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Assessing the origins and legacy of monetary aggregates

Paweł Kowalewski*

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Abstract

Monetary aggregates were an extremely popular strategy pursued by the majority of central banks between the turn of 1970s and 1980s. The gathering pace of deregulation in the international financial markets in the 1980s started, however, to affect demand for money and subsequently it made almost impossible for the majority of central banks to rely on this particular strategy any longer. Still, there was one central bank which, with the help of its pragmatism and a rather versatile approach towards monetary aggregates, managed to prove that these aggregates were useful in preserving the monetary equilibrium. December 2024 marks the 50th anniversary of the German DBB (Deutsche Bundesbank) decision to stick to this monetary tool. This anniversary poses a good opportunity to present their origins as well as their legacy. This assessment will be done with a historical and theoretical presentation along with a detailed description of the DBB's case.

Keywords: monetary policy history, inflation, monetary aggregates, quantity theory of money, DBB

JEL: E51, E52, E58, N12, N14

* Narodowy Bank Polski, Market Operations Department.

1. Introduction

The 50th anniversary of the launch of monetary targets by the German Bundesbank marks a good point for an analysis of these targets, putting a focus on their theoretical background and, above all, their historical background. This monetary framework stems from the quantity theory of money, the origins of which go back to the times of Nicolaus Copernicus. This theory has undergone a long transition ever since and it was not until the advent of Milton Friedman who converted it into an attractive monetary framework.

Monetary targets helped to fill the void following the demise of the Bretton Woods System. In the decade spanning from the mid-1970s and mid-1980s, monetary aggregates enjoyed their heyday, before they were gradually rejected by countries like the US, Canada and the UK. The then Bank of Canada's governor, Gerald Bouey, once even said that, 'We didn't abandon monetary aggregates, they abandoned us.'

In spite of Bouey's words, some central banks opted to pursue monetary targets until the late 20th century. This was especially the case of the DBB, where these aggregates not only worked, but also contributed to the anti-inflationary credentials of this bank. The latter occurred, even if the DBB missed its own target in 11 out of 24 years of their appliance. That is why German monetary policy makers insisted on not giving up monetary aggregates following the euro area's creation. Nevertheless, as time passed and the world economy changed, these aggregates went into irrelevance both in and outside euro area. There are however reasons to believe that a total departure from these aggregates was premature.

The eruption of inflation between late 2021 and early 2023 across most of the globe, however, made some observers change their perception of monetary aggregates, which until then used to be perceived as rather yet another obsolete framework. Most of these observers started to link the aforementioned upsurge in inflation with the preceding sharp spike in the growth rates of monetary aggregates (which reached double digit levels). For some experts this sequence of events proved to be a good opportunity to reassess the quantity theory of money again and thus make the case for raising its relevance for policymaking.

The reluctance towards these aggregates seems to persist. Many central bankers – in spite of their criticism for not keeping inflation under control in the early 2020s – insist that monetary targets are not a feasible option and point out at the constrained usefulness of the quantity theory of money in the environment of very low and sustainable inflation. They perceive high inflation from the early 2020s as a one-off event and are not convinced about shifting their attention back to monetary targets again. Alternative voices, however, tend to question this point of view. As a result more and more focus is being put on the key component of the quantity theory equation, which has not been explored sufficiently since the last outbreak of inflation, namely the velocity of money. If its fall (and its subsequent downward pressure on inflation) in the period preceding the launch of QE is rather well documented in the literature, there are few clues about its current upsurge following central banks' efforts to arrest the rise of inflation.

The idea behind this paper is to bring the concept of monetary aggregates closer to the reader and assess their advantages and disadvantages by addressing all the issues raised above. The key aim of the paper is to confront the reader with the question whether reducing these aggregates' importance or in some cases even eliminating them from the central bank's toolkit was perhaps

a premature step. The literature on monetary aggregates is extensive, however the majority of research focuses on either selected time intervals or is of a theoretical nature. According to my best knowledge, there is little updated research perceiving monetary aggregates in a wholistic manner, that is a study whose content ranges from their early origins to the most recent discussions about their potential use for policymakers. Furthermore, apart from Reischle (2001), little has been written about monetary aggregates from the operational perspective. The paper's intention is to fill this void. If the literature usually tends to present the weaknesses of these aggregates, the attention in this text will be focused on the case of Germany – where the appliance of monetary aggregates ended in success. This rather provocative attitude is aimed at relaunching a discussion about the usefulness of these aggregates after an interest in this strategy following a spike in inflation in the early 2020s started to resurface (Borio, Hofmann, Zakrajšek 2023). The key tool to be applied in this text is a historical analysis along with a case study presentation.

The paper is divided into five parts. The first is an introduction. The second one searches for a concept to gauge the amount of money in the economy. This search will be done with the help of historical analysis. Apparently the dominance of the real bill doctrine was so deeply rooted in some parts of the world that three long decades were needed for the world's largest central bank to change its attitude to the concept of money stock and its size. This section will be followed by a brief theoretical background, where the money stock will be referred to in a detailed manner, along with a presentation of key concepts like narrow, broad money, monetary base, the multiplier and the interlinkages between them. A separate section will be dedicated to changes occurring to these aggregates along with the causes behind all these changes. In other words, the notion of money counterparts will be discussed at the end of the second part of this text.

The third part of this text will be dedicated to the history related to the use of these aggregates and will be fundamental from the point of view of better understanding the way monetary aggregates used to work. As this article is dedicated to the 50th anniversary of their successful use by DBB, its content will be entirely dedicated to the German central bank and its experience using this strategy.

The fourth part will focus on the contemporary perception of these targets. Like the second part, this one will also be divided into two sections. The first one will present the relegation of the importance of aggregates across the globe. The focus will be dedicated here above all to the Eurosystem, as it proved to be the only place where some attention was given to these aggregates for a couple of years, mainly because of its monetary analysis. The second section will deal with the impact of unconventional monetary policies in the wake of two crises, financial and pandemic one. An important element of this section will be, a provocative question, namely why central banks opted to ignore the warnings sent by these aggregates at the height of the pandemic crisis. An attempt to answer this question will point to some clues regarding future trends in conducting monetary policies.

2. Historical and theoretical background

2.1. Historical part

Monetary aggregates are widely associated with the period which occurred in the early 1970s shortly after the demise of the Bretton Woods system. It is true that monetary aggregates became an important

economic variable at that time, as central banks were desperately seeking their new reference points. The way these aggregates played this kind of role, however, requires a separate description, which will be presented in further parts of this chapter. In this part, attention will be focused on monetary aggregates from the point of view of their original aim, namely the process of gauging the amount of money in the economy.

Monetary aggregates and their rise to eminence are often associated with Milton Friedman and Anna Schwartz's book *A Monetary History of the United States, 1867–1960* (Friedman, Schwartz 1963a). It is quite ironic because if both authors refer in some way to monetary aggerates, it is rather in their paper from the same year under the title *Money and business cycles* (Friedman, Schwartz 1963b). Still associating monetary aggregates with Friedman and Schwartz may prove unjust to many economists who contributed much earlier with their research to the emergence of these aggregates. That is why, prior to further deliberation on monetary targeting and its links to the quantity theory of money, it seems essential to address the reasons behind the emergence of monetary aggregates.

Needless to add, aggregates were created out of need. Perhaps the most convincing explanation behind their creation is offered by Anderson and Kavajecz (1994). According to these two authors, constructing monetary aggregates built upon daily data is essential from the point of view of eliminating seasonal patterns. A collection of data for individual days, however, may prove not representative enough (i.e. due to different working days in a month), when it comes to gauging both the average level and its trend growth rate. Efforts to aggregate daily data into larger but regular average units of time (i.e. monthly) took a long time to be accomplished. Below a detailed presentation of the most important events which paved the way to the creation of these aggregates is presented.

A search aimed at detecting the origin of monetary aggregates must be preceded with a reflection on money. Such a step will be helpful in understanding the entire logic behind the concept of monetary aggregates. A practical and empirical definition of money proved to be a tough challenge for central bankers for a long time, which apparently prevented them from taking full control of money supply. This was subsequently one of the reasons behind the Great Depression (Bernanke 2006). A similar line was represented by Frank Steindl, who highlighted the role of the Canadian economist, Lauchlin Currie (Steindl 1990). Currie was reported to say: "the Federal Reserve System simply was not concerned with the behaviour of the money stock, not even with collecting data on it" (Velasquez 2018).

Prior to the emergence of Currie, the Fed represented a surprising indifference to the issue related to the behaviour of money stock. With the benefit of hindsight, it must be stated that the Fed had to wait until the late 1930s to address the story of measuring money stock. And it was Currie who was supposed to fill the void. The key reason behind this state of affairs was most probably the Fed's reluctance to go beyond the so-called real bills doctrine (known also as the banking or commercial loan principle).

The origins of the real bills doctrine go back to the early 18th century, when John Law made a clear reference to the link to a currency backed by real property and whose supply should be correlated with the needs of trade. Humphrey (1982) described it as a rule purporting to gear money to production via the short-term commercial bill of exchange, thereby ensuring that output generates its own means of purchase and trade adapts passively to the legitimate needs of trade. Later on, the real bills doctrine stated that banks' lending should be confined to the collateral they receive in return. The content of this doctrine was relatively quickly challenged by many economists, starting with the monetary theorist, Henry Thornton, as early as 1802, and who was followed by David Ricardo. Nevertheless it was not until the advent of quantity theory when a feasible alternative to the doctrine referred above was conceived.

If in the real bills doctrine causality runs from prices and output to money (i.e. cyclical changes in output influenced demand for loans), the new theory foresaw a reversal of directions (Humphrey 1982). Fuerst (2008) points at one fundamental difference between the two aforementioned theories, namely an attitude towards money supply. The advocates of real bills doctrine believe that because of exogenous nature of prices, money supply passively responds to changes in the economy. Their opponents represent a view where money supply must be constrained. Otherwise achieving price stability will be impossible. That is why the quantity theory's followers see the room for an institution responsible for controlling money supply, namely the central bank.

Nevertheless, for the Fed in its adolescent years, the real bills doctrine suited quite well its profile of a rather decentralized institution which stayed away from any ambitions to interfere in the domestic economy. Humphrey (2001) put it bluntly by saying that in the referred period the Fed preferred accommodation to stabilization. The Fed's preferences hardly changed following the outbreak of the Great Depression. Sticking to the real bills doctrine, however, proved to be costly. After all, almost the entire research which relied on this doctrine sent false messages which kept the Fed in its conviction that its initial ill-fated reaction to the Great Depression was the correct one.

The search for a new conceptual framework went along with strong pressure to explain and draw lessons from the aforementioned events, and the Great Depression in particular. And it was Currie who delivered in 1934 a paper under the title *The failure of monetary policy to prevent the depression of 1929–32*. But it was another work by Currie that is considered the pioneering practical empirical definition of money, namely, the *Supply and Control of Money in the United States* (Bernanke 2006).

