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THE CHANGES IN THE STRUCTURE OF MONEY SUPPLY IN POLAND AND THEIR MACROECONOMIC CONSEQUENCES

Analysing and evaluating the dynamics of elements of money supply, with special focus on cash in circulation role for economic processes in Poland, is the main goal of this article. The research confirms the special role played by these variables in economies with a high unconformity of level of development in different sectors. Using the data for Polish economy and comparative data for other countries, it is underlined that changes of certain monetary aggregates observed in Poland are almost an oddity in modern economies. This element of Polish monetary policy has not achieved much attention yet. The research supported the thesis that central banks should – in the spectrum of their goals – allow for the structure of money supply with the dynamics of respective monetary aggregates and their influence as on the whole economy as on its individual segments.

Keywords: monetary policy, monetary aggregates, cash in circulation, central banks' goals, economic growth and money supply, structure of money supply, central bank policy

INTRODUCTION

In 1999–2000 the changes in the structure of money supply caused an additional tightening of the Polish monetary policy. This tightening is partly responsible for the slowdown in our economy. This issue is the main point of this article.

Central banks are fulfilling their basic goal, which is keeping the value of currency stable. At the same time they realize selected functions for the entire economy and for the banking system. These functions are: maintenance of liquidity and credibility of the financial systems (as the lender of the last resort), stabilizing and setting the proper level of interest rates, securing the sources of liquidity (money) in such amount and form which are consistent with the main goal of monetary policy when not creating an unnecessary obstacle for utilizing the growth potential of the economy. Insufficient money supply or its flawed structure could be

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monetary barriers for growth. So one of the central bank's functions is securing the sources of liquidity for an economy with structurally balanced growth and diminishing the possibility that changes in monetary aggregates could be the reason for the emergence or endurance of economic depression.

In parallel with a significant decrease of inflationary pressure, which was possible mostly because of central banks' liberation from short term political influence, the mainstream of scientific discussion and central banks' operating activities moved to influencing the market interest rates. Problems dealing with money supply in developed countries, where high inflation has not been a serious threat for years, became less important. In an obvious and natural way, countries entering European Union are duplicating this change in discussion about central banks' goals and tools. However, overstressing the question of desirable interest rates and almost forgetting issues dealing with the amount and structure of money has some unwanted results. In the case of Poland, two important issues can be presented, where assuming a relatively lower importance of monetary aggregates causes costly consequences. If things go wrong, these consequences can transform into choices, which in turn can be the source for recurrence of high inflation – and the rate of price increase is one of the key factors influencing the economy's long term rate of growth. Inflation is also an important indicator for the European Union deciding how deeply Poland should be integrated with European structures.

In the first part of this paper, there is a presentation of arguments supporting the hypothesis that a modern central bank should actively influence the size and structure of monetary supply, with the focus on some of its components, i.e. monetary base or cash in circulation.

The next part presents the results of the research dealing with dynamics of selected monetary aggregates for the Polish economy in the period from 1992 to 2001. They are linked to important events and data describing the Polish economy in the researched period. These analyses serve the purpose of verifying hypothesis, that in the year 2000, a tightening of Polish monetary policy occurred. This tightening had two dimensions: an increase of central bank interest rates and a decrease in selected components of money supply. The change in structure of money supply concerned categories especially important for an economy with a very heterogeneous level of development of its different sectors. This way the tightening of the narrowly defined money supply and decrease in the amount of cash in circulation, together with other factors, brought recession to various parts of the Polish economy.

In the last part of the paper the exceptional character of the changes in the structure of money in the Polish economy is demonstrated. For this purpose there are analysed a series of data for USA, Japan, Great Britain, Czech Republic, Hungary and the European Monetary Union area with special focus on France, for the period from 1967 to 2000. Based on this research, the conclusions are formulated and presented at the end of the article.

1. CENTRAL BANK CONTROL OVER SIZE AND STRUCTURE OF MONEY SUPPLY

Money supply is subject to monetary policy (Duwendag et al 1995, p. 22). If political decision makers assume that changes in aggregate demand influence production in real terms, then they could try to push production above its natural level by increasing money supply (Romer 2000, p. 433). To avoid such situations, which make monetary policy too short term focused, which is called the dynamic inconsistency of monetary policy (Kydland et al 1977 after Romer 2000, pp. 433–434), the theory and practice of central bank as an institution independent from short term political influence became dominant. Its final and most important goal is achieving price stability, consciously chosen monetary aggregate is often an intermediary goal (Szczepańska 2002b, p. 5). It is usually assumed that the central bank has full control over money supply, because of its special functions in the financial system. However this thesis is too far reaching. The authority of the central bank rather applies to a nominal size of monetary base but not the real money supply and the scale of money creation by commercial banks depends not only on parameters set by the central bank, but also to what the commercial banks' voluntary reserves are and the rate of cash in circulation (compared to deposits) (Pająkiewicz ed. 2001, p. 165). The changes in the reserve money are in fact under the control of the central bank only when there is regime of flexible exchange rate functioning and the central bank refrains from intervention in foreign exchange markets with the aim to achieve a desirable level of exchange rate (Pająkiewicz ed. 2001, p. 154). In such circumstances the central bank has full control over reserve money, but has only a limited influence on its structure. The more cash commercial banks collect from the market and the more credit they are able to create (and the economy absorb), the bigger is the share of reserves and the lower share of cash in circulation.

