pensions and ´livräntor´(annuities from life- and capital insurance companies and pension societies, funds or companies). [When we deal with ´barnbidrag´ (children´s allowances) and the general ´folkpension´ (people´s pension, I have chosen to regard them as onesided monetary transactions), because the connection with the single person is not especially close].
Interest payments. Whether we should regard them as service performances or monetary transactions can be discussed. The most correct should perhaps be to regard them as running service performances, which

also can be regarded as fitting, considering that they to some part are a compensation for risk and administration costs such as wages, salaries, rents, and material. On the other hand we can regard the payment of interest as a payment of a debt, which means that it then can be regarded as a monetary exchange transaction, a financial transaction. If the interest is continuously capitalized, there is however no transaction at all, which e.g. is true for deposit accounts in the banks.

Above transactions of type H do not put demands on the money of the public, the enterprises, or the administrations. They put instead demands on the payment systems of the banks, but this affects the money and the payment ability of the former only in a positive way, because an increased amount of money is put at their disposition. But its volume cannot increase beyond the statistical numbers that are counted for the money of the public, the enterprises, and the administrations, they are included therein.

Monetary exchange transactions (not for goods and services).
From the public, the enterprises, and the administrations to the bank system.

Exchange transactions (transaction type L in the list)

Exchange of notes and coins.
Deposit into the check and giro accounts of the customers, crediting of other money (means of payment)
Deposit into the payment card accounts with separate accounting. Purchases of cash cards.
Purchases of bank checks, money orders, sending of ´postanvisning´, etc.
Purchase of gold and foreign currency (from the bank system).

Financial exchange transactions (transaktion type M in the list).

Deposit into the bank customer´s own savings accounts or other long-term bank accounts or saving accounts in other savings institutes.
Amortizations and payments of bank loans or loans, incl. student grants, from other financing institutes.
Purchases of bonds or debentures from the bank system (at emission, commerse, or redemption).
Purchases of treasury discount notes, certificates or money market instruments from the bank system (at emission, commerce or redemption).
Take over of bills (of exchange) (renewal or redemption).
Payments for letters of credit or for other claims at import in domestic currency.
Amortizations and redemption of promissory notes or other claims.
In-payment of premiums and capital amounts to life and capital insurance companies and pensions societies, funds or companies.
Interest payments of bank loans, bills of exchange, bonds, money market instruments and other claims, the interests of which are not capitalized..

Above transaktions put directly demands on the money of the public, the enterprises, and the administrations. The demarcation between the transactions within the bank sector and the transactions for the sector outside (either these are effected by, via or outside the bank sector) is thus done, because the latter type of transactions put demands on money in the sector outside, while the formar type of transactions does not put any such demands, it can instead affect its payment ability in a positive way..

Monetary exchange transactions (not for goods and services).
From the public, the enterprises, and the administrations to the public, the enterprises, and the administrations via the bank system.

Because every transaction concerns two parties within the same sector, it will thus be the question of both paying and receiving of money at exchange and in other cases both purchase and sale, etc. The transactions go in this cases in both directions.

Exchange transactions (transaction type Q in the list).

Withdrawals from or deposits into owner's check and giro account or that of the opposite party (of cash, in-payments, transfers from giro, out-payments, checks, bank giro remittances, bank checks, money orders, ´postanvisningar´, payment by cards, etc.) against other money (means of payment), not against financial values or goods and services. An example of such transactions is the difference of SEK 110, when a customer pays by a check issued for SEK 1.000, when receiving goods for 890.

Financial exchange transactions (transaction type R in the list).

Purchases of or sales to the opposite parties (outside the bank system) of bonds or debentures (at emission, commerce or redemption), but with payment via the bank system.
Purchases of or sales to the opposite parties (outside the bank system) of treasury discount notes, certificates or money market instruments (at emission, commerce or redemption), but with payment via this.
Take over of bills of exchange (accept, renewal, or redemption) between parties outside the bank system, but with payment via this.
Payment for letters of credit or other claims at import or receiving of payment for letters of credit at export.
Accepting, amortization, and redemption of promissory notes or other claims between parties outside the bank system, but with payment via this.
Payments of interest of bills of exchange, bonds, money market instruments, or other claims between parties outside the bank system, but with payment via this.

Above transactions put direct demand on the money of the public, the enterprises, and the administrations. .

Monetary exchange transactions (not for goods and services).
From the public, the enterprises, and the administrations to the public, the enterprises, and the administrations outside the bank system and not via this.