The arrival of Currie to the Fed (who was brought by Mariner Eccles in 1934) generated an interest that proved to be an important milestone, but it was not until after WW2 when studies on money stock gathered pace. In 1948 the Fed started to compile and publish a consolidated statement of the banking and monetary system as of the last Wednesday in the month or for call report dates. This statement contained data for the money supply, defined as the total demand deposits adjusted and currency outside banks (Federal Reserve Bank 1960).

A lot was happening in the area of intellectual debate. In 1956 Donald Patinkin published a book under the title *Money, Income and Prices*, where he tried to explain that the nominal aggregate quantity of money did not translate into a change of any real variable (Congdon 2024). Four years later, John Gurley and Edward Shaw published *Money in a Theory of Finance*, where they coined two new terms: 'outside money' (money issued by a central bank) and 'inside money' (money issued by commercial banks) (Congdon 2024).

The year 1965 saw the publication by Phillip Cagan, under the title *Determinants and Effects of Changes in the Stock of Money, 1875–1960* (Cagan 1965). Academic efforts were accompanied by ever better techniques aimed at improving the measurement of money. The latter was done under the supervision of the Federal Reserve Bank of Saint Louis, William Abbott (Bernanke 2006). Thanks to his research, to be done in tandem with Marie Wahlig, the Fed's knowledge about monetary aggregates was enhanced substantially. As a result, as early as 1960 a project was launched which helped to present money statistics on a semimonthly basis – going back to 1947. Efforts undertaken in order to erase the statistical influence of seasonal variations were added. Furthermore, instead of figures for a single date, the new series were based on averages of daily figures. This step was aimed at reducing systematic and random variations (Federal Reserve Bank 1960).

The Fed's reluctance to resort to interest rates as an operation tool had gone well into the second half of the 20th century. There was an important reason for the Fed to avoid making interest rates its key instrument in the efforts to combat inflation. It was the elevated level of public debt stemming since the times of WW2 which abstained authorities from raising rates in order to keep its servicing costs under control. Furthermore a hike in interest rates could pose a challenge for all those institutions who were in possession of governments bonds. Under such circumstances, the onus of monetary policy was moved away from interest rates in the direction of constraining credit expansion – in line with the so-called credit availability doctrine widely attributed to Robert Roosa (Volcker 2002). This doctrine advocated for shifting from influencing the cost of credit and moving toward the process of restricting its availability (Meigs, Wolman 1971). As Volcker (2002) pointed out, the implementation of the doctrine obviously relied upon a market imperfection caused by the regulation of the markets, with Regulation Q being a good example. However the effect of regulations started to weaken once banks acquired new techniques for raising money. As time progressed, it was widely understood that regardless of the central bank's efforts, the banks were trying to game monetary authorities (Volcker 2002), thus making the aforementioned doctrine rather obsolete. As a result, Schwartz's advice encouraging the Fed to focus its attention on reserve growth started to be implemented following Volcker's arrival to power. The control of reserves was achieved with open market operations and reserve requirements. The link between reserves and money started to work. By controlling the former, a drastic increase in the price of money was engineered, which contributed to a fall in inflation. Subsequently, monetarism experienced its heyday.

2.2. Theoretical background

The notion of money is linked to the quantity theory of money. The origins of this theory, which claims that the general price level of goods and services is directly proportional to the amount of money circulation, go back well before the times of the already mentioned astronomer Simon Newcomb and the economist Irving Fischer. According to many sources, it was another astronomer, Nicolaus Copernicus, who detected its basic principles. Some others attribute authorship to a representative of the Salamanca School, Martin Azpilcueta. There are also voices claiming that this theory was invented by Jean Bodin. Even if ever since a number of philosophers dedicated their time to this theory (with John Locke and David Hume amongst others), one cannot help the feeling that this economy was coined by astronomers. If Copernicus was the first to detect its elements, Newcomb developed it further before Fisher formulated it. In 1885 Newcomb wrote *Principles of Political Economy*, whose content was even praised by Keynes. But it is Irving Fisher who is credited with the first-known enunciation of the relation involving the exchange between money and goods used in the theory discussed here. And in addition, it was he who formulated this theory with the help of the aforementioned equation. In 1911, in his book on *The Purchasing Power of Money,* Fisher highlighted the significance of this equation (MV = PT), whose importance his disciple Milton Friedman compared to Einstein's formula for mass--energy equivalence in physics (Congdon 2024).

Out of all four components of the aforementioned equation it is the velocity of money which deserves special attention. It is usually defined as the number of times a unit of money passes from one hand to another (Bussière, Sahuc, Pfister 2020). Since it is not constant, it is able to affect the way

an increase in the money supply translated into higher prices – even if the given GDP does not change (it remains constant). Nowadays, velocity of money is perceived as an important factor whose performance widely affects inflation, and its importance will be referred to in the fourth part of this article.

Now it is time to focus on concepts of both narrow and broad money. Sticking to the Eurosystem's definition, narrow money is often referred to as M1, which most often comprises coins and banknotes in circulation along with current account deposits. This ingredient is also often known as transaction money. M2 is often referred to as near money or quasi money, where M2–M1 is composed mainly of short time deposits or deposits redeemable at notice of up to three months. M3–M2 includes marketable instruments, like repo transactions, money market funds and debt instruments with maturity up to two years. With the higher M, the level of liquidity falls, but the money supply becomes more stable (Pospisil 2017). The higher degree of stability is due to the substitution effect, which is achieved with the help of assets that are less liquid than the narrow range, but still liquid enough to ensure a sort of substitution effect. Money is not only issued by the central bank. As Banque de France states, money can also be printed by credit institutions, money market funds (MMFs) and all resident financial institutions whose business is to take deposits and/or close substitutes for deposits from non-financial agents. One good example is repo transactions, whose 'moneyness' is so high that they are perceived as money-like (Brunnermeier, James, Landau 2016). The link between the largest aggregate (which depicts money supply) and the monetary base (M0) is measured with the help of the monetary multiplier.

Both monetary aggregates' absolute volume and their pecking order (the share of each component) played a decisive role at the time of conceiving the monetary framework. Pospisil (2017) believes that the practical application of monetary policy depends on priorities which are set in particular countries for the future status of the national economy (Pospisil 2017). This point of view is confirmed by Goodhart and Needham (2018), where the authors refer to the case of the UK, where broad aggregates – because of historical reasons – prevailed over narrow ones.

Monetary aggregates are probably the most common measure of what is known as intermediate variables or targets (Davis 1990). A similar definition is offered by Bindseil, who defines them as a variable to be within reach of the central bank's influence, but with a reasonable time lag (Bindseil 2004). The key feature of such variables is that they are not entirely controlled by the central bank, even if it is expected to exert an influence on the ultimate goal of monetary policies (Barth 2022).

Analyzing monetary aggregates (depicting broad money) alone does not enable an understanding causes of their changes. The broad money counterparts provide information on the underlying sources of broad money growth such as credit growth to resident units other than participants of the banking sector (depositary corporations). Furthermore, according to the same definition, broad money 'counterparts' refers to the accounting identity between the two sides of the consolidated banking system (depository corporations' stock positions) while the term broad money 'sources' refers to the factors affecting the expansion and contraction of money (flows). Counterparts are usually presented in net terms. Furthermore, there is a time criterion (usually up to two years) beyond which a given asset ceases to be a component of money supply and it is converted into its counterpart (Cartas, Harutyunyan 2016).

Both monetary aggregates and their counterparts can be divided into three sectors, namely the money issuers, the money holders and the money neutral sector. The money holders sector is composed of resident, mainly households, non-financial corporations, insurance companies and

non-MFI financial intermediaries (El Amri et al. 2021). And as already mentioned when referring to the subcomponents of M3, the notion of money issuers goes beyond central banks. As far as the money neutral sector is concerned, deposit holdings of the central government are a good example of them. This is because governments' means are not sensitive to macroeconomic variables (like the exchange rate or interest rate) to the same extent as the remaining money holders (Cartas, Harutyunyan 2016).

MFI are also excluded from this sector. This has to do with the monetary nature of the aggregates. Congdon (2024) explains that interbank settlement is of a financial nature. Such settlement does not create added value from the point of view of output. Another example of money neutral sectors is deposits of nonresidents, as their scope of activities usually lies outside the domestic economy. Regardless of the sector, the analysis of broad money counterparts offers an important insight into monetary developments, as it proves to be extremely useful in identifying the sources of money creation (Picón-Aguilar, Soares, Adalid 2004).

Central banks point at different factors which made loans the key engine from the point of view of money creation. Banque de France (2016) represents the point of view that it was a departure from the fractional reserve theory according to which the deposits of some bank customers were a prerequisite for any lending to be granted to other customers. That means that this theory imposed the following sequence of events, where deposits always preceded loans. And it was not until the 1970s (which coincided with monetarism reaching its eminence) when the departure from the aforementioned theory took place and subsequently reversed the order in the sequence of events. From then on loans started to precede deposits. In other words, it was all about the funding liquidity creation (Thakor, Yu 2023). This turning point brings both the historical and theoretical analysis to an end. From now on, the focus in the next two parts will be focused on empirical evidence by illustrating cases of selected countries that opted to pursue these aggregates.

3. Monetary targeting in Germany

If the US was the birthplace of monetary aggregates, monetary policies relying on different measures of the growth of money stock proved to be successful elsewhere. It was the DBB which, because of its clever use, epitomized all the benefits stemming from this framework.

In the case of the German DBB, monetary aggregates were mentioned as early as in the 1971 DBB Annual Report. In the years to come, the annual reports made reference to annual growth in both M1 and M2. And it was on 5 December 1974, when the DBB for the first time in its history announced a target for the growth of the central bank money stock. Even if the introduction of this new framework might have implied a new chapter in the DBB's history of conducting monetary policy, the conviction that inflation is always a monetary phenomenon was deeply rooted in German society well before 1974 (Reischle 2001). Reischle believes that the origins of this conviction go back as early as 1957, when the DBB was established and by doing so it became part of the German stability culture (DBB 1996).

For the sake of simplicity, in this text attention will be solely focused on monetary aggregates, even if this indicator was not the only point of reference for the policymakers. Monetary targets – as it will be referred later in the text – did go almost hand in hand with the inflation forecasted level. The latter was, however, more stable than the former. That is why in order to achieve its own targets, the DBB also used other tools out of which the short-term rates played the key role.

There is no doubt, that the successful use of monetary aggregates became a part of the DBB's heritage. No other central bank can boast a similar track record as far as their efficiency is concerned. And all that in spite of a rather rocky start of the new strategy, as five years were needed for the DBB to meet the target for the first time. Furthermore throughout the 24-year period, the DBB was able to meet its own target on 13 occasions only. Still, even the most ardent critics of this framework cannot contest that it was the DBB that saved these aggregates from oblivion. In the following sections there will be an attempt to explain this phenomenon.

Trying to understand the reasons behind the successful use of this strategy in spite of its rather limited efficiency, it must be noted, that throughout the period of 24 years, the DBB resorted to two principles loosely intertwined with each other. The first one was pragmatism, and the second one consisted of a 'learning by doing' approach.