Some different opinions exist. They state that in the time of globalization central banks lose any control of monetary aggregates (Tymoczko 2002, p. 6, 13). However they could be applied only to very short periods of a few weeks. In the longer term the central banks still dispose tools enabling them to set the supply of reserve money. Those tools are limits set for standing facilities and open market operations. Using them (and, in the past – financing fiscal deficits – which in the developed world, after changes in law and bank regulations, is now usually impossible) central banks introduce or withdraw cash from economy. As has already been stated, they have no full control over the structure of reserve money. This means they can not precisely determine how much cash would stay in circulation and how much would become the base for the creation of credit and come back to the central bank in the form of obligatory reserves. Because of this central banks *ex ante* are unable to determine what money supply would be created in the economy in the framework of a given amount of reserve money. However the amount of reserve money is under the control of the central bank (excluding such, usually minor factors, as changes in the amount of old banknotes, lost coins or cases of forgery).

The central bank, in spite of having the knowledge about the amount of reserve money and the possibility to control it, may cease to execute this knowledge, if it adjusts its supply to other goals, as achieving desirable level of exchange rate, or – mostly in the past – financing fiscal deficits. However not executing the control over reserve money does not mean that it does not exist.

The operation of decreasing the rates of obligatory reserves in July 1999 is a good example illustrating the scope of authority of the central bank (Tymoczko 2002, p. 6). The decrease of obligatory reserves rates increased the ability of the banking system to create credit – and so caused the increase of money multiplier. It meant that cash released from obligatory reserves (against unchanged amount of reserve money) flew to the economy becoming the base for increase in money supply. This operation was necessary to make the Polish banking sector more competitive (because of the lower obligatory reserves rates in the European Union), but created the risk of inflationary pressure. This was the reason for NBP to undertake a clean-up operation, selling the bonds to commercial banks and in this way withdrawing cash from the market. This meant decreasing the monetary base, however in parallel with highly increased ability of banks to create money it had a varied influence on other monetary aggregates – amount of narrow money (measured as M1) decreased and the amount of broadly

defined money (M2) increased. If these changes were mostly of a pure statistical meaning or caused real important changes will be discussed in the next chapters of this paper. Anyway this example shows that central banks possess powerful tools enabling them to change the size of monetary reserves and to intentionally influence the money supply. It is why the thesis that central bank can and should control and correct changes in basic monetary aggregates is a framework for further research and analyses in this paper.

2. SELECTED MONETARY AGGREGATES AND THE GROWTH POTENTIAL OF THE POLISH ECONOMY

Insufficient supply of money could be as harmful for the economy as excessive supply (Duwendag et al 1995, p. 25). The longevity and severity of Great Depression Milton Friedman explained by mistakes in monetary policy. He claimed that they were dealing with a decrease in money supply, which deprived stocks in depressed economies of chances for a quick revival (compare Friedman et al 1963, and Friedman 1968). In numerous publications he proposed replacing discretionally monetary policy by policy based on rules, with the key rule of stable, constant rate of money supply growth (Snowdon et al 1998, p. 188, also Friedman 1968 after Snowdon et al 1998, p. 184).

In the period of more then 40 years after the Second World War Poland experienced rather the results of too a loose monetary policy. Especially from 1980 the rate of money supply growth fuelled increasing inflation, which brought Poland to the brink of hyperinflation in 1990. When the real changes became possible, Poland decided to create a fully independent central bank. This independence was secured in the Polish Constitution in 1997. All these changes helped to overcome the dynamic inconsistency of monetary policy described by the Kydland-Prescott Model (Kydland et al 1977). Interest rates and money supply in Poland could be set without short term minded influence of politics. NBP stabilized changes in respective monetary aggregates, successfully suppressing inflation. By slowing down the rate of growth of money, NBP significantly decreased the rate of growth of prices. At the same time the constant growth of money supply secured the monetary needs of growing economy, which in accordance with M. Friedman thesis, is the precondition of a successful monetary policy (compare Friedman 1994).

The speed of the described changes and its costs are still controversial to many economists, but their final success is obvious, especially when compared with the pre-reform monetary conditions. Yet in this overwhelmingly positive picture some issues has escaped full analyses or sometimes are misinterpreted.

During the years 2001 and 2002 and maybe even in 2003, delayed results of year 2000 aggressive monetary tightening were still perceived. Together with the recession in the world economy and falling foreign investment, this tightening caused a decrease in domestic investment and entrepreneur pessimism. That situation forced enterprises to adopt to a new situation, which meant falling employment, flat domestic demand and in some branches of economy and regions of the country an absolute fall in production (cf. *Raport o inflacji*, 2002). Tightening of Polish monetary policy is usually understood as the derivative of the interest rates level with a possible taking into account of changes in the exchange rate. The index of monetary policy tightness, measured as the weighted average of variables mentioned above, increased from January 2000 to July 2001 by nearly 10 percentage points (*Raport o inflacji*, NBP 2002, pp. 78–79). If one uses in the analyse only one variable – changes in the interest rates – the results are slightly different. After a sharp decrease in the level of tightness in 1998 and 1999, there occurred a retreat from this policy, caused mostly by the speeding up of inflation. The tightening of monetary policy lasted from the end of 1999 till February 2001.