Exchange transactions (transaction type V in the list).

Exchange of banknotes and coins against other domestic banknotes and coins.
Exchange of checks, money orders and bank checks against other domestic money.
Exchange of foreign currency against domestic money.

The main part of the transactions of the public, the enterprises, and the administrations are made as we know via the bank system, but there are also a part of transfers outside the system. Check and giro payments via an account cannot of course be counted there, so it is mainly a question of banknote and coin transfers. But it can also concern transport of a check, money order or bank check a second time The transfer and transaction in this case are not handled by the bank system, even if its forms are used in some cases..

Financial transactions (transaction type W in the list).

Accepts, renewals and payments of bills of exchange against cash (mainly banknotes and coins).
Purchases and sales of bonds or debentures against cash.
Purchases and sales of certificates, money market instruments against cash.
Out-payment, amortization, and payment of loans and letters of credit against cash.
Out-payment. amortization, and payment of other claims and credits against cash.
Payments of interests on bills, bonds, certificates, money market instruments or other claims against cash.

Above transactions put direct demands on the money of the public, the enterprises, and the administrations.

Payments of goods and services against money.
Within the bank system mutually (transaction type D in the list).

For shares (stock certificates) and shares in investment funds.
For real estates and their rents and costs.
For service performances.
Interests and fees.

From the bank system to the public, the enterprises, and the administrations (transaction type I in the list).

For shares (stock certificates) and shares in investment funds.
For real estates and their rents and costs.
For purchased material to the operational management.
For wages, salaries, and service performances.

Interests.

From the public, the enterprises, and the administrations to the bank system (transaction type N in the list).

For shares and stock certificates and shares in investment funds.
For real estates and their rents and costs.
For service performances.
Interests and fees.

From the public, the enterprises, and the administrations to the public, the enterprises, and the administrations via the bank system (transaction type S in the list).

Goods and services, including stock certificates and shares in investment funds, real estates, companies and parts of companies

Against payment in banknotes and coins to other's check and giro accounts
" from post giro accounts (transfers, out-payments, and other remittances),
" " check accounts (checks and other remittances),
" " bank giro accounts (transfers, out-payments, and other remittances),
" by separate ´postanvisningar´, money orders, and bank checks, etc.,
" by payment cards from card accounts with separate accounting,
" by cash cards
" from other accounts in the bank system.

From the public, the enterprises, and the administrations to the public, the enterprises, and the administrations outside the bank system (transaction type X in the list).

Goods and services, including stock certificates and shares in investment funds, real estates, companies and parts of companies

Against payment in banknotes and coins.
" " through an extra transfer of check, money order, bank check, etc.
" " payment in advance.
" " after receiving credits

It can be discussed, how sales of goods and services against advance payments or on credit should be looked upon. There are two transactions concerned, one when the delivery is made and one when the payment is effected. At the payment in advance a claim arises that disappears, when the goods or the service is delivered. At the credit sale a debt arises already at the delivery, which disappears, when payment is done. Is the claim that arises at the credit purchase to be regarded as a payment, in which case we should count with two transactions or payments? Or shall we count with only one payment? But the credit times are as a rule so short and regular that the influence on the payment streams will be rather small and regular. Common credit terms are 10 days, 1 month or 3 months. Besides advance payments have rather low volume and go further in the opposite direction against the credit purchases. It should therefore not be a great problem im most payment cases at an examination of the payments, if we throughout ignore advance payment claims and credit sales and count payments in advance and payments at credit purchases as the only essential payments. At least long-term it would probably be a good approximation in most cases to treat these two transactions as one, as a purchase of goods and services against money..

Payments in kind (Barter transactions) (transaction type Y in the list).
Can hardly occur within the bank system, possibly as an exchange of services.

From the public, enterprises, and administrations to the public, enterprises, and administrations.

When goods and / or services are exchanged against goods and / or services.
At accounting, when deliveries of owner's goods and / or services are exchanged against the deliveries from the opposite party.

APPENDIX 3.

To the chapter 5 `The Velocity.

TYPES OF VELOCITY.

Examples of phenomenon in a society, which affect the payment system and the price formation mechanism by acting upon *V*, the velocity:

Long term structural or with respect to changes in the trend:

Natural resourses, economic assets.

Commercial law on sales of goods and services and other civil law, tax law, industrial (labour) law and other law, the judiciary and the police service, the organisation of the public sector, the scope, practice, and efficiency of the administration, the division private - public, benefits and social structure.