When it comes to pragmatism, the DBB admitted on several occasions that it did not respond mechanically to monetary developments in Germany. Interim disruptions were part of the game. This is one more piece of evidence of the DBB being an unorthodox applier of this strategy, as the size of the economic costs stemming from meeting the target were always an important criterion. This flexible handling of the monetary aggregates helped to adjust to the changing economic and monetary environment (DBB 1997a). Any policy response was always preceded by an additional, scrutinized analysis of all the causes, which contributed to the divergence of the money stock from its reference value. The DBB admitted itself that it used on purpose the notion of 'reference value' as it was less constraining than the notion of interim target. This wording was one more proof of the DBB's pragmatic approach (DBB 1999).

In turn, the approach of 'learning by doing' can be proved in many ways. Suffice to mention that the bank in the period spanning from 1974 to 1998 introduced several modifications ranging from moving away from an average target towards a range target, and ending on switching its reference value from the central bank money stock towards the M3. The discussed approach helped to preserve much needed flexibility, as depending on circumstances the DBB was either narrowing or widening its band. And in response to external unforeseeable processes, it opted for widening the money supply's extent it was trying to target. Furthermore, the DBB experimented with additional monetary aggregates, like M3 extended, which included deposits abroad, short-term bank debt securities and the certificates of domestic and foreign money market funds held by domestic non-banks, less the bank deposits and short-term bank debt securities of domestic money market funds.

In its *Report of the Deutsche Bundesbank for the Year 1998* (DBB 1999) for the final year of M3's appliance, the DBB defined money stock by referring to it is a suitable anchor for a monetary policy geared to the objective of price stability, making it easier to stabilize inflation expectations at the level perceived by the central bank as a desired one. The DBB emphasized on several occasions that the strategy of monetary targeting required money stock to have a lead over prices (DBB 1997b) as well as the assumption that the DBB can control its money stock (DBB 1999). Reischle (2001) pointed out the informative value of these aggregates for the future price level. This was the key feature of the money stocks, strong enough to be treated as an intermediate target, but not an operative one. Hence the use of the already mentioned interest rates. Furthermore, far-reaching scrutiny of aggregates (which was not confined to M3 only) – by an extensive evaluation of both current and future trends in the monetary growth in Germany – paved the way to the importance of the aforementioned monetary analysis, which was inherited by the ECB and pursued for a long time.

The DBB tried to stipulate the advantages of the medium-term strategy of monetary targeting in spite of the relatively high volatility of monetary growth experienced at the time of its appliance. The following elements helped the German central bank to consolidate its position as an extremely reliable partner at the time of assessing crucial factors of the economic situation in the country.

Firstly, with the help of the announcement of the target, the DBB was informing the general public about its own view on the monetary stance. The deeply-rooted confidence of the German public in its own central bank most probably encouraged the bank to engage in a sort of open dialogue, during which every aspect of the conducted policies was referred in detail. In order to preserve its credibility, the bank had to present in a convincing manner the reasons behind its pragmatism, otherwise it would have exposed its credibility at risk. Secondly, as a result of the aforementioned dialogue, the DBB exerted influence on inflation expectations among the general public. Thirdly, in order to preserve the already mentioned confidence, this strategy imposed self-commitment from the bank. Fourthly, the strategy discussed here offered the possibility to clearly distinguish monetary conditions which affect inflation in the medium term from the short-term (and not related to monetary policies) factors and whose impact on the price level is rather interim. Among the latter, there are fiscal decisions and rather controlled wage formation by the trade unions. The credible policy pursued by the DBB was the key reason behind restrained wage settlements, which made keeping inflation under control easier. All these processes were important components of the already mentioned German stability culture (DBB 1997a).

Finally, the German policymakers paid a lot of attention to the counterparts of the monetary aggregates – often described either as the money creation process or the determinants of monetary growth. Out of all these determinants, the analysis of credit action along with monetary capital formation played an extremely important role. And as it will later be explained, monitoring closely the monetary capital formation proved to be one of the key reasons behind the entire strategy. Some attention was also paid to the development of net external assets.

As already mentioned, pragmatism was the key feature of the DBB's attitude towards the aggregates. This pragmatism most probably stemmed from the fact that throughout the rather brief period of 24 years, the German central bank had to face different kinds of shocks, ranging from the sharp currency movements stemming from global and regional factors (membership in the Exchange Rate Mechanism – ERM), sharp economic downturns (like the one in 1975 when the bank resorted to the purchase of government bonds), and ending with an event of a political nature, mainly German Unification (GU) in 1990.

Initially, the onus of attention – at the time of launching this new strategy – was placed on central bank money. According to the bank, such a definition of money must have been rated superior to other definitions as a monetary indicator. Its rapid availability was one of the key reasons behind such a choice (DBB 1976). Furthermore, it was easy for the bank to control it. And it reflected the underlying monetary trend as there was close relationship between it and economic activity. The first target amounted to 8% in the course of the year and it was overshot by some 200 basis points (at 10.1%). The DBB was not discouraged by this failure as it always believed that the success of the strategy can only be measured in a longer period. However, each failure generated minor modifications aimed at avoiding similar errors in the future.

Throughout the entire period, decisions were undertaken, above all, by scrutinizing the real production potential and the velocity of circulation, with the former being by far more important that the latter. The nominal gross national product was subject to procyclical fluctuations. During an upswing, output rose faster than the money stock and it was assumed that the velocity of circulation was

on the rise. And conversely, during a slowdown, a decrease in the velocity of circulation was observed (DBB 1976). Apart from these two aforementioned variables (being part of the money equations), other factors were at stake, above all fiscal measures like, for instance, the introduction or abolition of the withholding tax (which occurred in the late 1980s). In the mid-1990s it was the introduction of the money market funds which affected the growth of aggregates discussed here.

In the period stretching from 1976 to 1978, the average target was used. The sharp currency movements which followed the disintegration of the Bretton Woods system and the subsequent creation of the new European Monetary System (EMS) made the DBB introduce the range. The width of the range introduced for the year 1979 was rather large (300 basis points) as the bank wanted to have room for manoeuvre in the wake of uncertainty of FX swings. This shift was mainly motivated by the fact that it could not have been taken for granted whether the newly set level for the German mark (DM) against other foreign currencies was sustainable or not. Bearing in mind the width of the range, between 1979 and 1983 the DBB tried to be more precise regarding its preferences. It achieved a higher degree of precision by stating what part of the range (in lower limit, upper or lower band) it was intending to target.

The sharp currency movements in the years 1979–1983 were of different origins. It was rather the side effects of the efforts aimed at achieving exchange rate stability within the EMS. Once the situation in the EMS after the March 1983 realignment within the ERM had stabilized, the DBB opted to narrow its range to 200 basis points for 1984. The width of the range remained for the next three years before it was extended for 1987 to 300 basis points again. Yet again, external factors were at stake behind yet another widening of the range, namely the sharp appreciation of the DM against the dollar following the Plaza Accord in September 1985 and yet another realignment in the ERM, which took place in April 1986 (as the majority of the ERM currencies were not able to keep pace with the DM). The Louvre Agreement from February 1987 aimed at preserving the stability of the exchange rates of the key currencies was yet another example of an external factor which posed a major challenge for the DBB from the point of view of meeting its money growth target.

Between February 1985 and December 1987, the DM appreciated against the US dollar from levels of approximately USD 0.29 to levels close to USD 0.64. The rise in the external price of the DM was accompanied by further cuts in interest rates, with the latter gathering pace in late 1987 as result of coordinated action following a drastic fall in the value of the Dow Jones in October of that year. A combination of rising external prices (exchange rates) along with falling internal prices (interest rates) generated a sharp demand for currency in circulation. Between Q4 1986 and Q4 1987, currency in circulation rose by 10.3%. Such a sharp rise was translated into growth of central bank money stock of 8.3%, and implied that monetary expansion was again (akin to 1986) significantly higher than the medium-term increase in the production potential at current prices in Germany (DBB 1988). In 1986 the annual range for the central bank money was set at 3.5–5.5%, while the final outcome proved to be 8%. Uplifting the range for 1987 to a level ranging from 3% to 6% did not prevent the final outcome (at 8% again) from exceeding the range either. However, the overshooting of the range was due to a high share of currency in circulation in the central banking money. Other measures of money in the consolidated banking system yielded lower increases in the money growth, albeit above the range. As a result, it became clear that central bank money stock overstated the importance of the currency in circulation and subsequently had to be changed. That is why for 1988 the monetary target was for the first time expressed in terms of M3 (DBB 1989). In other words, a shift from narrow to broadly defined money stock took place.

Surprisingly enough, a switch from central bank money towards M3 did not prevent yet another overshooting of the money growth in 1988, even if the scale of the overshooting was far smaller than in the two preceding years. It was not until 1989 when the DBB proved yet again to be able to meet its own target of about 5% (DBB 1990). This positive trend was to be continued for the next two years (1990 and 1991), which coincided with the greatest challenge the DBB had to face in its history, namely, GU which took place in 1990.

Even if there are voices claiming that monetary GU was done with neither the consent of the DBB (Marsh 2014) nor in line with its preferences (Bofinger 1990), from the very onset the bank started to support it. And its role proved to be crucial from the point of view of accomplishing this rather complex undertaking, in which political reasons clearly overcame economic ones.

The fall of the Berlin Wall and the subsequent disappearance of the German Democratic Republic (GDR) from the map implied a strong boost for the economy of West Germany. The latter was perhaps one of the causes of the threat to monetary stability. Notwithstanding, there were also other factors (unrelated to the GU, such as an upsurge in the volume of liquid funds placed with banks abroad by domestic enterprises) which aggravated the aforementioned threat even further. The DBB's reaction to all these challenges was to contain them by resorting to a rather moderate expansion of the money stock (DBB 1991). Apart from tightening the monetary policy (by raising interest rates), the bank announced a very ambitious target for 1990, namely a range of 4% to 6%. Its cautious level stemmed mainly from two factors: firstly, the inability to deliver the true forecast regarding the GDR output. The same was true of the money holding habits by the citizens of the GDR (DBB 1996).

The aforementioned constellation of factors could have offered enough incentives to change the way monetary policy was conducted. But in order to ensure its commitment to price stability, the DBB opted to preserve the hitherto strategy. In other words, the German central bank resisted any search for an alternative. With the benefit of hindsight, it must be admitted that it was the right decision, as external factors emerged yet again.

It turned out that GU had repercussion beyond Germany. Other EMS members whose economies did not enjoy the GU boom were heading towards recession. This divergence started to create tensions within the EMS, which erupted with all intensity in autumn 1992. Apart from the unstable external environment, there were other factors at stake. One of them was that the introduction of a tax on interest income on the top of it made the situation even worse by encouraging holders to accumulate large banknotes in circulations and above all capital outflows. As a result, the target in 1992 – in spite of being revised upward at the outset by 50 basis points compared to the previous year – was overshot by the widest margin since its introduction in late 1974.

GU had an impact on the monetary policy beyond 1992. In 1993, the DBB opted to lift its range by 100 basis points (to the one ranging from 4.5% to 6.5%). This change was attributed to higher nominal potential growth (stemming from an improvement in the former GDR) as well as the fear of the impact of price increases of products which were hitherto subject to administrative prices (DBB 1993).