Mostly because of falling inflation but also being scared by the difficult situation in economy, from March 2001 NBP returned to the policy of gradual interest rates lowering, which was still being continued in the time of preparing this paper. The basic central bank interest rates are presented in Figure 1. The lombard rate was omitted, because in the researched period it was always equal to the refinancing credit rate when financing the investment with central government guarantee.

The tight monetary policy has at least one more, rarely distinguished, dimension. It is dealing with changes in the structure of money supply. In the researched period the permanent rise in money supply is accompanied by significant and multi directional changes in its structure. They have been caused by two factors. First is the result of the development of Polish financial sector and has a permanent influence. It is expressed by this sector's rising efficiency in monetary creation, which means an increase of money multiplier and a bigger share of fiduciary money in money supply (Table 1 in Appendix, see also Więznowski 2003, p. 291).

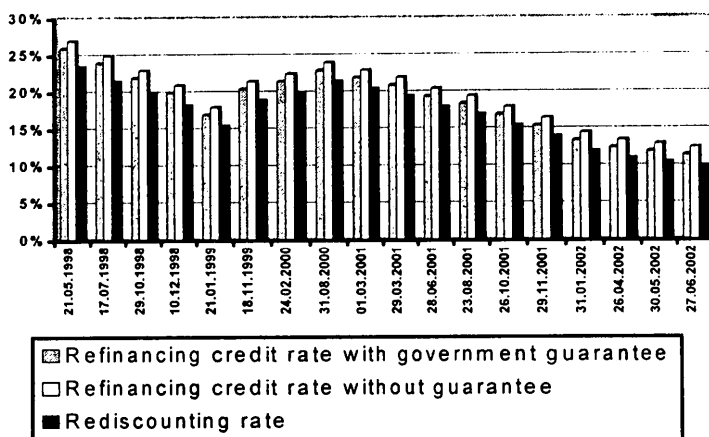


Fig. 1 Basic rates of Polish National Bank 1998–2002

Source: Authors' compilation based on data from www.nbp.pl 2003

The second factor is the result of a change in the NBP policy, caused by the intention to increase the competitiveness of our banking sector to bring conditions of its functioning closer to rules present in the European Union. With the target of 21 July 1999 NBP standardized the level of obligatory reserves for all kinds of deposits, setting them at 5% of money collected. It meant a fall by 55% for time deposits and 75% for demand deposits. It was not the first decrease of obligatory reserves in the Polish bank system, but by far it was the biggest and the most influential one, affecting not only the capabilities of commercial banks but also the potential of the whole economy (Więznowski 2002, p. 110). However these decisions also caused an immediate, significant rise in the ability of the financial system to create money. From the theoretical point of view, money multiplier could potentially increase by 34%, from 4,11 in 1998 to a hypothetical 5.52 in 1999 (Figure 2 - the calculus is based on the assumption of a constant share of cash in circulation in money supply; in fact it did not stay constant, so the result is different from the data in Table 2 (see Appendix); calculus was made based on data from (IMF Financial Statistics Yearbook 2001, p. 832) and (Rocznik Statystyczny GUS 2001, p. 475). It would cause significant rise of money supply and, what usually follows, could provoke the return of rising inflation (compare Figure 3), which NBP wanted to avoid at any price.

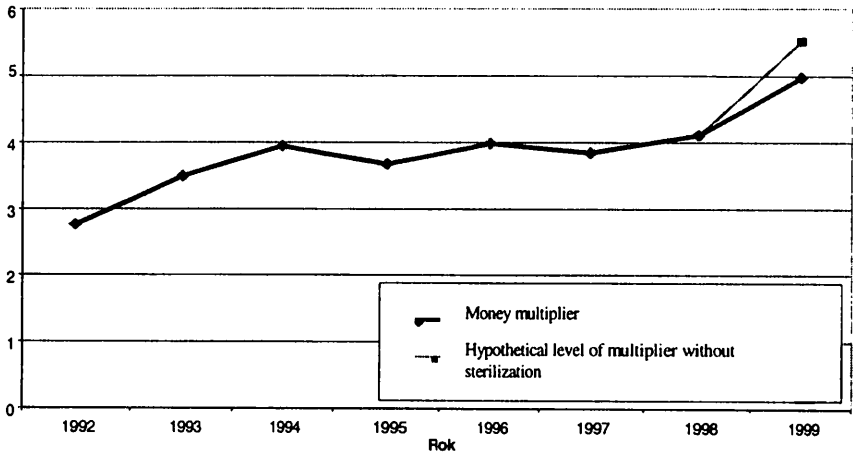


Fig. 2 Money multiplier in Poland 1992–1999

Source: The authors' calculation based on IMF Financial Statistics Yearbook 2001, p. 833 and GUS Statistics Yearbook 2001, p. 475