Established norms, standards, routines, customs and plans of actions within the economics (t.ex.´god köpmannased´ , *sound business practice*).

Technical conditions, communications. The composition and function of the bank system and the payment system as well as the stock exchange and the insurance system. Other infrastructure.

Types of business, the composition and division of single enterprises. Small companies or large-scale production, cartels, trusts, cooperation agreements, vertical or horizontal integration. Pricing, marketing, purchase- and personnel policy. Trade unions and employers´ associations.

Foreign and trade policy, customs or free trade, economic cooperation, unions. Established trade, shipping, road, and air connections abroad as well as data and tele communications. Diplomatic representations and consulates. Established relations with banks and companies. Agents and subsidiary companies.

Short-term structural or seasonal::

The change of the seasons, between snow and cold and heat and resulting differences in production, distribution, and consumtion patterns. Sowing and harvest, hunting, fishing, berries and fruit times. Vacations and holidays, weekdays, Sundays, and holidays, ends of months and quarters. Markets, amusements parks and sport events. Bank free days, payment times for goods, services, salaries and wages, loans, interests, taxes, and rents.

Irregular or dependent on the economic activity:

War, civil war, revolution, rebellion, plundering, confiscation, disturbances, ethnic cleansing, refugees, mass flight.

Severe crop failure, starvation and famine, severe epidemic diseases.

Severe earthquakes, volcanic eruptions, inundations, typhoons, severe landfalls,

Severe strikes, lockouts and blockades.

The central bank´s banknote edition, open market operations and initiated changes by the central bank or the government of interest rates and the rate of exchange.

Measures of the state in the economic area of great immediate effect on taxes, income, wealth, employment, and payments and price determination, e.g. rationings. The borrowing of the state and the volume of the national debt. Laws, rules, regulations, and measures by the government that concern cash balances, the reserve quotas, and the division of assets and debts of the bank system.

The cash-holders opinion on the development of the price level and the economic activity and how they judge the measures of the state and the central bank. Their policy and course of action on the basis of their information and their own capacity.

APPENDIX 4.

To the chapter 7 ´Supply and demand and their nature´ and chapter 8 ´The concepts supply of and demand for money´.

A STUDY OF THE VALUES OF THE VARIABLES OF THE QUANTITY EQUATION.

In the tables 12A - 12B and in the diagrams 12A - 12D I have tried to calculate, which part of the price changes and other changes the different variables in the quantity equation are responsible for. The example has reference to Sweden for the years 1945 - 1959. For every variable and for every part period volumes and %-numbers for the changes have been counted.

The velocity of the transaction volume is named V_t. It is counted in two different ways. According to the first one, it is presupposed that V_t for check payments and for payments by banknotes and coins are the same as for postal giro payments, i.e. transfers and out-payments from postal giro. According to the second alternative it is presupposed that V_t for check payments is the same as for postal giro payments, but that V_t for banknotes and coins is only half the size of that for postal giro payments. Even if there are no measurements of this, it is probable that V_t for banknotes and coins is lower, but not lower than half the size of the postal giro´s. It is therefore probable that the real V_t, the average for all payment means, lies somewhere between these values (within this interval), probably nearer the lower value.The velocity of the postal giro increased during the period from 60,69 to 87,18, i.e. by 1,89 per year in average. If we use the latter method of calculation for V_t, we get an increase from 44,89 to 61,73, i.e. by 1,20 per year (thus for the whole M). The long-range structural part of V_t I call V_{ts} and the part that the cash-holders can affect more independently, I call for the autonomous V_t or V_{ta}. This was of importance only during the period 1953 - 1959, when it amounted to between 3,6 and 5,4 % or to 0,6 - 0,9 % per year.

If we multiply M by V_t, we get the transaction volume MV_t. A turnover volume for goods and services only (where then monetary and financial transactions have been disregarded) that I call MV_v, I have obtained in a separate study based on the business accounts (´företagsräkningar´) of the years 1930 and 1950. As these have come so seldom, it is extremely difficult to get a correct material. Anyone making such studies is therefore obliged to use interpolation between values of different factors and many times plausible assumptions only, besides the existing real numbers. The numbers that I account for MV_v do not therefore claim of any exactness. They are included here primarily to show what methods and concepts that can be used and they need to be completed by more profound and exact statistics.

