

An introduction to a new measure of the money supply: MA

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Executive summary

The 2008/09 financial crisis and subsequent recession has created renewed attention to UK monetary aggregates. This discussion paper argues that although measures of the money supply are crucial to understanding the economy, existing approaches are flawed: “Notes and Coin” is too narrow, and M4 is too broad. An alternative measure that is based on the Austrian school approach to the definition of money (MA) is proposed, which indicates the following:

- From January 2008 – January 2009 MA fell from a monthly growth rate of 27.9% to one of -3.9%
- In the 30 months from December 2008 – May 2011 MA grew in 6 of them but contracted in 24

This finds evidence to support the conventional wisdom that a sustained and increasing monetary expansion during the “great moderation” was followed in 2008 by a catastrophic slowdown in money creation that has become a sustained monetary contraction.

Introduction

The global financial crisis has had a profound and enduring impact on the way monetary policy has been conducted. In March 2009 the Bank of England reduced the Bank Rate to 0.5%, which has been seen as a lower bound for policy, exhausting their scope for further cuts. In conjunction with this decision it was announced that £75m worth of quantitative easing would be launched, intending to inject money directly into the economy through the purchase of various financial assets with newly created money¹.

In addition to demonstrating a change in focus from short term to longer-term interest rates, QE has also raised attention to the role of monetary aggregates - as the Governor, Mervyn King, has explicitly revealed, “We are now doing [this] in order to increase the supply of broad money in the economy.”² Despite theoretical and empirical doubts about the ability to define and measure the money supply, it is of direct and increasing policy significance.

This is in stark contrast to previous trends that have downplayed attention to the money supply. The US Federal Reserve abandoned the targeting of M1 in 1987, and of M2 in 1992. Financial deregulation that occurred during this period was seen to create greater instability in the demand for money, and thus reduce the influence of the money supply on prices and output. Indeed “the reliability of various money measures as useful indicators on which to base policy has become seriously compromised” (Carlson and Keen 1996, p.15). In March 2006 the Fed ceased to even publish figures for M3, and the Bank of England replaced M0 (with “Notes and Coin”) in May 2006³. These decisions suggest that either the money supply doesn’t matter, or that even if it does we cannot reliably measure it. This article maintains that the money supply *does* matter, but that existing measures fail. Indeed the debate between “narrow” and “broad” measures, and the attention to *divisia* approaches, lack a coherent definition of money. Section 1 asks whether money can be measured, drawing attention to notions of emergence and subjectivity. Section 2 surveys existing Austrian school attempts to measure the money supply, and presents MA. Section 3 shows how MA differs with regard to traditional measures of the UK money supply (Notes & Coin and M4). Section 4 concludes.

1. Can the money supply be measured?

Some economists would argue that the money supply is impossible to measure, and there are two aspects of money that suggest this may be the case – (i) its *emergent* properties; (ii) and its inherent *subjectivism*.

¹ In November 2009 this was increased to £200bn

² Comments made to a Treasury select committee, quoted by Norma Cohen, “Money supply supplants rates on Bank’s agenda”, *The Financial Times*, April 6th 2009

³ This was because the Bank began to pay interest on reserves, which would significantly alter the incentives for holding cash in components of M0 (see Congdon 2007, p.3)

The characterisation of money as an emergent, social institution originates from Menger (1892). A barter system has high transaction costs and therefore certain commodities that were universally valued emerged to satisfy the so-called double coincidence of wants. Thus money – on account of its “saleability” - emerged as a social institution to facilitate economic exchange (see Mises 1912, p. 45). Consequently we define money as the generally accepted medium of exchange – it is what all goods and services are traded in exchange for (see Rothbard 1978, p.144, Salerno 1987, p.1).⁴ In defining money in terms of a medium of exchange, it demonstrates the unique role of money within a market economy⁵. As the final payment for all goods, it is one half of all economic exchanges and thus cannot have a market of its own. This explains why monetary disequilibrium has such far-reaching consequences: any adjustments in the exchange value of money must be felt across all markets (Yeager 1997, Horwitz 2000, p.67).