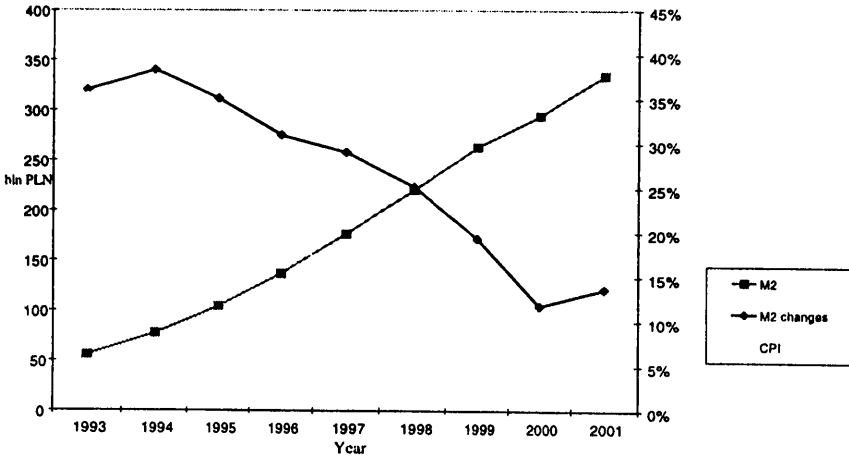


Fig. 3: M2 and inflation in Poland 1993 – 2001

Source: The authors' compilation based on IMF Financial Statistics Yearbook 2001, p. 833 and GUS Statistics Yearbook 2001, p. 475

To prevent inflation, the Polish National Bank took steps aimed at withdrawal of liberated cash reserves from the economy, to stop money multiplier – and, what follows, money supply – from rising too much. The

detailed characteristic of the techniques and procedures used by NBP goes beyond the scope of this paper. What has to be described here, is the change in the structure and size of money supply, which was caused by NBP actions. The overall size of money supply has increased anyway, however reserve money and cash in circulation share in its structure have fallen drastically.

Obvious for NBP has been the need to withdraw from the market a part of the reserve money approximately equal in size to the amount of money liberated from obligatory reserves. In theory the ideal solution would be the absorption of these resources in amounts which do not affect the cash circulation in the economy.

In practice the fall in the size of bank reserves consistent with the theoretical model followed, which with a yearly delay, has been accompanied by the shrinkage of cash circulation. Owing to the significant increase in money multiplier, these changes have been supplemented by a big increase in the amount of bank money.

In the field of changes in structure, the most visible was an increase the amount of cash in circulation of reserve money. It increased from 56% in 1998 to 72% at the end of 1999. This means that softening inflationary pressure from the central bank's actions was in fact not very effective. Nearly all cash resources liberated from reserves escaped to the economy (8,6 billion PLN had been liberated, the amount of cash in circulation had risen by 7.9 billion PLN). As a result money multiplier increased by 21% (to 4.97), which was the biggest increase since 1993. Those changes were accompanied by loosening of monetary policy in other areas – the interest rates were gradually lowered to 15%–17%, reaching the lowest level in the history of transformation. Accelerating the inflation rate to above 10% in 2000 was the delayed result of described changes.

The NBP reacted with new operations, which resulted in a 10% fall in cash circulation. It meant the withdrawal of more than 4 billion PLN from circulation, which was at the same time the second consecutive year of a shrinking in the reserve money amount. This way the amount of cash in circulation was brought to a size characteristic for highly developed economies. However, the Polish economy had a different sector structure meaning among other things, also a much more important role played by cash (compare Figure 4).

Based on the above explanation one could accept that bringing the rules of the Polish banking system functioning closer to conditions of European financial markets and involved a decrease of the obligatory reserves rate were the reason of reserve money shrinkage and indirectly, fall of cash in circulation in years 1999–2000.

The rise of fiduciary money supply was supposed to be the factor mitigating the decrease in availability of cash. The practise seemed to validate assumptions made by NBP – as in 1999, the money multiplier grew by another 21% (to 6.03) in 2000. This way, in spite of the shrinking cash circulation, the growth of total money supply (M2) persisted, when fulfilling the assumption of a gradual fall of growth rate to prevent inflation.

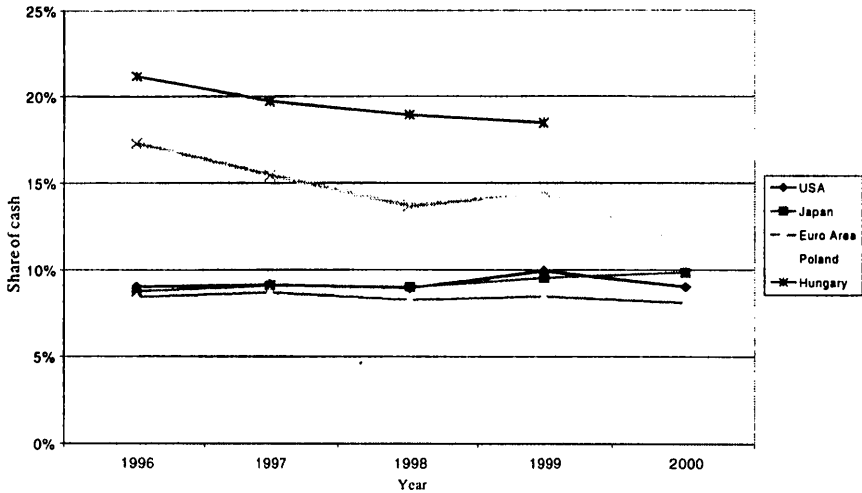


Fig. 4: The cash in circulation share in M2 for chosen economies

Source: Author's calculations based on IMF Financial Statistics Yearbook 2001, pp. 403, 459, 547, 601, 833, 1027