Once the impact of GU (along with tensions in the EMS) evaporated, the DBB focused its attention on other issues, such as addressing the liquidity jam in early 1994, the emergence of money market funds or a gradual but sustainable fall in the level of interest rates. In the last five years of the use of this strategy, the DBB missed its target twice, namely in 1995 and 1996. In 1995 an offsetting of the excessive provision of liquidity (aimed at addressing the aforementioned jam) was one of the reasons behind the only undershooting of its own target in the referred period.

A year later yet another overshooting occurred, attributed mainly to the high volatility of shorter--term monetary growth (DBB 1997a) and that in spite of the range expanding to 300 basis points again. It was a side effect of ever lower interest rates, which contributed to the growth of money stock (to a great degree thanks to savings deposits at three months' notice). The latter was represented by special saving facilities (which had short notice but higher yield than other saving deposits with a longer holding period) which served as an alternative for both shorter-term time deposits and for longer--term types of assets which were usually part of the monetary capital formation. As the bank wrote in its report (DBB 1997b), these facilities represented an intermediary position between money and monetary capital. That is why demand for them increased money stock at the expense of monetary capital formation, and that in spite of these facilities being 'disguised' monetary capital formation. Another position to record hefty growth in the wake of lower interest rates were sight deposit and currency in circulation. In the last two years of the referred period, the central bank – in spite of a similar environment to the two preceding periods – was able to meet its target on both occasions.

Whenever it comes to explaining the high efficiency of the strategy described here, the DBB emphasized the importance of stability of demand for money. The latter posed a great challenge for both decisionmakers and academicians (Goodhart 1992). Goodhart pointed out that failures to model the relationship between demand for money and money stock were notorious. Sticking to his own law, Goodhart added that the problem became even more evident once several central banks opted for monetary aggregates to become their intermediate target. Among the factors behind this failure were deregulation and greater competition from both nonbanks and overseas banks. The experience of the German central bank gives enough arguments to doubt the aforementioned arguments. In its report, the DBB explicitly questioned all these opinions, claiming that the increasing spread of financial innovations in the 1980s was the decisive factor behind the shorter-term instability of money demand (DBB 1997b). The report admits that new financial instruments can affect monetary aggregates negatively as the new investment vehicles are close substitutes to components of the money stock. This is due to the fact that there were more and more doubts whether these substitutes were part of the money stock yet, or whether they were already part of monetary capital formation. The authors refer explicitly to a process of blurring the borderline between money stock and its counterparts (namely monetary capital formation).

The aforementioned description proves that the monetary aggregates – provided certain conditions are met – can be a useful tool for a central bank. Despite shocks of a different nature which occurred during the period in review, the DBB was able to preserve low inflation, thus giving more arguments supporting the thesis that the majority of central banks let these aggregates go into irrelevance prematurely.

4. Monetary targets nowadays

4.1. Moving into irrelevance

Most of the world was unable to imitate the DBB's success, thus necessitating the search for a new framework (Kowalewski 2024). The latter proved to be direct inflation targeting, whose emergence coincided with a reshaping of attitudes towards interest rates, which were subject of the pendulum swing moving them from one pole to the opposite one. From now on interest rates were to fill the void following aggregates' demise. Congdon (2024) refers to this process as 'the obsession with the rate

of interest' and cites Mark Blaug's statements as an example of this obsessions. According to Congdon (2024), Blaug in his *Economic Theory in Retrospect* from 1985 wrote that, 'the quantity theory of money assigns no explicit role to the rate of interest and... no monetary theory is worth much if it neglects the interest rate.'

The first to raise the diminishing trend of reference to money stock among central bankers was Mervyn King (2002), as he offered some figures which depict this trend. It is worth quoting them here. According to King, 'Eddie George made only one mention of money in 29 speeches, Chairman Alan Greenspan (US Federal Reserve) made one reference in 17 speeches, and Governor Masaru Hayami (Bank of Japan) one in 11 speeches. Even Wim Duisenberg, the president of the European Central Bank, a bank that formally recognizes the use of monetary aggregates in its policy framework based on the "two pillars", mentioned money in only three out of 30 speeches' (De Gregorio 2004). King (2002) also added a remark by Larry Meyer, a member of the Federal Reserve Board of Governors from 1996 to 2002, who said that, 'money plays no explicit role in today's consensus macro model, and it virtually plays no role in the conduct of monetary policies.' On the top of that, Milton Friedman made a sort of an auto bashing of his own intellectual heritage, by admitting that, 'The use of quantity of money as a target has not been a success.' (De Gregorio 2004). In the same interview given to the *Financial Times* in its weekend edition (7/8 June 2003), Friedman went as far as to articulate his own grudge by admitting, 'I am not sure I would as of today push it as hard as I once did.' (Keegan 2003).

Another important reason behind turning back from monetary aggregates was the fall in inflation. One central banker said explicitly (on the basis of the Chatham House rule) in 2024 that aggregates in the second half of the 1990s began to give few clues in the prevailing environment at the time of low inflation. These remarks echoed some parallels about the Purchasing Power Parity theory which also seems to hold, above all, in the environment of high inflation (Copeland 1994). Congdon went as far as to resort to the term 'ostracism of money', which according to him was the effect of the overdominance of the three equations of the New Keynesian Model – the Phillips curve, IS and the interest rate-based monetary policy rule curve (Carlin, Soskice 2005).

King was most probably the first to warn against the risk of abandoning an adequate emphasis on money stock, even if he warned against treating any economic variable in the same way as the Bank of England treated its famous weather vane. The story of the latter goes back to the early days of the Bank of England, when wind was instrumental in determining the arrival times of ships to London carrying different kinds of commodities from the most remote corners of the world. Their arrival used to have an impact on the way the demand for money and credit was shaped at the time. Uncertainty about the exact time of the ships' arrival can be compared to the uncertainties nowadays which make it more difficult for policymakers to take the right decisions. This weather vane – which is still in operation – seems to embody a need for similar instrument today even if a lot has changed since its use as a guide for monetary demand. However, as King (2002) himself said 'no one has yet worked out how to translate such shifts into a simple reading on the financial equivalent of a weather vane'. Subsequently the multi-factor analysis seems to be desirable. The relegation of money stock in the central banking toolkit proved to be disastrous in the early 2020s, when the enormous monetary (and fiscal) stimulus paved the way to higher money growth. The latter was of no concern as a similar monetary stimulus used in selected high income countries in the 2010s had hardly translated into higher inflation. That is why when another stimulus of a similar nature stemming from the pandemic emergency in the early 2020s generated an increase in the money stock, it was initially not perceived as an inflationary stimulus.

Unfortunately for decision makers, this time was different as inflation worldwide rose to levels not seen in more than four decades. With the benefit of hindsight, Mervyn King's fears were vindicated. Before explaining why the first monetary stimulus did not produce inflationary processes and the second one did, it makes sense to refer in more detail to the way money stocks were treated in the first two decades of the 21st century. What did this process look like?

The aforementioned question will be answered with the help of a review of the Eurosystem's experience. As already mentioned, the ECB initial monetary policy strategy of the ECB was based on a two-pillar framework aimed to identify risks to price stability: economic analysis and monetary analysis (Lane 2024). As far as the latter is concerned, the ECB's Governing Council initially chose to emphasize the quantity of money among the key indicators to be closely monitored and established a reference value for M3 (set at 4.5%). Most probably high swings in the M3 rate of growth in the period stretching from the second half of 2001 to the first half of 2003 were the key reason behind the change. Two upward surges in the value of M3 (stemming from an accumulation of liquidity by euro area residents in response to high financial market geopolitical uncertainty, the then rather uncertain outlook for economic growth and employment, and a rather flat yield curve (ECB 2003) in the aforementioned period) could have been the reason for the ECB's policy stance at the time being analysed as too tight (BIS 2003).

The key architect of the monetary policy in the early days of the ECB, Ottmar Issing (2003), defined the two kinds of analyses in the following way: if the economic analysis was supposed to concentrate on the most proximate factors behind inflation, the monetary analysis should offer details for assessing price developments at medium- to long-term horizons. Issing claimed that it was close to impossible to unify both kinds of analyses. With the help of monetary analyses, the ECB had a tool for cross-checking from its own perspective the indications coming from the economic analyses covering the short to medium term. Among the latter, there were cost developments and demand-supply imbalances. In order to emphasize the long-term nature of the reference value for M3 growth (set at 4.5% a year), the ECB decided in May 2003 to review of the strategy and subsequently preserved M3 growth value in the years to come at an unchanged level. Prior to 2003, the reference value was the subject of annual reviews.

Even if the monetary pillar was formally preserved as result of the 2003 review, in practice its role was demoted and the ECB framework got closer to the flexible inflation targeting regime (Constâncio 2018). The annual reports ECB for 2013 was the last one to mention the M3 reference value. Perhaps it was not a coincidence, as with the launch of unconventional policies in mid-2014, the ECB started to move away in from analyses based on money growth. Suffice to say that the analysis of the impact of the aforementioned policies on broad money – following their launch – was rather mooted, limited to a standard coverage, and actually expanded analyses were rather confined to one article in 7th issue of the ECB Economic Bulletin from 2015 (ECB 2015), and one box number 7 of the 6th issue of the same Bulletin from 2017 (ECB 2017).

In practice, however, there are even voices suggesting that the M3 had been relegated into irrelevance as early as the second half of the 2000s (Christensen 2016), with the outbreak of the Great Financial Crisis (GFC) being literally the final nail in the coffin. The same conclusion can be drawn by reading Bussiere (2020).

The demise of the importance of monetary analysis was admitted by the ECB itself in the fifth issue of the Economic Bulletin from 2021 issued on the occasion of an overview of its monetary strategy and the subsequent disclosure of its iteration (ECB 2021). In this bulletin it is written:

'The monetary analysis has shifted from its main role of detecting risks to price stability over medium to longer-term horizons towards a stronger emphasis on providing information for assessing monetary policy transmission. This shift in focus reflects a weakening of the empirical link between monetary aggregates and inflation, impairments in monetary policy transmission during the global financial crisis and the broadening of the ECB's monetary policy toolkit. Given these changes, the ECB's monetary policy deliberations will be based on a revised integrated analytical framework that brings together two analyses: economic analysis and the monetary and financial analysis.'

4.2. The advent of unconventional monetary policies and their impact on velocity of money

The outbreak of the GFC saw the implementation of unconventional monetary policies, out of which the purchase of government bonds along with other different securities was the key component. These purchases, however, were not coordinated. The ECB started to purchase bonds five months after the Fed had finished a similar programme and subsequently sparked speculations about a reversal from its ultra-loose policies.