Percentage and absolute changes in M, V_t, V_{ts}, V_{ta}, MV_t, MV_v (current and fixed values), P and GNP (current and fixed values), and what I call transaction-quota (TK) and GNP-quota are compared with each other. MV_v as fixed value is about the same concept that Fisher calls T (Trade) or Q, even if Fisher does not keep the border clear to monetary and financial transactions. The transaction quota (TK) is received if the transaction volume MV_t is divided by MV_v (current value). The GNP-quota is obtained, if MV_v (current or fixed value) is divided by GNP (current or fixed value).

That I in the examples include up to four decimals and unabridged numbers does not mean that I regard these numbers as safe. Some are, but many are not safe at all in lack of statistic material. But if we shall be able to show and illustrate methods and formulas, it can be valuable to include decimals and unabridged numbers as examples of the methods and the often small changes it is the question of in certain varibles .

a. Key to the signs of the tables 12A - 12B and the diagrams 12A - 12D.

M. The money volume = the volume banknotes and coins and the check and giro means for cash-holders outside the banks and the payment institutes.

V_t. Velocity for the transaction volume. In table 12A counted as V_t for transfers and out-payments from the postal giro, season adjusted averages for the year. In table 12B V_t for giro- and check payments is assumed to be as in the postal giro, while it is assumed to be only half as large for banknotes and coins.

V_{ts}. Velocity for the transaction volume, long-term structural part, counted as trend from the value for the year 1945 to the value for the year 1959. In the table 12A from 60,7 to 87,2, i.e. with an annual increase by 1,89. In table 12B from 44,9 to 61,7, i.e. with a annual increase by 1,20. A regular trend calculation gives somewhat lower values, but because that underestimates V_t's long-term changes, I use the above values.

$V_{ta} = V_t / V_{ts}$. The velocity for the transaction volume, autonomous, the part affected by the cash-holders.

$MV_t = M \times V_t = M \times V_{ts} \times V_{ta}$.

MV_v current: Turnover of goods and services per year according to my own estimation. Equivalent to MV_{y+z} in chapter 7:

MV_v fixed = MV_v current / P = T, real volume goods and services.

The transaction quota (TK) = MV_t / MV_v current value.

P. The consumption price index for the years 1945 - 1953 (the statistics issued by the National (Swedish) Board of Health and Welfare, the common index with 1935 as base). The numbers for 1954 - 1959, the board´s consumer price index with 1949 as base have been recounted with the number 175,9.

GNP. Value for the year 1945 is not available. GNI increased 1945 - 1946 from SEK 19.500 to 21.470 million = 10,1 %. The production index of the manufacturing industry increased from index 103 to index 124 or by 20,38 %. Its market value increased from SEK 13.549 million to 16.332 million or by 20,54 %. We have here assumed that GNP the year 1945 - 1946 has increased by 16 % from SEK 20.450 million to 23.730 million. GNP at fixed value has been achieved by GNP:s current value being divided by the consumption price index.

We have got the GNP-quota by dividing MV_v by GNP.

The diagrams 12A - 12 D are based on the values in the tables 12A and 12B.

b. A comment to the values of the tables.

I have used statistic material for the period 1945 - 1959, because this is perhaps the only period in the Swedish statistics that has useful values. After 1959 the statistics was unfortunately altered. The period is also good, because it begins and ends with years with relative price stability and it comprised three clearly well defined price increase periods. I have therefore divided the material in periods of the years 1945 - 1949, 1949 - 1953 and 1953 - 1959. The tables and the diagrams give an approximate picture of the magnitude, changes, and importance of the variables in the price formation process.

The changes of the velocity can easily be followed from month to month and from year to year. They are as a rule small, if we disregard the seasonal changes and even smaller, if we disregard the long-term structural changes. They are thereby foreseeable. This is nothing new; it is also shown by all other serious studies, which have been done. The velocity is not a factor that passively suites itself to changes in other variables of the quantity equation. It is determined by its own laws. It is determined, it is true, by the cash-holders, but they are closely bound by structural factors such as the payment system and the payment habits of the society. There is a certain room for their autonomous measures, but these means nearly without exception that they can increase or decrease V (that part I call V_{ta}) over or under its trend level by some single percentage points. Not even medium-term (1 - 7 years), during what is usually called a trade cycle) does this result in but small corrections only and as I earlier have shown, these go nearly always in the same direction as the price change. If the central bank effects a price increase by extending the money volume by 10 % too much, the cash-holders almost never counteract this. Instead they often increase V_{ta} somewhat, so the price increase will instead be perhaps 11 or 12 %. Also the years 1945 - 1959 are a good example of this, which is shown by the diagrams 12A - 12D. This was a period with a very large increase of the money volume and the price level. The cash-holders strengthened these tendencies by expanding V_{ta} somewhat to keep pace with the price changes, even if the numbers for this rise were small compared with the rise in M.