It might appear as though the emergent properties of money impede ones ability to neatly categorise it, and as Horwitz says, “financial assets have degrees of “moneyness” about them, and... different financial assets can be placed along a moneyness continuum” (Horwitz, 1990, p.462). However it is precisely these emergent properties that tend to deliver a focal point of relatively few commonly accepted media of exchange. The fact that the value of money derives from its use in exchange, implies that people will tend to coordinate around the same currencies.

The second factor that might be seen to impede efforts to measure the money supply is the inherent subjectivity of what constitutes money. Since the value of money is a function of an expectation about what other people will accept as a means of payment, there is no a priori means to identify “money”. Whatever emerges as the general medium is based more on historical or cultural factors than any “intrinsic” suitability. Whilst gold possesses several characteristics that make it appropriate (such as durability and fungibility), there is nothing to say that in different contexts other commodities would be used (e.g. cigarettes, see Radford 1945). Consequently any attempt to measure the money supply is essentially a historical survey. Researchers must ascertain which commodities were being used as the “generally accepted” medium of exchange and cannot rely on objective definitions. You can only truly define money retrospectively.

So despite these difficulties, the classification and measurement of the money supply is possible. And two further reasons suggest this is feasible. Firstly, the existing monetary regime does not really permit money to emerge spontaneously, and thus what constitutes money is relatively stable. This is because of the legal tender laws and other state interventions that impose a definition of money on the market. With a monopoly issuer of base currency and a central banking system the task of measuring the

⁴ One way to apply this definition is a “newspaper test” – money is anything a shopkeeper would accept in to pay for a newspaper. However this threatens to oversimplify the task. If we adopted a “car test”, it is likely that a car salesman would *not* accept payment in copper coins, but this does not mean that a penny is not money.

⁵ To say that money is a medium of exchange does not deny that it performs other functions, such as store of value or unit of account. But these should be considered as secondary (or derivative) functions.

money supply can be reduced to the task of defining money. Provided the definition of money is well grounded, it is mostly a case of sorting through official statistics. The challenges involved in identifying exactly *which* commodities are being used as the medium of exchange can be confined to societies without legal tender laws. And secondly, the feasibility of measuring the money supply is a judgment based on the next best alternative. Given that academics, policymakers and commentators all use existing measures there is an element of pragmatism at play. It is the existing measures that should serve as the benchmark to judge new ones, as opposed to a theoretically “pure” abstraction. We cannot perfectly measure national income accounting either, but that doesn’t mean that all attempts are equally bad.

2. Austrian definitions of the money supply

We can make a distinction between two approaches to defining the money supply. The first acknowledges the difficulty in making binary distinctions, and utilises a “divisia” method that weights each component based on the extent to which it is held for transactions (Barnett 1980, Belongia 1996). The problem with this method is that by shying away from the central question of “is this asset class money?” it can lead to an arbitrary reliance on statistical rather than economic relationships. In addition it is hard to believe that these weighted averages will be compatible over different time periods. By contrast a “definitional” method will concentrate on providing a clear and conceptually solid definition of “money” and then search for measures of any and all asset classes that fall into this classification. Both approaches will contain ambiguity and flaws, but whereas the former is theoretical coherency that latter is entirely down to data availability.⁶

It is worth drawing specific attention to “money of zero maturity” (MZM), a similar measure to MA in that it focuses on liquid assets (Carlson and Keen 1996, Teles and Zhou 2005). The fact that there is no MZM measure for the UK underlines the problems with data availability. This being the case, it is important that proposed new measures proceed with caution. For this reason our methodological priority is visual relationships as opposed to a robust statistical test. In short, our focus is on the theoretical validity of the measure, and the data is provided as a cautious justification of its relevance. The data should lead the measure, not vice versa, and the identification of correlations based on historic data have the potential to make a measure *less* likely to explain future events, as compared to an approach rooted firmly in core principles. We are not attempting to show which bundle of liquid assets does the best job at matching recent economic experience, but to use the data to illustrate a new measure that is grounded in the definition of money.