As a result, a divergence appeared between the world's two major central banks emerged, with the former heading towards looser and looser policies, while the latter was already at the stage of considering tightening processes. The Fed actually raised its interest rates only nine months after the ECB started purchasing government bonds. These differences in the stance pursued by the two central banks were envisaged easily by market participants and subsequently brought about at the turn of 2014 and 2015 a massive depreciation of the euro against the dollar. The different sequence of asset purchases was the key reason behind the flow of funds across the Atlantic and was reflected in one of the components of the M3 counterparts, namely the net external assets. In the space of three years (between early 2015 and early 2018), the net external assets ranged from levels of approximately EUR 1,150 bn to levels close to EUR 830 bn, emphasizing perhaps more than ever their importance from the point of view of M3 counterparts. The ECB could not remain totally indifferent to these trends in its monetary analysis, even if the latter's importance – as already mentioned – had been relegated in the ECB's research list of priorities.

Analysing the importance of the net external assets was summarized in the ECB occasional paper prepared by Picón-Aguilar, Oliveira Soares and Adalid (2020). In their research, the authors explored the M3 and it counterparts beyond the conventional link involving them and the consolidated balance sheet. Still, for the sake of simplicity of a further presentation here, it is worth taking a look at Table 1 and Chart 1.

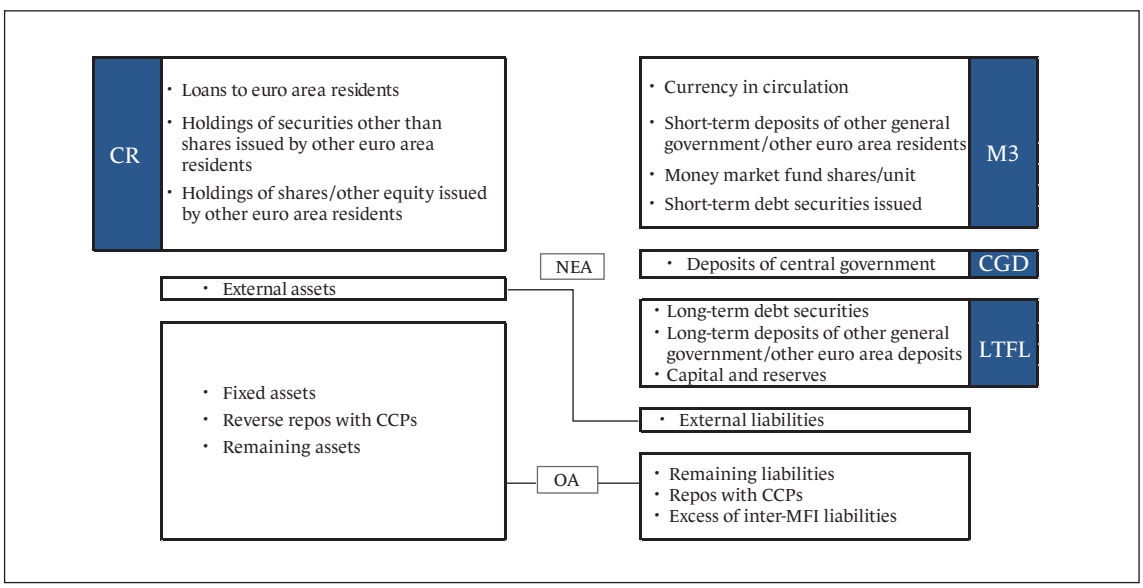
Now all the positions from Table 1 will be distributed in a way to make them match with the M3 and its counterparts.

Table 1
MFI consolidated balance sheet (instrument and maturity categories)

Assets	Liabilities
1. Cash	1. Currency in circulation
2. Loans	2. Deposits
a) up to 1 year	a) overnight
b) over 1 and up to 5 years	b) with agreed maturity
c) over 5 years	– up to 1 year
3. Debt securities held	– over 1 and up to 2 years
a) up to 1 year	– over 2 years
b) over 1 and up to 2 years	c) redeemable at notice
c) over 2 years	– up to 3 months
4. Equity	– over 3 months
5. Investment fund shares/unit	– repos
a) MMF shares/unit	3. MMF shares/units
b) non-MMF shares/unit	4. Debt securities issued
6. Non-financial assets (including fixed assets)	a) up to 1 year
7. Remaining assets	b) over 1 year and up to 2 years
	c) over 2 years
	5. Capital and reserves
	6. Remaining liabilities

Source: Picón-Aguilar, Oliveira Soares, Adalid (2020).

Chart 1
M3 and its counterparts in MFI consolidated balance sheet



Source: Picón-Aguilar, Oliveira Soares, Adalid (2020).

As a result, the M3 can be presented with the help of the following equation:

$$M3 = CR + NEA - CGD - LTFL + OA$$

where:

CR – credit,
NEA – net external assets,
CGD – central government deposits,
LTFL – long-term financial liabilities,
OA – other net assets.

As the net external assets go beyond the domestic economy, it is indispensable to introduce the briefest possible analysis of the balance of payments (BoP), which can be presented in Table 2.

Table 2
BoP (standard presentation)

Account	Subaccount/functional category
Current account (CA)	Goods
	Services
	Primary income
	Secondary income
Capital account (KA)	Non-produced, non-financial assets
	Capital transfers
Financial account (FA)	Direct investment
	Portfolio investment
	Financial derivatives and employee stock option
	Other investment
	Reserve assets

Source: Picón-Aguilar, Oliveira Soares, Adalid (2020).

$$CA + KA + E\&O = FA$$

where:

CA – current account,
KA – capital account,
E&O – error and omissions.

Some important assumptions must be highlighted: firstly, that in case of the monetary financial institutions (which in line with ECB's standards apart from MFIs, they also include a central bank) balance sheet assets = liabilities, and secondly, that in the BoP:

$$CA + KA + E\&O = FA$$

From now on, our attention will be focused on transactions. And for the sake of simplicity, E&O are assumed to be 0. If the sum of CA and KA transactions is positive, it will contribute to money creation, and other way round. Furthermore, FA is broken down by resident sectors. The latter can be divided money issuer sector (central bank and MFIs) denoted as FA^{MFIs}, and the two remaining sectors (neutral and money holders) money, denoted, as $FA^{Non\text{-}MFIs}$. As it is all about money creation, the BoP equation will be reshaped in order to single out FA^{MFIs}. As a a result we obtain following equations:

$$CA + KA = FA^{MFIs} + FA^{Non\text{-}MFIs}$$

$$FA^{MFIs} = CA + KA - FA^{Non\text{-}MFIs}$$

Going back to the M3 formula derived directly from the consolidated balance sheet:

$$M3 = CR + NEA - CGD - LTFL + OA$$

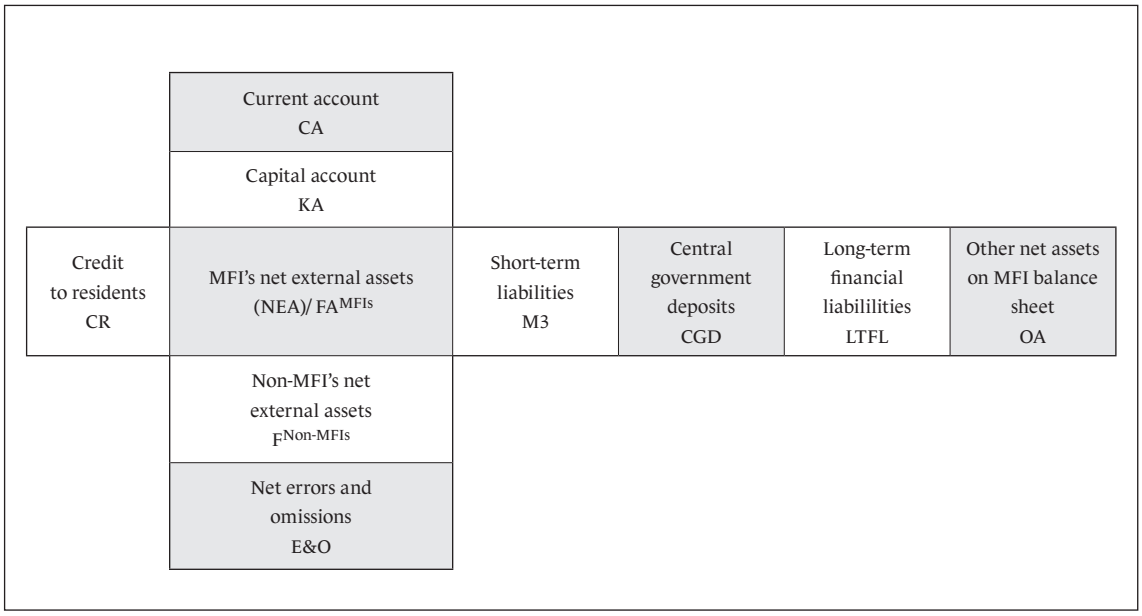
As conceptual similarities between FA^{MFIs} and NEA are becoming apparent, FA^{MFIs} will substitute now NEA in the aforementioned equation:

$$M3 = CR + (CA + KA - FA^{Non\text{-}MFIs}) - CGD - LTFL + OA$$

As a result of the following equations, Picón-Aguilar, Oliveira Soares and Adalid (2020) present a chart (where the vertical column depicts BoP and the horizontal one depicts the MFI balance sheet transactions, which highlight the links between M3, MFI balance sheet and BoP, where the external transactions of MFIs (and reflected as NEA) are at its crossroad.

Chart 2

Combined presentation of the MFI balance sheet (positions in the horizontal row) and the balance of payment (positions in the vertical column)



Source: Picón-Aguilar, Oliveira Soares, Adalid (2020).

The performance of net external assets can be considered an interesting peculiarity but cannot be considered as the key reason behind changes in money supply (Choulet 2022). The behaviour of both the monetary multiplier and the money velocity in the era of unconventional monetary policies seems far more intriguing. The latter seem apparently to have sped up the decline in the multiplier and the velocity. Before dealing further with this issue, it must be emphasized that the monetary multiplier and the money velocity are intertwined depending on the definition of the latter. The money velocity can be gauged in narrow and broad terms. This distinction is important as it otherwise may lead to conflicting results. For instance, Janssen (1996) from the Bank of England pointed in his analysis to reliance on the narrow money definition (where an increase in narrow money velocity represented a contraction in cash in circulation per unit of national income) at a fall of velocity in many countries, including the US, while Ragan and Trehan (1998) from the Fed, focusing on broad money (M2), pointed otherwise. In this article, the analysis will rely on a broad definition.

The last seventy years can be divided into two periods when money velocity displayed two different trends. In the first 35 years, stretching from the mid-1950s towards the end of the 1980s, the velocity of money was rather rangebound and hovering around the ratio of 1.76 with a deviation of up to 0.15 in both directions (only in the early 1980s did it breach the range briefly and approach levels slightly above 1.92). The relatively calm first half contrasted with big fluctuations in the second half ranging from almost 2.2 in 1997 to as low as levels below 1.13 during the Covid era.

The early nineties saw an increase in the broad money velocity, which contrasted with a fall in the narrow money velocity. This phenomenon can be explained by lower inflation (Janssen 1996) and financial innovations (with costs of acquiring bonds and stock mutual funds dropping significantly). As a result, households obtained close substitutes for M2. The latter could have pushed velocity above 1.90 in the early 1980s, but the prevailing high inflation (compared to that experienced in the 1990s) prevented the money velocity from breaching the level of 2. Some sources point to other factors behind an increase in velocity in the early 1990s. This was the period when the generation of baby boomers were in their heyday. Furthermore, they were focusing on the education of their kids, which required big spendings (Pinnacle Digest 2023). Once baby-boomers started to retire, their willingness to spend followed suit. In the early 2000s, the velocity of money mimicked the trend set by interest rates.