As tables and diagrams show, the transaction volume MV_t is nearly entirely determined by these two factors, the payment means volume M, thus banknotes and coins, check and giro means, and the structurally characterized velocity V_{ts}, which is changed very slowly in the long-term. If we look at Sweden during the years 1925 - 1970, M has increased more than ten times, while V_{ts} for the postal giro has hardly increased more than 3 times. M is in its turn determined by the central bank and the cash-holders, but the latter are also in this respect strongly bound by custom, institutions, and payment system, which means that when the central bank increases the banknote volume outside the central bank, the cash-holders nearly always increase the volume check and giro means according to the earlier relation between these payment means. It means that the central bank in reality determines the total money volume by its banknote issue. The cash-holders can however as we said affect the velocity V_{ta}, but the deviations that this results in are as a rule small. Not even during this period, 1945 - 1959, with its heavy changes in M and P, the cash-holders could affect V by more than the odd percentage point.

Studies like this one are however difficult to accomplish, partly because of lack of material concerning V of banknotes and coins and even for check and bankgiro means, partly due to lack of material on the relation between the transaction volume of the society (outside the bank system) and the volume goods and services turned over.

During the period 1945 - 1959 the Riksbank increased the volume banknotes and coins outside the Riksbank by about 130 %, which resulted in an increase of the volume outside the commercial banks and the giro institutes by about 131 %. The cash -holders did not however increase the volume check and giro means as much but only by about 79 %, which meant that the total increase in the payment means volume amounted to about 106 %.

It is rather unusual that the increase in the check and giro means does not keep pace with the increase in the volume of bank notes and coins. As a rule their changes keep pace with each other very closely. During the period 1925 -51 there were only a few monthly values of the quota between them that exceeded 1,1 or were below 0,9. During the nineteen-

fifties it sunk however slowly and temporary to 0,7, which explains the difference in our material.

The cash holders increased the velocity by between 37,5 and 43,5 % according to our material. This meant an increase in the transaction volume by between 183 and 196 %. The rise in the volume goods and services at current price was however higher, about 235 % on account of a decrease of the transaction quota by between 11,5 and 15,5 %. (That this decreased meant that the cash-holders needed relative less money 1959 than 1945 to turn over a certain volume of goods and services, i.e. the part changing transactions and financial payments of the total transaction volume had dropped. Some of these numbers are of course very uncertain. Normally the changes of the transaction qouta are much smaller.

To meet the increase in the turnover of the real volume goods and services, it had probably been enough, if the Riksbank had increased the banknotes- and coins volume by about 20 % during the period instead of 130 %.

c. How reliable are the values?

The question is to what extent the stated values for *M, V* and *T* in the tables and diagrams are representative for their respective variables. The numbers ought perhaps to be adjusted up in some cases and down in other cases in order to be wholly correct.

The value of *M* comprises banknotes and coins and the balance of check and giro accounts. But the check credit volume is not counted, because *V* for this is low and there are furthermore no counts of this for the period in question. In statistical numbers for the check credit are also often included traveller´s checks and building credits, the accounts of which rarely being an object for payments but mostly for withdrawals. They are mostly turned over once per credit period in contrast to accounts for the common check credits, where the balance is really used for payments. But even if the credit account is really used for payments, the velocity for that part of the check payments (owner's withdrawals then deducted) will be very low for many reasons, compared with the velocity for the favoured balances. Two important reasons are the extra charge and the accounting technique, which causes the owner to use first his balance in favour. The owners often see the credit as a reserve in certain situations with unplanned expenses. See also my commentary under the chapter ´Payment means´. If we count with 5 % of the check payments during the period being made against check credits and considering this adjust up the volume of the check accounts by 5 %, it would mean an increase of *M* by SEK 82 million for the year 1945 and 88 million for the year 1959 or by 1,7 % respective 0,9 % of the total volume SEK 4.799 respective 9.885 million. The postal accounts are not affected, because they have no credit options. But if *M* in such a case had to be adjusted upwards, then *V* had to be adjusted down equally much, because the turnover of the check credit accounts regularly becomes a part of the totally counted volume *MV* that is the same.