However, the structure of the Polish economy is very complicated. Relatively modern sectors, branches and regions are present, but at the same time lots of poor and undeveloped areas exist (for example the big number of craftsmen and small businesses, the so-called Eastern Wall, countryside). If Polish cities and modern industrial enterprises could adjust to the new conditions created by the shift in the money supply structure without big problems – for years they used mostly bank money as the medium of exchange – a big part of the Polish economy relevant to small and medium enterprises, craft and most of agriculture, was used to and was using mostly cash as the medium of exchange. This applies also to the so-called “grey economy”, which is basic or an additional source of income for millions of Poles. This official and unofficial part of the Polish economy had to be most toughened by changes taking place,

and it was the least able to prepare for them. In these zones the earliest return of rising unemployment occurred accompanied by falling incomes and spending and essential decrease of economic activity. This limited the size of markets for commodities and services supplied by “motors” of the Polish economy – in this way stagnation gradually spread all over Poland.

How big a shock for the Polish economy was the limiting of cash circulation, additionally reinforced from November 1999 by increase of interest rates, could be shown, among others, by levels of unemployment. Unemployment increased from 11.8% in July 1999 to 15.7% at the end of January 2001, and the rate of increase was much higher in rural and undeveloped areas than in the rest of our economy (compare Sokołowski ed. 1999, pp. 111–141 and 253–257). This was not easily reversible. In an economy with given inflationary expectations, the intensified money boost and then its absolute reversal did not bring “symmetrical” results. The economy, after restoring the former nominal size of cash circulation, was not coming back by itself on a stable growth path with lower inflation. It was experiencing the intermediary period of very serious depression occurrence, resulting in lower growth rate and rising unemployment, which are the direct outcomes of shocks caused by unstable changes in availability of money, once limiting and then ballooning the chances to trade and affecting in multiple, often contradictory ways the financial liquidity of enterprises and households spending.

To slow down inflation, it is usually enough to reduce the rate of money supply or cash growth – if realized consistently and supported by proper information policy, it also decreases the costs of such an operation. However, the adverse results of restrictive monetary policy are very costly and persist longer when they are caused by limited availability of liquid resources induced by a decrease in the absolute amount of money supplied or by an absolute fall of any important money aggregate.

Unfortunately such a situation occurred in Poland. The shrinkage of the absolute amount of reserve money persisted for two years, the cash circulation and amount of narrow money decreased in absolute terms in 2000 (Figure 5). So restrictive and causing fall in some of the most important monetary aggregates monetary policy was almost unprecedented in modern economies. That is why, behind the undisputed influence of stagnation on the world markets, too slow Polish structural reforms, wrong and often wasteful fiscal policy, should be the valid hypothesis stating that restrictive monetary policy is in part responsible for the economic stagnation in Poland from 1999 to 2002. The monetary tools constituting this character of policy were not only and even not the most importantly, central bank interest rates (sensitivity of the Polish economy to the

changes of these rates seems to be limited) but the unprecedented fact in modern economies of decreasing the key monetary categories, i.e. cash in circulation, reserve money and narrow money.

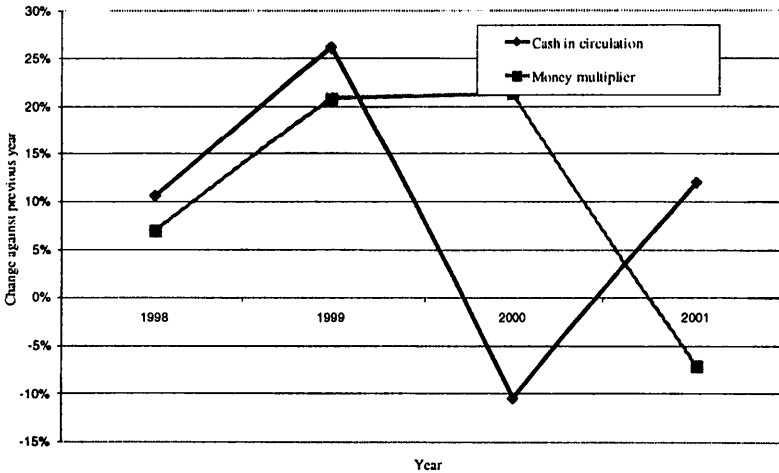


Fig. 5: Dynamics of cash in circulation and money multiplier $K(M2)$ (Poland, 1998–2001)

Source: Authors' calculation based on IMF Financial Statistics Yearbook 2001, p.833 and www.NBP.com.pl

All these categories substantially shrank in absolute terms. The Polish economy had to be especially vulnerable to shocks of this kind because of whole sectors which are using mostly cash to finance its trade and production.