The true decline in the velocity was ignited by the launch of unconventional monetary policies, and the purchase of different kinds of asserts in particular. The decline in velocity was above all engineered by an increase in demand for banknotes and coins. Obviously there were exceptions to the rule, like Sweden, where unconventional policies were not able to reverse the decline in demand for banknotes and coins. In the major economies, however, an increase in demand for money could be measured in the higher percentage of banknotes and cash as well as higher percentage of M1 within M3. The amount of US dollar banknotes and coins in circulation between December 2002 and December 2008 rose by less than 30% (with a significant share of the increase taking place in the last months of 2008). During the two following six-year intervals (2008–2014 and 2014–2020), the demand for cash rose 51.2% and 56.5% respectively. Between March 2020 and September 2021, the value of cash rose by more than 20% – mainly because of the Fed's programmes aimed at supporting households to a great extent (Blinder 2022). As a result of the unconventional policies, less than a decade was needed to see the value of banknotes double. Obviously the case of the Fed has to be treated with caution as up to 70% of banknotes are most probably located outside the US. The use of the euro is significantly lower

(less than 20%[1]), but the currency changeover from early 2002 inhibits long-term analysis. Nevertheless, by the time of the outbreak of the GFC, demand for money in circulation seemed to have stabilized and could be treated as a reference point. In the period from 2008 and 2014, the value of cash rose by less than 36%. The launch of the Asset Purchase Programme in late 2014 along with negative interest rates saw an increase in the value of cash between the start of 2015 and the end of 2020 by approximately 40%. The share of M1 in the M3 rose from around 43% in mid-2008 to more than 73% fourteen years later.

Moving to very low interest rate countries (Switzerland and Japan), the cash performance had been somewhat different. Prior to making these comparative analyses however, it must be borne in mind that the scope of money varies over time and country (Bank of Japan 2024). If the trend in M1 share to M3 was somewhat similar to the US and the euro area, both in Japan and Switzerland more time was needed to double the volume of banknotes in circulation. If in other highly industrialized countries, the cash to GDP relationship has been hovering (following the advent of electronic payments) at around 3.5%, in Switzerland it has never fallen well below 7% (SNB 2024).[2] The same can be said about Japan (Saito, Takada 2004).

That is why the process of increasing the value of cash by a factor of two required far more time than in the US and the euro area. In the case of Switzerland, a doubling of the value of cash in circulation prior to the launch of unconventional policies (registered in early 1985) required approximately a quarter of a century (that is in 2010). In Japan the value of cash registered in 1998 doubled nineteen years later. This state of affairs owes most probably to the high levels of the base effect. Low interest rates and slower GDP growth (compared to other industrial countries) seems to be the key reason behind the high share of banknotes to GDP in these two countries. The latter may also imply no need for economic agents to protect against inflation. It may reflect lower inflation expectations as well as more trust in the central bank.

The combination of low interest rates (and during certain period of time negative interest rates) and low GDP growth along with the unconventional monetary policies pursued by the Bank of Japan and SNB were the key factors behind the aforementioned trend. Focusing again on the ratio of cash to GDP, it started to pick up in Japan in the second half of the 1990s, whereas in Switzerland in the late 2000s. This difference owes to the fact that rates close 0% came to Switzerland a decade later than in Japan. The following example should depict the difference. The value of banknotes and coins in circulation observed in Switzerland as late as October 2007 – when interest were still well above 0% – managed to double in about 10 years (late 2017). In the same time period in Japan with official interest never exceeding the level of 0.5%, the same indicator rose merely by 34%.

In spite of minor discrepancies between these two countries related to an advent of rates in vicinity of 0%, both Japan and Switzerland display many similarities as far as the high share of cash to GDP is concerned. As a result, this high ratio could have contributed to higher resilience stemming from a sharp rise in M1 experienced during the Covid crisis. Being accustomed to holding non-remunerated funds, there was no pressure to get rid of them and thus stimulating an internal demand, which in the end paved the way to higher inflation elsewhere.

The process of a drastic fall in the velocity of money – as it was already stated – had been widely attributed to unconventional monetary policies. The latter were in demand because of two crises which occurred in a relatively short period, namely the GFC from 2008 and the pandemic crisis, which hit

[1] https://www.ecb.europa.eu/stats/money_credit_banking/monetary_aggregates/html/index.en.html.
[2] In line with data on the SNB's website: https://www.snb.ch/en/the-snb/mandates-goals/cash/circulation.

the world economy twelve years later (and whose effects were magnified by the outbreak of Russian--Ukrainian war). Even if there were some differences in the way central banks responded to each crisis, the pivotal line of their reaction hardly differed. If the response towards the GFC, however, hardly generated any inflationary threat, counteracting the pandemic crisis in return led to an increase in price levels not seen in more than four decades. The central banks' response to COVID-19 proved to be particularly disturbing as the performance of monetary aggregates was signalling pre-emptively the upcoming inflationary threat. Central banks opted not to heed this message and by doing so they were consequently exposed to fierce criticism.

It is clearly beyond the scope of this text to explore the reasons for the central banks' reaction, but it makes sense briefly to refer to their line of defence. It will help us to make a better judgement of perspectives concerning the future of the aggregates discussed here by these banks. As usual, the central bank community opted to be very cautious in addressing the abovementioned criticism. Self-admittance to having focused too little on money growth during the pandemic period can be echoed in Borio, Hoffman and Zakraijsek (2023). The three authors insisted on the principle already mentioned in this text, according to which the strength of the link between money growth and inflation is non-existent when inflation is low, and the other way round when it is high. It tends to be one to one when inflation is high. And for the crucial question regarding whether the process of pushing monetary aggregates into irrelevance went too far, their answer was inconclusive. By suggesting that time will deliver such an answer, they sent almost an explicit message that the post-Covid inflation spike did not offer arguments strong enough to draw definite conclusions upon which far-reaching reform in the way monetary policy is conducted could be implemented. Schnabel (2023) was a bit more outspoken by pointing out when quantitative easing can be inflationary. The latter occurs when banks, households, firms and government are both able and willing to respond to low interest rates, thereby boosting money growth, economic activity and ultimately inflation. Schnabel offered some clues to the aforementioned question concerning the different inflationary outcome between the first and the second wave (related to GFC) of unconventional policies (Covid related).

Following GFC, governments (at least in the euro area) were consolidating public finances while banks were in process of building up their capital buffers (in response to non-performing loans, and most probably in the wake of the then upcoming prudential measures). Schnabel (2023) pointed out that during the sovereign crisis four years were needed for the real income to recover to its pre-crisis level, while in the case of the Covid crisis the same was achieved in three months only. Furthermore, the nature of the imposed lockdown meant that households ended up with enormous excess savings. And contrary to the already mentioned countries accustomed to an ultra-low interest rate environment (Japan, Switzerland), there was a tendency to get rid of these savings at once. All in all, Schnabel admitted that money growth was a sort of harbinger which was not appreciated enough at the time of assessing the risks to medium-term price stability.

The inflation outbreak seems to have taught central banks some lessons, as it was observed by some experts. Congdon (2024) pointed out that the Bank of England started to focus more attention on money growth, dedicating a special section in its Monetary Policy Report from May 2024 (Bank of England 2024). But it was Mervyn King (2022) who summarized the situation quite wisely by pointing out that central banks should show some humility in the wake of the rising uncertainty and non-stationarity. The policies pursued by central banks in the last two decades should be a reason for concern, as they seemed be the subject of an orthodox approach. Putting too much faith in the

assumption that expectations drive inflation and the central bank drives expectations (the so-called Maradona criterion) seemed to have its price. Hence King was calling for the need to four funerals and a wedding. Among the concepts needed to be buried, King stated forward guidance, flexible average inflation targeting, the belief that monetary stimulus is an appropriate response to any economic problem and obviously the notion that money has nothing to do with inflation. In order to support the latter as a part of a new and hopefully a better reality ('the wedding'), King advocated for a world relying on several principles, ranging from Hume's eternal verities, von Moltke's credo that no plan survives first contact with the enemy, and to Guardiola's criterion that demands from his players an ability to make good decisions on the pitch in real time. In other words, it is all about intellectual versatility. Such a mixture of the aforementioned attitude seems to be a must in the wake of the so-called great reversal from unconventional policies (which already result in a pickup of the velocity of money).

Analysing the criteria proposed by King brings us many parallels with the way the DBB was conducting its policies with the help of the strategy which was introduced 50 years ago. Its key feature was pragmatism along with the ability to adapt quickly to an ever-changing environment. It would be a sort of a dream-come-true scenario, should this rather low profile anniversary prove to be a good opportunity to conceive a new approach toward monetary policies relying on both the versatility and far-reaching practicality along with commonsensical attitude. Nevertheless there is some hope that more and more voices demanding changes will be heard. After all, the aforementioned mix of pragmatism and versatility helped the German central bank gain – in the words of Jacques Delors – its divine status among the German population. Achieving a similar status nowadays seems hardly feasible for any central bank. However, the need to rely on principles which helped the DBB gained this status is perhaps – in the wake of the rather orthodox prevailing stance – more pending than any time in the last quarter of the century.

5. Summary and conclusions

The outbreak of inflation in the early 2020s ended a period of low inflation which lasted for more than three decades in most of the world economy. Prior to the inflation spike, there were some warning signs detecting the inflationary pressure to come. Central banks opted, however, not to heed them for several reasons. Firstly, they preferred to stick to their hitherto way of conducting monetary policies. Secondly, in the environment of enormous uncertainty raised by the possible recurrence of the pandemic, they opted to exercise caution and subsequently not to withdraw the rather generous support offered in the early days of COVID-19. Still, their behaviour was bizarre, as initially they tried to justify their support to the economy by pointing to market dysfunctionalities (King 2022). Having said that, central banks were not in a rush to withdraw their support from the economy once these dysfunctionalities came to an end.

The failure of these indicators to engineer monetary stability in many countries stemmed from the changing environment rather than their intrinsics flaws. In order to prove it, a historical analysis in the second part of the text was presented. If the origins of monetary aggregates go back to the interwar period, their intellectual foundation, namely the quantity theory of money, has its beginnings in economic though dating back to the 16th century. Such a long track record of the abovementioned

theory seems for the advocates of monetary aggregates a reason strong enough to avoid any relegation of their significance in the central banks' operational toolkit. Furthermore, the case of the DBB proves that monetary aggregates can be a useful toolkit for monetary authorities in their efforts to keep inflation at a low level. That is why this text presented the DBB's experience with these aggregates in a more detailed manner in order to detect the indispensable conditions which guaranteed the German central bank's success with a strategy based on monetary (quantitative theory of money) principles. As a result, there are reasons to believe that many central banks distanced themselves from these aggregates prematurely.