An important factor for *M*'s volume would possibly be the bank giro that however had not yet started during this period as well as the banks ´girokapitalräkningar´ (giro capital accounts) that started at first in the year 1960. ´Personkontot´ (the personal account´ for the ´Nordea´ that was then called ´PK-banken´), and the ´sparbanksgiro´ (savings banks' giro) came into existence still later. This allows us to obtain the definitely main part of the check and giro means for these years by measuring the volume of postal giro and check accounts. Furthermore neither postal giro nor check accounts rendered any interest during the years 1945 - 1959, which means that savings were not deposited into the accounts, which can occur in other cases and thereby risk to somewhat distort the results. These years are for these reasons very suitable as an study period.

The numbers for *M* can be somewhat too high, because a number of institutions that properly belong to the bank sector, use payment means that statistically are accounted to the payment system outside the bank system. But the percentage part is rather low and besides probably very structurally dependent, i.e. it does not vary significantly from time to time. Swedish savings banks, postal giro and postal bank that normally have cash funds that together amount to 1/3 or 1/2 % of the volume money outside the commercial banks, can be stated as an example. And their balance of check and giro means in owner's accounts amount also to rather small sums.

To the part the payments of the bank system concern goods and services, it would be correct that they were counted, because also these payments act upon the common price level. But as a rule it concerns small amounts rents, salaries, and material, for which it is difficult to get any statistics. Furthermore is true that the banks can carry through payments by crediting customers' accounts, but these payments do not lay claim on the customer's money, because the transactions always mean an increase of the balance.

On the other side payments of goods and services for the society´s economy outside the bank system are in exceptional cases effected with money (payment means) that are the bank system´s and are not included in the statistic numbers. This does not then apply to payments that only are follow-on transactions to ordinary payments of goods and services made of parties outside the bank system, via this system These are not a problem. But sometimes the bank system can accomplish payment transactions for parties outside, without these at all having to use their usual giro or check accounts. Such a case in points are sales of shares or investment trust units via the stock exchange when the purchase and sale are made only from and to such customers' depot and

dividends accounts that are not included in the regular check or giro accounts.

How sure are the values for GNP and the consumption price index? A question mark might be put for GNP during its initial period at the end of the nineteen-fourties. A value is missing for the year 1945, why an approximate value had to be estimated based on the development of GNI and the production volume. The numbers for these years have the uncertainty that a undeveloped system has and they are furthermore affected by the transition from the war administration. A defect with GNP is that it is affected by writes-off, stock changes and nature transactions that do not involve monetary payments, while purchase taxes and purchases of goods for reinvestments are deducted in NNP, in spite of their being included in the price of the goods or the services and are included in ordinary economic transactions that affect the money value.

Now the money value is dependent not only on the commerce with goods and services for consumption and investment but also on the trade with raw materials, semi-manufactured goods, additional materials, energy, services and finished products before they reach the retail trade and the service sector. If the values of these latter would be doubled, while the consumer prices were unchanged, the money value would have deteriorated considerably. Now the problem is not so great, because the consumer price index as a rule does not deviate especially much from an assumed weighed index that builds on the turnover of all goods and services (of course not including bonds and other claims the price of which follow the value of the money unit). A study of different indices in the developed industrial countries during the 20th century shows that wages and price of services have increased much faster than the comsumption price index, in step with the standard of living development, while the production price index has increased somewhat slower than the consumption price index. This is true also for the period 1945 - 1959. These tendencies in the wage- and service indices and in the production price index thus take out each other to a large extent. The consumer price index for Sweden during this period can therefore be consided as a rather good measure of the price changes also for the total volume of goods and services, as its changes lies between the changes of the other price indices.

GNP comprises thus only a part of the volume goods and services turned over by money. But most things point towards their volumes developing highly in parallel. Anyhow this is true for the medium-term periods of 1 - 7 years. In the same way it is true that the total transaction volume MV_t develops very much in parallel to the value of the volume goods and services MV_v turned over. A proof of this is the co-variation between the value of GNP and measures of the transaction volume, for example the amount of giro transfers and outpayments from giro. This is clearly indicated in the diagram 12E, which displays the development of the total transaction volume (according to alternative 1 and 2) and GNP:s volumes during the period 1945 - 1959, as they can be seen from earlier reproduced tables and diagrams. In the diagram the development of the total volume of goods and services turned over (MV_v) that I earlier have calculated, has been put in, even if these numbers suffer of great uncertainty and rather can be seen as examples of what methods that can be used and how the values can be calculated. But reasonably the fact that the differences are so small medium-term between the changes in GNP and the transaction volume should mean that these changes in relation to MV_v are still smaller, because this volume is an intermediate.level to the two others. In the same way, as we use changes in GNP as an approximate measure of changes in the turnover of the volume goods and services , we can also use NNP and different other measures of the income, generally denoted *y*. Even if the absolute numbers are very different, there is a great correlation between the changes.