3. MILTON FRIEDMAN'S RULE AND CHANGES OF CASH IN CIRCULATION IN CHOSEN COUNTRIES

As the experiences of other countries show, among monetary phenomena not only the level of inflation has a substantial influence on the proceeding of economic processes but also the rate of growth of money supply and its structure. Milton Friedman's rule states that money supply changes are a too serious variable for the economy to be left for central bankers. So he proposes the constant rate of money growth, secured - for example - in the constitution, which would be outside the influence of central bankers or any other state institution (with the exception of parliament, but only with a huge majority of votes) (compare Friedman 1968, Friedman 1994, Snowdon et al 1998). The money supply and its most important

components should rise at the rate securing realization of the inflation goal, but also fulfilling the economy's demand for liquid resources securing efficient proceed of the economic processes. That is why Milton Friedman pointed at Federal Reserve Banks as the main institution guilty of causing Great Depression in the 1930s and demanded as the final solution regulation fixing the money supply rate of growth, which would be independent from the wishes of those promoting an active role for monetary policy, dependent on the current economic situation, but also without reacting to the changes in money supply on the eventual speeding up of inflation. Not being fuelled by higher money growth, this inflation phenomena had to be a short term occurrence. The rationale for such recommendations was our limited knowledge to purposely create changes in size and structure of money supply without occasionally making the cure worse then the disease. This was why in any discretionally monetary policy he saw the source of potential instability and inflation or prolonged recessions. The earmark of efficient monetary policy should be low inflation and the lowest possible variability of the rate of money supply growth (compare Snowdon et al 1998, pp. 181–188).

The structure of money supply should change, reflecting the demands of an economy. For example, in modern economies a decrease of cash circulation appears, but it has a natural and long term character, being the consequence of gradual changes proceeding those economies. In our opinion, the changes in basic monetary aggregates are bound by the same Milton Friedman's rule as the whole money supply. The only difference is that in the money supply case the central bank is responsible for assurance of constant growth of this variable, but in the case of cash, the central bank should take care that the absolute amount of it does not fall and that there does not occur rapid, shock changes in the rate of growth of this category. To fulfil this assumptions, open market operations and standing facilities would still play the function of key tools in the central bank's redefined tasks.

If the above considerations are just an ideal case, not to be applied in reality since Milton Friedman's rule was not even fully implemented by Federal Reserve Banks or European Central Bank, they still have practical use. They point at the central banks tasks, which should include in the framework of realized functions, minimizing the variability of key monetary categories and securing their constant growth. That is about making sure that lack of liquidity is not strangling the growth of economy, when securing the basic condition, which is bringing inflation to a sufficiently low level. This rule also applies to the amount of cash in circulation. Cash is part of reserve money, which is one of the most important tools for central banks to influence money supply. At the same time it is a category of essential influence on the economic processes. Its importance could be illustrated by the fact that until 1998 the basic Bundesbank

goal was measured not as desired inflation rate or rate of growth of money supply, but as the rate of growth of reserve money.

Analysing data concerning the absolute size of cash circulation in USA, Japan, Great Britain and in the European Monetary Union (EMU) area with a special focus on France, for years 1967–1999, one can draw the following results. In USA, Japan and for EMU as a whole, there has been never seen even one year of fall in the absolute size of cash circulation (Figure 6). The exception is Great Britain, where during the premiership of Margaret Thatcher – in the years 1982–84 – cash circulation decreased by 18%. This was one of the causes of falling inflation, but it also could be one of the reasons for the sharp rise in unemployment accompanied by a decrease in economic activity. The limitation of cash circulation also occurred in France in 1993. However it was on a much lower scale, when compared to cases observed in Poland in 2000 or in Great Britain in the early eighties. Anyway, in the year of decreased cash circulation and the year after, France experienced a substantial rise of unemployment, which surpassed 12%. Taking into account the different, more traditional structure of the Polish economy, the consequences of shrinkage of cash in circulation could be at least as volatile, as those observed in Great Britain and France, and could have more long-term character.

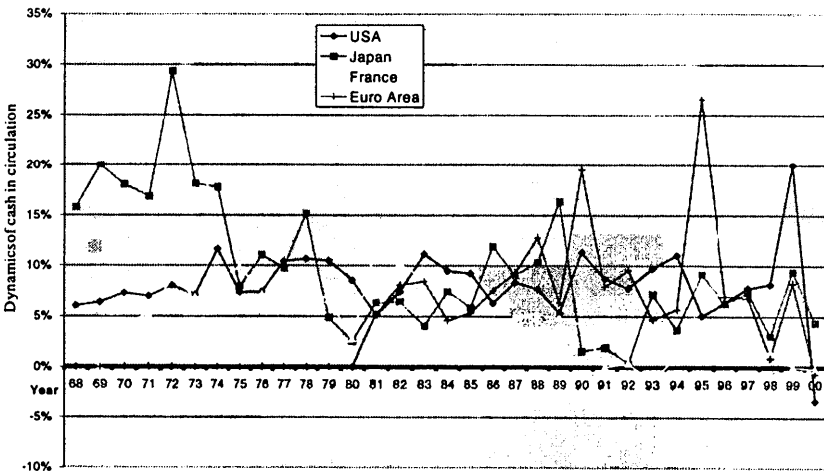


Fig. 6: The dynamics of cash in circulation in chosen developed countries

Sources: Authors' calculation based on IMF Financial Statistics Yearbook 1997, p. 394, 496, 850. IMF Financial Statistics Yearbook 2001, pp. 458, 459, 474, 475, 600, 601, 1026, 1027

The fall of amount of cash in circulation in Poland as of 2000 is sometimes explained by economic agents reaction for risks of "problem 2000" appearance – so-called millennium worm risk and the inability of computer clocks to measure time properly in the third millennium. Enterprises, but also some households, increased by the end of 1999 their cash resources, to get prepared for the possible malfunction of electronic systems and cash machines in the first days of the year 2000. After a relatively short period this resources came back to the banking system. This character of operations could increase the cash in circulation dynamics in 1999 and decrease it (including the fall in absolute terms) in the year 2000. Such a situation really took place in some of the analysed countries.