The key factors behind the DBB's success with monetary aggregates was the avoidance of the orthodox approach towards them. On the contrary, far-reaching pragmatism along with an ability to adjust to a rapidly changing environment helped the German central bank to achieve unquestionable success in spite of extremely tough circumstances, ranging from supply shocks, tough recessions and ending with unprecedented instability within the international monetary system. Last but not least, monetary aggregates proved useful in overcoming a shock of a unique kind, namely GU – which resembled more a process of extending market mechanisms into the former centrally planned GDR rather than a process of achieving a political and above all economic union in the genuine meaning of this word.

The DBB sources emphasize the significance of stability of demand for money in the domestic economy. This factors is of enormous importance, as in the majority of cases where the appliance of monetary aggregates ended in failure, the lack of stability of demand for money was the key culprit. The whole success of the West German economy (the so called Wirtschaftswunder) relied extensively on the culture of stability, the importance of which – from the point of view of aggregates analysed here – was quite strongly emphasized in this text.

The newly created Eurosystem was somehow convinced not to disregard these aggregates entirely and M3 growth rate was part of a two-pillar strategy. Even if after a review in May 2003 diminished its role substantially, it was the advent of unconventional monetary policies worldwide, which gradually started to minimize the importance of this particular component of the two-pillar strategy. Very low inflation in the first two decades of the 21st century seemed to diminish the importance of this indicator further in line with a theory according to which both the quantitative theory of money (in a similar way to Purchasing Power Parity) tends to work better in the environment of high inflation. But a period of very low inflation came to Germany soon enough to affect the DBB's policies in the last couple of years of the use of these targets. The subsequent reaction of the central bank to the advent of this new environment was to increase the width of the range for M3 growth. The ECB did not follow a similar strategy in the wake of ever lower inflation.

The aforementioned different reactions coming from the two different central banks to the same kind of phenomenon plays in favour of the German model. Under such circumstances, it should not be surprising that many critics of the central banks' behaviour in the early 2020s point to the orthodoxy of their policies, which haunted many central banks in the period under review. By doing so, their behaviour has ignited a discussions concerning future trends for monetary policies. Perhaps the 50th anniversary of the DBB' s decision to resort to monetary aggregates could be a good reference point in all these discussions and exchange of opinions concerning the pragmatism and versatility of the central banks' policies in the years to come.

References

Anderson R., Kavajecz K. (1994), *An historical perspective on the Federal Reserve's monetary aggregates: Definition, Construction and Targeting*, Federal Reserve Bank of St. Louis, March–April.

BIS (2003), Monetary policy in the advanced industrial economies, in: *73rd Annual Report*, Bank for International Settlements.

Bank of England (2024), *Monetary Policy Report*, May.

Banque de France (2016), Who creates money?, *Banque stabilité économie euro l'éco en bref*, June, https://publications.banque-france.fr/sites/default/files/medias/documents/816149_fiche_monnaie.pdf.

Bank of Japan (2024), *Guide to Japan's Money Stock Statistics*, https://www.boj.or.jp/en/statistics/outline/exp/data/exms01.pdf.

Barth R. (2002), *Macroeconomic Management. Programs and Policies*, International Monetary Fund.

Bernanke B. (2006), *Monetary aggregates and monetary policy at the Federal Reserve: a historical perspective,* speech at the Fourth ECB Central Banking Conference, Frankfurt, https://www.federalreserve.gov/newsevents/speech/bernanke20061110a.htm.

Bindseil U. (2004), *The operational target of monetary policy and the rise and fall of reserve position doctrine,* ECB Working Paper Series, 372 (June), https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp372.pdf.

Blinder A. (2022), *A Monetary and Fiscal History of the United States, 1961–2021,* Princeton University Press.

Bofinger P. (1990), The German monetary unification (Gmu): converting Marks to D-Marks, *Federal Reserve Bank of St. Louis Review*, July/August, 17–36, DOI: 10.20955/r.72.17-36.

Borio C., Hofmann B., Zakrajšek E. (2023), Does money growth help explain the recent inflation surge?, *BIS Bulletin*, 67, https://www.bis.org/publ/bisbull67.pdf.

Brunnermeier M.K., James H., Landau J.-P. (2016), *The Euro and the Battle of Ideas*, Princeton University Press.

Bussière M., Sahuc J.G, Pfister Ch. (2020), The link between money and inflation since 2008, *Bulletin de la Banque de France*, 232/8, https://publications.banque-france.fr/sites/default/files/medias/documents/bdf-232-8_the-link-between-money-and-inflation-since-2008.pdf.

Cagan Ph. (1965), *Determinants and Effects of Changes in the Stock of Money, 1875–1960*, National Bureau of Economic Research.

Carlin W., Soskice D. (2005), *The 3-equation New Keynesian Model – a graphical exposition,* https://www.ucl.ac.uk/~uctpa36/3equation_2005_withtitle.pdf.

Cartas J.M., Harutyunyan A. (2016), *Monetary and Financial Statistics Manual and Compilation Guide*, International Monetary Fund, https://www.elibrary.imf.org/display/book/9781513579191/9781513579191.xml.

Choulet C. (2022), *United States: money supply losing steam*, BNP Paribas, Chart of the Week, 10 May, https://economic-research.bnpparibas.com/pdf/en-US/United-States-money-supply-losing-steam-5/10/2022,46340.

Christensen L. (2016), *It's time to rediscover ECB's reference value for M3 growth*, The Market Monetarist, 23 October, https://marketmonetarist.com/2016/10/23/its-time-to-rediscover-ecbs-reference-value-for-m3-growth/.

Congdon T. (2024), The Quantity Theory of Money: A New Restatement, Institute of Economic Affairs, https://iea.org.uk/wp-content/uploads/2024/06/QTM-Interactive.pdf.

Constâncio V. (2024), *Past and future of the ECB monetary policy*, the conference on 'Central Banks in Historical Perspective: What Changed After the Financial Crisis', Central Bank of Malta, Valletta, 4 May, https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180504.en.html.

Copeland L. (1994), *Exchange Rates and International Finance*, Addison-Wesley Longman.

Currie L. (1934), The failure of monetary policy to prevent the depression of 1929–32, *Journal of Political Economy*, 42(2), 145–145.

Davis R. (1990), Intermediate targets and indicators for monetary policy: an introduction to the issues, *FRBNY Quarterly Review*, Summer.

DBB (1972), *Report of the Deutsche Bundesbank for the Year 1971*, Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702878/4e508176eea9ad8aeb59d9536e21820b/mL/1971-annual-report-data.pdf.

DBB (1975), *Report of the Deutsche Bundesbank for the Year 1975*, Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702894/1701a9d31e0517e178baa156c40ed22b/mL/1975-annual-report-data.pdf.

DBB (1988), *Report of the Deutsche Bundesbank for the Year 1987,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702920/71f4691d52ea7633a1f54adb9228459a/mL/1987-annual-report-data.pdf.

DBB (1989), *Report of the Deutsche Bundesbank for the Year 1988,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702918/ae14446d7837ebf170771dba2edea5d4/mL/1988-annual-report-data.pdf.

DBB (1990), *Report of the Deutsche Bundesbank for the Year 1989,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702906/5272342f92283f5911fba5700532f9cd/mL/1989-annual-report-data.pdf.

DBB (1991), *Report of the Deutsche Bundesbank for the Year 1990,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702912/5ba92e48bd9ce5809887883d8f60922c/mL/1990-annual-report-data.pdf.

DBB (1993), *Report of the Deutsche Bundesbank for the Year 1992,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702922/9481137e6f5ea8f94156076a92463c45/mL/1992-annual-report-data.pdf.

DBB (1996), *Report of the Deutsche Bundesbank for the Year 1995,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702928/5eff676b8555481da8afd80df3128157/mL/1995-annual-report-data.pdf.

DBB (1997a), *Report of the Deutsche Bundesbank for the Year 1996,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702928/5eff676b8555481da8afd80df3128157/mL/1995-annual-report-data.pdf.

DBB (1997b), Review of the monetary target, in: *Deutsche Bundesbank Monthly Report*, August, https://www.bundesbank.de/resource/blob/705690/a7443913af0b026b1726982b6961ac6c/mL/1997-08-monetary-target-data.pdf.

DBB (1999), *Report of the Deutsche Bundesbank for the Year 1998,* Deutsche Bundesbank, https://www.bundesbank.de/resource/blob/702926/b18ce3a35896ec53681f7f3cb807bef4/mL/1998-annual-report-data.pdf.

De Gregorio J. (2004), *Rapid growth of monetary aggregates and inflation: the international evidence*, Central Bank of Chile Working Papers, 256.

El Amri W., Mouriaux F., Wicky Y., Bussière M., Horny G., Sahuc J.-G. (2021), Money and its counterparts: instruments and reflections of monetary policy, *Bulletin de la Banque de France*, 234/2, https://publications.banque-france.fr/sites/default/files/medias/documents/821062_bdf234-2_en_money_vfinale.pdf.

ECB (2003), The outcome of the ECB's evaluation of its monetary policy strategy, *ECB Monthly Bulletin*, June, 79–92.

ECB (2015), The transmission of the ECB's recent non-standard monetary policy measures, *ECB Monthly Bulletin*, July, 32–51.

ECB (2017), Base money, broad money and the APP, *ECB Economic Bulletin*, 6, 62–65.

ECB (2021), An overview of the ECB's monetary policy strategy, *ECB Economic Bulletin*, 5, 75–89.

ECB (2024), *International use of the euro remained broadly stable in 2023,* 12 June, https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240612~52259e0382.pl.html.

Federal Reserve Bank (1960), *A New Measure of the Money Supply,* Federal Reserve Bulletin, 46(10), October, 1102–124, https://fraser.stlouisfed.org/files/docs/publications/FRB/1960s/frb_101960.pdf?utm_source=direct_download.

Friedman M., Schwartz A.J. (1963a), *A Monetary History of the United States, 1867–1960*, Princeton University Press.

Friedman M., Schwartz A. (1963b), Money and business cycle, *The Review of Economics and Statistics*, 45(1), part 2, https://cooperative-individualism.org/friedman-milton-and-anna-schwartz_money-and-business-cycles-1963-feb.pdf.

Fuerst T.S. (2008), Real bills doctrine versus the quantity theory, in: *The New Palgrave Dictionary of Economics,* Palgrave Macmillan.

Goodhart Ch. (1992), *The objectives for, and conduct of, monetary policy in the 1990s,* RBA Annual Conference, https://www.rba.gov.au/publications/confs/1992/goodhart.html.

Goodhart Ch. (1989), The conduct of monetary policy, *The Economic Journal*, 99(396), 293–346, DOI: 10.2307/2234028.

Goodhart Ch., Needham D.J. (2018), Historical reasons for the focus on broad monetary aggregates in post-World War II Britain and the 'Seven Years War' with the IMF, *Financial History Review*, 24(03), 331–356.

Humphrey T. (1982), The real bills doctrine, *Economic Review*, September/October, Federal Reserve Bank of Richmond, https://fraser.stlouisfed.org/files/docs/publications/frbrichreview/rev_frbrich198209.pdf.