In diagram 12F the connection between the transaction volume and GNP is given in the form of a line for the transaction volume MV_t divided by GNP:s current value or in other words the transaction quota x the GNP-quota.. This value in the study is a considerably more sure value than the quotas for themselves, because it does not suffer of the uncertainty that is in force in MV_v. Also values for the transaction quota and the GNP-quota for themselves are put in the diagrams, but as we said these are considerably more unsafe values.

Now of course long-term changes also occur in the transaction quota and the GNP-quota, even if the changes probably develop very slowly and affect the values only slightly during the period 1945 - 1959. (That the quotas were about unchanged in these years, could have depended on that giro transfers in line with the development of the postal giro gradually replaced out-payments and ´postanvisningar´, which both had greater relative importance in earlier years. The change meant a lower transaction quota, because it brought about fewer assistant transactions. This counteracted the slow common rise in the transaction quota, which occured also in these years). For the period after the year 1959 there has evidently been a strong increase in the transaction quota, mostly depending on the introduction of new payment methods such as payment cards, cash dispenser cards and data payments, involving more transactions for every single payment. But this does not change the basic fact that medium-term (1 - 7 years) the changes in the transaction volume occur so slowly that a measure of the changes in the transaction volume also makes a good measure of the changes in the real turnover volume of goods and services.

The changes of the velocity are a problem, as I have statistical numbers only for transfers and out-payments from postal giro. V_t for banknotes and

coins lies probably at lower levels than V_t for the giro balance. The measures I have chosen, one where V_t for the postal giro is supposed to be valid for the whole M (alt. 1) and one where V_t for the postal giro is supposed to apply only for giro and check payments, while for banknotes and coin payments half of this V_t is supposed to apply (alt. 2), can be considered as outer points in an interval, where V_t can lie anywhere within the interval but probably nearer V_t of the latter type, thus a lower V_t. While MV_t counted according to alt.1 is between 12,5 and 14 times GNP during the period 1945 - 1950, it is only between 9,5 and 10,5 times GNP according to alt. 2. In the same way MV_t is according to alt.1 perhaps 3,5 - 4,5 times larger than the total turnover of goods and services MV_v, as I have counted it, while it according to alt. 2 becomes perhaps only 2,5 to 3,5 times larger.

These differences affect most the absolute numbers and to a lesser degree the relative ones, which we are most interested in. The relative changes, which occur most often, are to the greater part long-term and structural ; those that I have called V_{ts}. We know that the V_{ts} of the giro transfers has rissen strongly during the period, while the V_{ts} of the giro out-payments have hardly rissen at all. But the important fact is that V_{ta} for these do not go in different directions but follow each other, which they do. (As also the seasonal changes do). In the same way we can suppose that there are long-term and structural changes in V_t for check means (money in check accounts) and for bank notes and coins. But there is no reason to suppose the V_{ta} for these payment means is developed in a different way than V_{ta} for postal giro means at least not during the periods of 1 - 7 years, that we are interested in. The changes are probably very small and regular. If there are tendencies to price increases, V_{ta} for check means, banknotes and coins surely also increase in the same way as V_{ta} for postal giro means do. A different assumption would be absurd. But as we said there is no statistical material showing this, because there have been no statistics in the area and no analysis has therefore been made. But until the time that this is done, it may be seen as a very probable hypothesis.

The most important means of assistance to control that the values in the equation are good values, is the equation itself. All values in the equation are a measure also of the other ones. If we had good values also for the transaction volume or the velocity of the check payments and the banknote (inclusive coin) payments, we had good values also for the total transaction volume and its velocity. If we also had good values for the transaction quota, then we have had good values also of MV_v, the volume goods and services turned over. The more exact values we have, the better are also the remaining values.

d. Some conclusions.