In the USA, a 3% decline in the cash amount took place. Similar in direction, but more moderate a change in the aggregate researched was observed in the EMU – a 1% drop of cash in circulation appeared (in France the decrease was even smaller – 0.2%). The extent of decrease in the researched countries at the break of years 1999/2000 shows that only a small part of more than a 10% fall of cash circulation in Poland could be explained by "problem 2000" fears. No rationale argument exists why the reaction of Polish economic agents should be much stronger then those observed in the USA or France, let alone, that the cash in circulation fall was not observed, for example, in Japan, the Czech Republic or Great Britain. So we can conclude, based on data presented in Table 3 and Figure 6 and on the above considerations, that the decline of cash circulation in Poland by 10% was really unprecedented and could not be explained by economic agents reaction to the so-called "problem 2000".

The last two questions remain to be answered. Has it been possible to increase the competitiveness of the Polish banking sector without lowering the obligatory reserves ratio and if inflationary results of such operation could be avoided without sterilizing the money market? The answer to both questions is "no". However, it seems that the sterilizing operation itself could be managed better – managed the way blocked cash liberated from obligatory reserves came back to the market when securing a reasonably stable, gradual rise of cash in circulation. None of this was fulfilled by the NBP. This is one of the important reasons why inflation rose and economic stagnation followed.

CONCLUSIONS

The reduction of the amount of cash in circulation is one of the factors responsible for slowing down of the Polish economy in the years 2000 –

2002. For keeping the inflation and money supply growth rates within established limits, at the presence of changes influencing heavily money multiplier, NBP decided to decrease the monetary base and the amount of cash in circulation. However, a big part of the Polish economy uses bank money only in a limited extent and in this part, cash circulation is dominant. This is the reason why small towns, countryside, sector of small and medium enterprises, local economies of the "Eastern Wall" etc. has been most hurt by changes in the money supply structure. For an economy not only global money supply is important but also the structure of this supply. The analysis of data collected for about thirty years periods in chosen developed countries, underlines that an absolute decrease in size of cash in circulation is a rare phenomenon and is accompanied by unfavourable consequences in the form of rising unemployment and slowing economic growth.

Undoubtedly Poland had to accomplish the described changes on its way of adjusting to the European Union. More changes are still ahead of us. However one has to ask the question, if securing against inflationary results of lowering obligatory reserves ratios, the NBP had to reduce cash in circulation resources by 10%, knowing that for a big part of our economy this is the main medium of exchange. If the only goal was getting closer to the rules implemented in the European Union, the answer was negative. It was possible to model such changes in structure and size of reserve money that did not cause a decrease in the amount of cash or money supply. However, if the NBP goal was additional, stronger reduction in inflation, then its actual rate shows that the goal was achieved. But the cost of this success seems to be very high. Watching NBP activities in the year 2001 (an increase in cash in circulation by 12%, reserve money by 22%, money supply by 14% and a significant reduction of interest rates) and in the year 2002 (decreasing from February obligatory reserves ratio to 4.5%, further reductions of interest rates), it is difficult to deny that the NBP, at least partly, shares opinions about too restrictive monetary policy in the year 2000.

Regrettably, in the year 2001 the economy in stagnation was not able to absorb new liquid resources and utilize easier access to credit, which was exemplified by a fall of money multiplier by 7%. It is worth to quote the universally known saying – we can lead a horse to water, but we cannot force it to drink. There is only hope, that after this unpleasant experience, the set of intermediary NBP targets will be widened by adding the obligation to secure the positive dynamics of key monetary categories, cash in circulation included, at least until Poland becomes a member of the European Monetary Union.

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APPENDIX

Table 1

The reserve money/M2 index for chosen economies (%)

Year	1994	1995	1996	1997	1998	1999	2000
USA	10.8	10.7	10.6	10.7	10.3	11.4	10.1
Japan	9.3	9.7	10.3	10.7	10.7	14.4	11.6
France	17.8	17.8	18.1	17.5	X	X	X
Germany	13.5	13.2	12.9	12.4	11.9	X	X
Czech Rep.	20.3	24.1	22.8	29.3	34.8	36.9	34
Poland	25.4	27.3	25.1	26	24.3	20.1	16.6
Hungary	30.9	30.7	23.2	24.3	22.6	24.5	X