Given that Austrian school economists tend to emphasise tight analytical (or a priori) reasoning and the primacy of theoretical soundness over empirical testing, it is no surprise that economists working within this tradition are more likely to take a “definitional” approach. Austrians tend to place greater

⁶ This is not to say that “the” money supply is the only monetary aggregate that is of interest. For example it would be useful to monitor how “near monies” ebb and flow as the money supply changes.

emphasis on “an explicit and coherent theoretical conception of the essential nature of money” (Salerno 1987, p. 1), as opposed to “an arbitrary mixing of various liquid assets” (Shostak 2000, p.69). There have been numerous attempts to define and measure the money supply by those who identify themselves with the Austrian school, but none that have been published in peer-reviewed journals and made available for replication.⁷ This article is based on two different methods that have been published in academic journals. The “True Money Supply” (TMS) is compiled and published by the Ludwig von Mises Institute, and is based upon Salerno (1987) (which in turn is heavily influenced by Rothbard 1978⁸).

The “Austrian Money Supply” (AMS) is outlined by Shostak (2000) and was published by Man Financial¹⁰. Diaspason Commodities and Morgan Stanley have also published close versions of this, as part of subscription based investment reports. The main difference between AMS and TMS is that TMS includes certain types of savings accounts (and since savings constitute over 70% of the TMS this has a large impact). An advantage of AMS is that it does have a UK version, but the series used are not public information.¹¹

Since neither TMS nor AMS provide a dependable measure for the UK, this paper presents an alternative, which is named “Austrian money supply” (MA)¹². As previously discussed MA is

⁷ Partly this is because interest in money supply measures tends to be driven by professional rather than academic economists, therefore less importance is attached to a peer-review process, and methods are more guarded for commercial reasons.

⁸ Indeed the use of the name “MA” is based on Rothbard: “*Ma* (*a* = Austrian) = total supply of cash-cash held in the banks + total demand deposits + total savings deposits in commercial and savings banks + total shares in savings and loan associations + time deposits and small CDs at current redemption rates + total policy reserves of life insurance companies—policy loans outstanding—demand deposits owned by savings banks, saving and loan associations, and life insurance companies + savings bonds, at current rates of redemption.” (Rothbard 1978, p.153).

⁹ The components of TMS are: Currency Component of M1, Total Checkable Deposits, Savings Deposits, U.S. Government Demand Deposits and Note Balances, Demand Deposits Due to Foreign Commercial Banks, and Demand Deposits Due to Foreign Official Institutions [see <http://mises.org/content/nofed/chart.aspx>. Date accessed June 23, 2011]. To replicate the TMS I used the following FRED series (monthly, not seasonally adjusted): CURRNS, TCDNS, SAVINGNS, DDDFCBNS, DDDFOINS, USGVDDNS. This perfectly replicates TMS from 1998-2000, after which a difference of \$1bn exists, rising to \$20bn in 2005, \$30bn in late 2007/early 2008, and then becomes the same again by the end of 2008. I have been unable to understand the reason for these discrepancies.

¹⁰ Shostak (2000, p.74) identifies three main components of the AMS: (i) cash; (ii) demand deposits with commercial banks and thrift institutions; (iii) government deposits with banks and the central bank

¹¹ A problem with the UK AMS is that in July 2008 the Bank of England reclassified £14bn of interest bearing assets into non-interest bearing ones. Previously the demand deposit section could be taken from the following series, “Monthly amounts of UK residents banks (inc Central Bank) sterling non-interest bearing deposits (inc. transit and suspense) from private sector”(LPMAUYA). But following the decision to lump £14bn of assets into this measure it is no longer appropriate. Also, in order to calculate the AMS an adjustment is required that is of a magnitude similar to the largest single component. I do not doubt that there is a valid reason for this however it makes the series hard to replicate and therefore reduces the validity. In addition unlike AMS we wish to include wholesale as well as retail deposits, and to use the sum of general *and* local government deposits.

¹² The notation is chosen to fit into the traditional UK distinction between M0 (narrow money) and M4 (broad money). The replacement of M0 with “Notes and Coin” and the switch from M4 to M4x undermines this label, but the use of an “M” to signal a money supply measure is fairly well established. In addition it avoids the mistaken hubris of labelling anything “true” or “actual”.

grounded in the definition of money's primary function as a medium of exchange. Crucially the ability to redeem an asset at par and on demand is *not* part of this definition because these attributes are relating to liquidity, not moneyness. If something can be exchanged *for* money, it cannot actually *be* money. Thus the ease with which an asset can be liquidated is not our concern – it is assets that are already money.