Humphrey T. (2001), The choice of a monetary policy framework: lessons from the 1920s, *Cato Journal*, 21(2), https://ciaotest.cc.columbia.edu/olj/cato/v21n2/cato_v21n2hut01.pdf.

Issing O. (2003), Evaluation of the ECB's monetary policy strategy, *BIS Review*, 33.

Janssen N. (1996), Can we explain the shift in M0 velocity? Some time-series and cross-section evidence, *Bank of England Quarterly Bulletin*, February, https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/1996/can-we-explain-the-shift-in-m0-velocity.pdf.

Keegan W. (2003), So now Friedman says he was wrong, *The Guardian*, 22 June, https://www.theguardian.com/business/2003/jun/22/comment.economicpolicy.

King M. (2002), No money, no inflation – the role of money in the economy, *Bank of England Quarterly Bulletin*, Summer.

King M. (2022), *Monetary policy in a world of radical uncertainty,* Institute of International Monetary Research, Conference Paper 1, January, https://mv-pt.org/wp-content/uploads/2022/01/2022-01-21-Annual-public-lecture-Lord-King-lecture-text-SCRIPT-v-2.pdf.

Kowalewski P. (2024), Monetary processes in the world economy following the end of the Bretton Woods System, *Bank i Kredyt*, 55(6), 697–730.

Lane Ph. (2024), *Modern monetary analysis*, speech at the Bank of Finland's International Monetary Policy Conference, Helsinki, 26 June, https://www.ecb.europa.eu/press/key/date/2024/html/ecb.sp240626~0cdeaedbb1.en.html.

Marsh D. (2014), The Karl Otto Pöhl guide to central banking behaviour, *OMFIF Daily Commentary*, 1 December, https://www.omfif.org/2014/12/the-karl-otto-pohl-guide-to-central-banking-behaviour/.

Meigs J., Wolman W. (1971), Central banks and the money supply, *Federal Reserve Bank of St. Louis Review*, August, 18–30.

Picón-Aguilar C., Oliveira Soares R., Adalid R. (2020), *Revisiting the monetary presentation of the euro area balance of payments,* ECB Occasional Paper Series, 238, February.

Pinnacle Digest (2023), *Money velocity is spiking. Fastest 3-quarter increase since 1994*, https://pinnacledigest.com/economy/money-velocity-rises-near-30-year-high/.

Pospisil R. (2017), The monetary aggregates and current objectives of European Central Bank, *Studia Prawno-Ekonomiczne*, 105, 341–363, DOI: 10.26485/SPe/2017/105/19.

Ragan K., Trehan B. (1998), *Is it time to look at M2 again?,* FRBSF Economic Letter, 6 March, Federal Reserve Bank of San Francisco, https://www.frbsf.org/research-and-insights/publications/economic-letter/1998/03/is-it-time-to-look-at-m2-again/.

Reischle J. (2001), The role of the analysis of the consolidated balance sheet of the banking sector in the context of the DBB's monetary targeting strategy prior to Stage Three, in: H.J. Klöckers, C. Willeke (eds.), *Monetary Analysis: Tools and Applications*, European Central Bank, https://www.ecb.europa.eu/pub/pdf/other/ecbmonetaryanalysisen.pdf.

Saito Y., Takada H. (2004), *Background to the recent decline in the growth rate of banknotes in circulation,* Bank of Japan Review, October.

Schnabel I. (2023), *Money and inflation,* lecture at the annual conference of the Verein für Socialpolitik, Regensburg, 25 September, https://www.ecb.europa.eu/press/key/date/2023/html/ecb.sp230925_1~7ad8ef22e2.en.html.

Steindl F. (1990), The 'oral tradition' at Chicago in the 1930s, *Journal of Political Economy,* 98(2), 430–432.

Thakor A., Yu E., (2023), *Funding liquidity creation by banks,* Federal Reserve Bank Philadelphia, Working Papers, WP 23-02, Federal Reserve Bank of Philadelphia, https://www.philadelphiafed.org/-/media/frbp/assets/working-papers/2023/wp23-02.pdf.

Velasquez I. (2018), *Two Harvard economists on monetary economics: Lauchlin Currie and Hyman Minsky on financial systems and crises,* Levy Economics Institute, https://www.levyinstitute.org/pubs/wp_917.pdf.

Volcker P. (2002), The monetary transmission mechanism: some answers and further questions, *Economic Policy Review*, 8(1), Federal Reserve Bank of New York, https://www.newyorkfed.org/medialibrary/media/research/epr/2002/EPRvol8No1.pdf.

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Agregaty monetarne – analiza ich pochodzenia oraz dziedzictwa

Streszczenie

Agregaty monetarne były niezwykle popularną strategią realizowaną przez większość banków centralnych na przełomie lat 70. i 80. XX w. W grudniu 2024 r. miała miejsce 50. rocznica podjęcia przez Deutsche Bundesbank (DBB) decyzji o zastosowaniu tego narzędzia monetarnego. Rocznica ta jest dobrą okazją do zaprezentowania początków oraz ewolucji agregatów monetarnych. Dorobek DBB nie był w stanie uchronić ich od zapomnienia, tym bardziej że zachodząca od początku lat 80. deregulacja na międzynarodowych rynkach finansowych zaczęła wpływać na popyt na pieniądz, co praktycznie uniemożliwiło większości banków centralnych dalsze poleganie na tej strategii. Dodatkowo nadejście ery niskiej inflacji powodowało, że odwoływanie się do tych agregatów było zbędne, zwłaszcza że w środowisku bardzo niskiej inflacji nie zawsze dawały one zadowalające wyniki.

Wybuch inflacji na początku lat 20. XXI w. zakończył okres niskiej inflacji, który trwał ponad trzy dekady w większości światowej gospodarki. Jeszcze przed gwałtownym wzrostem inflacji pojawiły się pewne sygnały ostrzegawcze (wynikające z odczytu opisywanych tu agregatów), wskazujące na nadchodzącą presję inflacyjną. Banki centralne zdecydowały się jednak nie zwracać na nie uwagi z kilku powodów. Po pierwsze, wolały trzymać się swojego dotychczasowego sposobu prowadzenia polityki pieniężnej. Po drugie, w warunkach ogromnej niepewności wywołanej możliwym nawrotem pandemii COVID-19 zdecydowały się zachować ostrożność, a następnie nie wycofywać dość hojnego wsparcia zaoferowanego w pierwszych dniach pandemii. Ich zachowanie było jednak co najmniej dziwne, gdyż początkowo próbowały uzasadnić swoje wsparcie dla gospodarki dysfunkcją rynków. Kiedy jednak te dysfunkcje dobiegły końca, banki centralne nie spieszyły się z wycofaniem swojego wsparcia dla gospodarki.

Niechęć banków centralnych, by przywiązywać większą wagę do agregatów monetarnych, mogła mieć kilka powodów. W wielu z nich ciągle pamiętano przykre doświadczenia związane ze stosowaniem agregatów monetarnych w latach 80. Ponadto niechęć ta wynikała raczej ze zmieniającego się otoczenia, a nie z wad agregatów. Z takimi tezami można jednak polemizować i w tym tekście odwołano się do analizy historycznej. O ile początki agregatów monetarnych sięgają dwudziestolecia międzywojennego, o tyle ich intelektualne podstawy, czyli ilościowa teoria pieniądza, powstały w XVI w. Tak długa historia wydaje się dla zwolenników agregatów monetarnych wystarczająco silnym powodem, aby nie traktować ich tylko jako zestawu narzędzi operacyjnych banków centralnych. Co więcej, istnieje co najmniej jeden bank centralny, który udowodnił, że agregaty monetarne mogą być dla władz monetarnych użytecznym narzędziem w utrzymywaniu inflacji na niskim poziomie. Z tego powodu w niniejszym tekście przedstawiono bardziej szczegółowo doświadczenia DBB z tymi agregatami, aby zidentyfikować warunki, które gwarantowały mu sukces strategii opartej na zasadach monetarnych (ilościowej teorii pieniądza). Istnieją podstawy, by twierdzić, że banki centralne najprawdopodobniej zbyt pochopnie odeszły od opisywanych tutaj agregatów.

Kluczowym czynnikiem, decydującym o sukcesie DBB w wykorzystaniu agregatów monetarnych, było unikanie ortodoksyjnego podejścia do nich. Daleko idący pragmatyzm oraz umiejętność dostosowywania się do szybko zmieniającego się otoczenia pomogły DBB osiągnąć sukces mimo niekorzystnych okoliczności, począwszy od szoków podażowych, przez ciężkie recesje, a skończywszy

na bezprecedensowej niestabilności międzynarodowego systemu walutowego. Nie mniej ważne jest to, że agregaty monetarne okazały się przydatne w przezwyciężeniu wyjątkowego wstrząsu, jakim było zjednoczenie Niemiec. Bardziej stanowiło ono rozszerzanie się mechanizmów rynkowych na byłą centralnie planowaną NRD niż tworzenie unii gospodarczej w prawdziwym tego słowa znaczeniu.

Szereg analiz autorstwa Bundesbanku podkreśla znaczenie stabilności popytu na pieniądz w krajowej gospodarce. Sukces gospodarki zachodnioniemieckiej w dużej mierze opierał się na kulturze stabilności, której znaczenie – z punktu widzenia analizowanych tu agregatów – zostało w niniejszym tekście mocno zaakcentowane. Jest to ważne, gdyż brak stabilności popytu na pieniądz w wielu krajach był postrzegany jako główny powód niepowodzenia tych agregatów.

Początkowo EBC usiłował nawiązywać do rozwiązań DBB, odwołując się do tych agregatów w swojej dwufilarowej strategii prowadzenia polityki pieniężnej. Pojawienie się niekonwencjonalnej polityki pieniężnej na świecie przyczyniło się jednak do stopniowego odchodzenia przez EBC od strategii opartej na dwóch filarach. Ponadto niska inflacja w pierwszych dwóch dekadach XXI w. zdawała się jeszcze bardziej zmniejszać znaczenie agregatów monetarnych, co jest zgodne z teorią, w myśl której agregaty te lepiej działają w środowisku wysokiej inflacji.

Pojawienie się wysokiej inflacji około 2022 r. zmusza do zastanowienia się nad tym, czy rezygnacja z tych agregatów nie była posunięciem pochopnym. Wielu krytyków działań banków centralnych na początku lat 20. bieżącego stulecia zwraca uwagę na ortodoksję ich polityki, która zniechęcała je do sięgnięcia po stosowane kiedyś narzędzia. Wspomniana tu krytyka doprowadziła do dyskusji na temat przyszłych tendencji w polityce pieniężnej. Być może 50. rocznica decyzji DBB o odwołaniu się do agregatów monetarnych mogłaby być dobrym punktem odniesienia w tych dyskusjach i wymianie opinii na temat pragmatyzmu i wszechstronności polityki banków centralnych w nadchodzących latach.

Słowa kluczowe: historia polityki pieniężnej, inflacja, agregaty monetarne, teoria ilościowa pieniądza, Deutsche Bundesbank