Source: IMF Financial Statistics Yearbook 2001, pp. 99, 101

Table 2

The key money categories of the Polish economy 1992–2001

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Cash in circulation outside DMBs	7.8	10	12.3	19.5	23.6	27.3	30.2	38.1	34.1	38.2
Reserves with DMBs	5.8	6	7.3	8.9	10.7	18.6	23.5	14.9	14.7	21.5
Reserve money	13.6	16	19.6	28.4	34.3	45.9	53.7	53	48.8	59.7
Money	14.7	19.7	27.5	37.4	52.3	61.7	71.7	88.2	82.6	X
Quasi money	26.2	36.3	49.9	66.9	84.3	114.7	149.1	175.3	211.9	X
Money and quasi money (M2)	41.1	55.9	77.3	104.4	136.7	176.4	220.8	263.5	294.5	334.7
Money multiplier	2.76	3.49	3.94	3.68	3.99	3.84	4.11	4.97	6.03	5.61

Attention: Category "money" is calculated up to IMF standards, which are different from the closest to its Polish measure M1

Source: IMF Financial Statistics Yearbook 2001, p. 833 and www.nbp.com.pl

Table 3
Amount and dynamics of cash in circulation

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	
1 USA	6%	41	7%	7%	8%	7%	12%	7%	7%	10%	11%	10%	9%	5%	7%	11%	
2 Japan	16%	3	18%	17%	29%	18%	18%	8%	11%	10%	15%	5%	3%	6%	6%	4%	
3 France	3%	71	4%	5%	9%	7%	9%	10%	7%	6%	8%	7%	3%	12%	10%	9%	
4 Czech Rep.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5 Poland	X	X	X	X	X	X	X	X	X	X	X	X	21%	38%	53%	18%	
6 Hungary	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	12%	
7 Euro Area	X	X	X	X	X	X	X	X	X	X	X	X	X	5%	8%	8%	
8 Great Britain	1%	3	10%	8%	14%	7%	16%	14%	13%	15%	15%	9%	8%	4%	5%	-2%	
9	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
10 USA	41	44	47	50	54	58	62	69	74	80	88	97	108	117	123	132	147
11 Japan	3	4	4	5	6	8	9	11	12	13	14	16	17	17	19	20	21
12 France	71	73	73	76	80	87	93	101	111	119	126	136	145	149	167	184	200
13 Czech Rep.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14 Poland	X	X	X	X	X	X	X	X	X	X	X	X	24	29	40	61	72
15 Hungary	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	85	95
16 Euro Area	X	X	X	X	X	X	X	X	X	X	X	X	X	74	78	84	91
17 Great Britain	3	3	3	3	4	4	4	5	6	7	8	9	10	10	11	11	11
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1 USA	9%	9%	6%	8%	8%	5%	11%	9%	8%	10%	11%	5%	6%	8%	8%	20%	-3%
2 Japan	7%	6%	12%	9%	10%	16%	2%	2%	0%	7%	4%	9%	6%	7%	3%	9%	4%
3 France	4%	4%	3%	5%	5%	5%	4%	0%	0%	-1%	1%	2%	1%	2%	1%	X	0%
4 Czech Rep.	X	X	X	X	X	X	X	X	X	X	42%	25%	14%	0%	7%	24%	9%
5 Poland	14%	23%	16%	12%	92%	292%	298%	43%	39%	28%	23%	59%	21%	16%	11%	26%	-10%
6 Hungary	11%	11%	12%	17%	7%	10%	16%	24%	24%	15%	11%	8%	12%	13%	19%	27%	X
7 Euro Area	5%	5%	8%	9%	13%	6%	20%	8%	10%	5%	6%	27%	7%	7%	1%	8%	-1%
8 Great Britain	-17%	7%	36%	6%	8%	6%	1%	2%	6%	6%	6%	6%	4%	6%	-18%	10%	11%
9	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
10 USA	161	175	186	202	217	229	255	277	299	328	364	382	406	438	473	568	549
11 Japan	22	23	26	29	32	37	37	38	38	41	42	46	49	53	54	59	62
12 France	209	217	224	235	247	259	270	270	271	267	270	275	278	283	287	49	49
13 Czech Rep.	X	X	X	X	X	X	X	X	X	59	84	104	119	119	127	158	172
14 Poland	82	101	117	131	252	988	3934	5618	7798	9982	12274	19330	23563	27256	30225	30083	34113
15 Hungary	105	117	131	154	165	181	210	260	322	371	411	444	498	563	667	845	X
16 Euro Area	96	101	108	118	133	142	170	183	201	210	222	281	300	321	323	350	348
17 Great Britain	9	10	13	14	15	16	16	17	18	19	20	21	22	23	19	21	24

Positions 1 – 8 describe dynamics of cash in circulation – they are the current relative subtractions, positions 10 – 17 are the amount of cash in circulation. Pos. 10 – USD billion, pos. 11 – YPY trillion, pos. 12 till year 1998 inclusive – FRF billion, since 1999 – EUR million, pos. 13 – CZK billion, pos. 14 – PLN million, pos. 15 – HUF billion, pos. 16 – EUR billion, pos. 17 – GBP billion

Source: IMF Financial Statistics Yearbook 1997, pp. 394, 496, 846, 850. IMF Financial Statistics Yearbook 2001, s. 402, 403, 458, 459, 546, 547, 600, 601, 832, 833, 1020, 1021, 1026, 1027 and authors' calculations

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