The raw data for MA comes from the Bank of England, and Table 1 shows the component parts.¹³

Table 1

Type of account	Type of entity
Currency (notes and coin ¹⁴)	Private sector ¹⁵
Demand deposits ¹⁶	Public sector ¹⁷
	Non-residents

We use data that has not been seasonally adjusted because MA is intended as a starting point for analysis, and therefore seasonal adjustments (and how such seasonal adjustments are incorporated) are considered a supplementary procedure. Figure 1 shows MA¹⁸.

¹³ It is worth reiterating that these series do not provide a perfect capture of MA. In this regard the data should be seen as an estimate of MA based on data series that are (i) publicly available; (ii) mutually compatible; and (iii) widely regarded as being legitimate. In many ways Table B2.2.1 is most appropriate as a basis for MA but only covers the central bank. MFIs are contained in Table B2.5 but does not make a distinction between sight and time deposits. The series for private sector currency and demand deposits are taken from Divisia money and include notes and coin; non interest-bearing deposit; and interest-bearing banks (excl. mutuals) sight deposits. Due to a lack of comparable data for public sector and non-residents we use Table B2.1 (for a breakdown of public sector see Table B2.1.1), despite the fact that this contains currency, deposits and money market institutions.

¹⁴ We wish to incorporate all notes and coins of pound sterling in circulation, regardless of any inferred “motivation” for holding or dormancy

¹⁵ The series can be further split into the household sector, other financial corporations, and private non-financial corporations. Note that Table A6.1 in Bankstats only includes seasonally adjusted data; therefore we must use the Statistical Interactive Database.

¹⁶ Unlike with other methods any interest paid on deposits is irrelevant, since our only concern is whether they are available on demand for use in exchange.

¹⁷ The public sector is the combination of general government (which is comprised of local government plus central government) and public corporations. There is no distinction here between money held with commercial banks and at the central bank.

¹⁸ Due to breaks in the series we go back to September 1998. We use year on year rather than monthly growth rates to follow convention and avoid being exposed to seasonal changes. The series is published at <http://kaleidic.org/data>