These tables and diagrams show unambiguously one thing. The changes of the velocity can easily be followed from month to month and from year to year. Its changes are as a rule small and in addition they are foreseeable and predictable. V is not a variable that passively adjusts itself after changes in M, T or P in the quantity equation or other variables. It follows its own laws. This is not any news but is also evident from all other serious studies made on the subject. The velocity is admittedly determined by the cash-holders, but these are closely bound by structural factors such as the payment system and the payment habits of the society. There is some space for their autonomous moves, but this implies nearly without exception that they can increase or decrease V (the part I call V_{ta}) above or below its trend level by some single percentage points. Statistical numbers for V give no support at all for the theories that maintain that V is characterized by great changes over a business cycle period or that it could not be predicted with a good safety margin. A great number of theories and theory systems, for instance the Keynesian one, are built on these suppositions, which are completely groundless. It is curious that economists can maintain theories that so obviously are contrary to fact and reality. Furthermore it is so that to the extent that changes in V affect the price formation process, that does *not* mean that they *weaken* the effects of M's changes, as many economists have assumed but that they *strengthen* them in most cases, as I earlier have pointed out.

For the central bank the small autonomous changes in V are no problem at all, if their managers only realize the implications. If the central bank considers it necessary for the stability of the price level, there need to be only small changes in the banknote volume to compensate for an increased or decreased disposition for expenses by the cash-holders as well as it is needed only small changes in the banknote volume to compensate for the cash-holders´ possibly changed quota between their banknote volume and their check and giro means, which latter change furthermore occurs very seldom and besides perhaps goes in the opposite direction of the other one. The changes that the central bank has to effect in its and the market´s stock of bonds and money market instruments for example for increasing or decreasing the banknote volume by 1 - 2 % are very small, due to the formers´ total volume being so much greater than the latter´s. This means that the central bank through its banknote issuing determines not only the bank note volume outside the central bank and outside the bank system but de facto also the total money volume and by V's inertia and predictability even the realized transaction volume and as we have seen in the previous also the total volume of spending power and the development of the price level.

The banknotes have an enormous efficiency. If the banknote volume outside the central bank is SEK 10,5 billion., of which the bank system uses SEK 0,5 billion in its cashes, the part of the cash-holder´s is SEK 10 billion. If the cash-holders on this base have created check and giro means of SEK 20 billion, then the payment means total SEK 30 billion. If their velocity is 90 times per year, of which the turnover of goods and services amounts to 20 and the monetary and financial transactions to 70, then goods and services for SEK 600 billion are turned over annually by these means and they account furthermore for monetary and financial transactions of SEK 2.100 billion. One single ´krona´ (SEK 1,00) of the banknotes is then responsible for a turnover of SEK 270 in a single year and 2.700 kr. in 10 years. And this turnover goes on year after year, as long as the banknotes are not worn out, whereupon they can easily be exchanged against new ones.

Normally the price stability can be maintained, in spite of the fact that the central bank increases the banknote volume to some extent. The normal production development and the development of the payment system create the prerequisites for this. If the volume goods and services turned over increases by 3 % (like monetary and financial transactions), while the velocity increases by 1 %, then the banknote volume and consequently the payment means volume can be increased by 2 %, without the price stability being disturbed. Something like that the conditions have been in Western Europe and North America after the Second World War. The price rise that has occured in different countries during this period, can therefore be wholly ascribed to excessive distribution of banknotes by the central bank.

There are an overwhelming large amount of material from different sources, economists, and works that point in the same direction. On the other hand it is true that the main part of this material suffers from the uncertainty that depend on the tendencies not having been studied in detail to the required extent. Often this depends on shortages in public and private statistics that too much lacks relevant data. It is so to a great extent also for this study that in many cases gives only an approximate picture of the values of the variables and is intended formost to state a method or a model for future work. It becomes therefore an important task for the economists in coming years to create public and private statistics that record relevant facts to fill these gaps and remedy these deficiencies. To start with there is a need for detail statements about volumes of payment means and their velocities besides turnover numbers for goods and services and their relation to different transaction volumes.

The results we reach are as a rule so unequivocal and expression for so strong tendencies that they appear also in an imperfect material. As a rule all material points in the same direction. The variables of the quantity equation indicate the terms for the price determining process and the development of the economy of the society.

LITERATURE.

Too little has been written the latest fifty years about the price building process of basic nature, I think. And too much that has been written, has lacked relevance or connection to reality. Also on account of lack of time, it has not always been possible for me to choose the most relevant quotations.

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