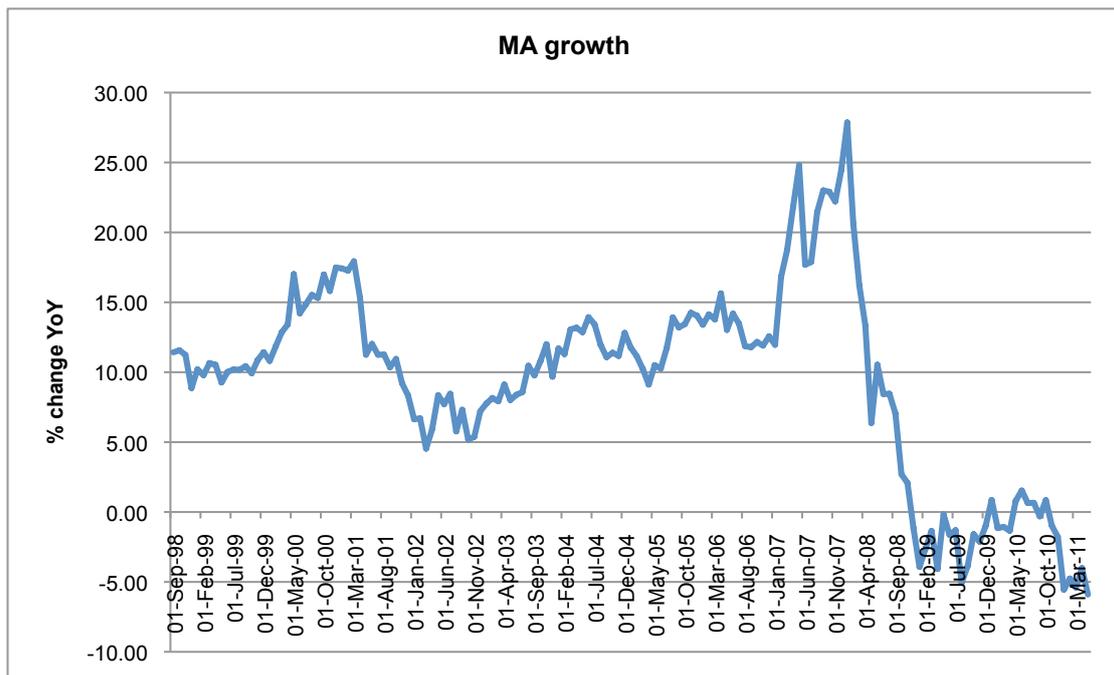


Figure 1: MA monthly growth rate September 1998 – May 2011

The impact of the credit crunch is stunning. MA steadily rises during the late 1990s going above 14% in May 2000 and staying above this growth rate for a year. It falls to a low of 4.5% growth in March 2002 and then steadily increases throughout the “great moderation”. It hits a peak of 27.9% in January 2008 (although there’s a sharp drop from 24.8% in May 2007 to 17.7% in June) but then falls dramatically. Note that this fall *precedes* the Lehman collapse and the tightening of credit conditions following sub prime bankruptcies in the Spring of 2008 are visible. MA shows a monetary contraction that began in December 2008 and doesn’t rise above 2% through May 2011 (and indeed has been negative since November 2010).

In terms of justifying some of the decisions regarding what to include, it is worth commenting on three things in particular: savings accounts, Money Market Mutual Funds (MMMFs), and government deposits.

Savings accounts

MA has important differences with other Austrian measures, both in terms of the choice of series and the methods. Like the TMS we do not include savings accounts. Salerno’s reasons for doing so are that there are “the dollars accumulated... are effectively withdrawable on demand... [and] at all times transferable, dollar for dollar, into “transactions” accounts” (Salerno 1987, p. 3). However they are not transferable *to other market participants*. Although people can draw a check on a savings account, to meet that obligation they must liquidate part of their savings by transferring assets into a checking account. The savings account does not act as a final payment on goods and services. If financial

innovation results in a savings account that can be drawn upon directly, this would no longer constitute “savings” as we’re using the term, and become de facto demand deposits. The issue of savings accounts provides an example of the problems posed by the subjectivism of money. For Rothbard if the general public believe (falsely) that money in their savings accounts are instantly redeemable and act in accordance with this belief, does this mean we should treat it as part of the money supply? We would contend that money isn’t what people believe is purchasing power, but what is routinely accepted by others. This provides the binding constraint, since merchants would only accept “savings” that have been converted into either cash or a demand deposit.¹⁹

Money market mutual funds (MMMF)

We do not count MMMFs as money because they are a form of investment that has a fluctuating price, thus are not redeemable at par. If an investor wishes to liquidate a MMMF they must instruct a fund manager to sell a portion of their holdings and then transfer the proceeds. These proceeds will fluctuate according to market conditions. Admittedly very few MMMF’s “break the buck” and investors have a reasonable expectation of redeeming them for par value. However this is a necessary but not sufficient factor. Shostak (2000) raises the issue that money market mutual funds (MMMF) can be withdrawn on demand, but as Salerno points out “they are neither instantly redeemable, par value claims to cash, nor final means of payment in exchange” (Salerno 1987) – and thus not part of the money supply. Indeed it would be double counting to include MMMFs in the definition of the money supply since money isn’t created when a deposit is made – they are a neutral asset class. In addition to this retail market money funds are clearly not part of the money supply since short-term debt (e.g. government bonds or commercial paper) are not routinely used as a media of exchange.

Government deposits

Both the TMS and AMS argue that government deposits should be incorporated into a measure of the money supply. According to Salerno, we are interested in “the total stock of money owned by *all* economic agents” (Salerno 1987, p.5, emphasis in original), and therefore even when money is transferred from private to public accounts it is still part of the money supply, “in reality, however, the money is now available for government expenditure, meaning that money held in government deposits should be part of the definition of money” (Shostak 2000). However there is an inherent difficulty in counting the monopoly issuers own holdings of a currency. The problem is that much of the government held deposits will consist of newly created money, or soon-to-be-retired money, and this

¹⁹ In another passage Rothbard seems to accept this: “They continue as equivalent to money only so long as the subjective estimates of the seller of goods on the market *think* that they are so equivalent and accept them as such in exchange” (Rothbard 1978, p.145, emphasis in original)

would not be in circulation²⁰. But whilst government deposits *may* not be in circulation, this brings us back to the issue of subjectivism and whether an asset is being “hoarded”. Whether or not we are capable of making an empirical distinction between money that is “in circulation” (aside from the validity of the statistical measures), the measure of the “money supply” is intended to be broad. In this way it is seen as a “gross” concept referring to the total amount of money that could be used in exchange, and further work should be done to strip out any balances that are genuinely dormant.

3. The Goldilocks measure

One argument in favour of MA is that whilst narrow and broad measures of the money supply provide useful insights into the economy, neither of them finds the right place on the spectrum of liquidity. Historically speaking, M0 comprised of cash that was in circulation outside of the Bank of England, as well as banks’ operational deposits within the Bank. In May 2006 it was replaced by “Notes & Coin and Reserve Balances” – the reserve balances are interest-bearing and held by private banks at the central bank.

The convention of taking a narrow/broad approach is appealing since it captures the whole range of the monetary transmission mechanism, from the base money that is created by the Bank of England, to the additional demand deposits and accounts that are generated through fractional reserve banking and the money multiplier. The main problem though is that there’s a tradeoff involved in both. Base money is easy to measure, but does not have a clear link to what is happening in the wider, real economy. Bank lending is more likely to capture economic activity, but is susceptible to lags and dependent on the transmission mechanism working in a stable manner.²¹ Indeed we can look in turn at problems with narrow and broad measures.

Narrow is too narrow

One main limitation in focusing purely on Notes & Coin is the practical reality of what types of transaction they fund²². Although accurate numbers are impossible to find, the conventional view is that less than 1% of total transactions are paid for with cash, and around 50% of cash is held in the

²⁰ This is why many measures don’t include government holdings of coin, but there seems to be an inconsistency when measures such as the TMS include Federal holdings of *notes* but exclude Federal holdings of coin

²¹ Indeed this is what happened during the credit crunch – the transmission mechanism broke down, with large spreads arising between the Bank rate and the interbank rate (i.e. LIBOR). QE can be seen as an attempt by the Bank of England to restore control over the broad money supply. However when QE was adopted this generated a surge in bank reserves, but since they did not seem to find their way into consumers real money balances they had a questionable impact on short term inflation and output.

²² Note that we are interested in total “transactions” here rather than components of GDP

informal economy (Congdon 2007).²³ Table 1 shows the monthly average amount outstanding of notes and coin as of December 31st 2010²⁴.

Table 2: Breakdown of Notes & Coin as of 31/12/10

	£m
Household sector (LPMVYWO)	48,011
Other financial corporations (LPMB75C)	83
Private non-financial corporations (LPMB76C)	4,263
Total	52,357

If we assume there are about 49m adults in the UK²⁵, this implies an average cash holding of £980. Even factoring in private businesses that are cash intensive, it is implausible that such money is routinely held for legitimate business. As Congdon (2007) concludes, this is strong evidence in favour of cash being held predominantly in the informal economy, and therefore outside our analysis.²⁶

There is also the issue of substitutability. In the US the statistical relationship between M1 and national income began to fail in the 1980s as people increasingly switched between savings and NOW accounts²⁷, and in 1993 Alan Greenspan said, “M2 has been downgraded as a reliable indicator of financial conditions in the economy, and no single variable has yet been identified to take its place”²⁸. This is partly why many economists view little middle ground between M0 and M4, however financial innovation all calls into question the validity of a narrow money measure at all. Congdon (1995, 2007) draws attention to “money transfers”, arguing that individuals can alter their holdings of narrow money by substituting from one form of money to another, avoiding any “real balance” effects. This leads Congdon to abandon narrow money as a useful metric:

“Changes in narrow money have no important causal role in the economy, but changes in broad money can and do have effects on output and employment in the short run, and on the price level in the long run” (Congdon 1995, p.26)

²³ Indeed if anything this casts doubt over whether bank notes should be considered “money” as we’ve defined it.

²⁴ Elsewhere in this paper we use measure Notes & Coin with series LPMVAVA (not seasonally adjusted), which provides a total of £59,641m

²⁵ According to the Office for National Statistics’ “Population Trends”, Summer 2011 there are around 13m dependent children in the UK. If the total population is around 62m it suggests that there are roughly £49m adults.

²⁶ By “informal” economy I refer not only to illegal activity (such as prostitution or drug dealing), but also unregistered individuals engaged in business activity (e.g. informal child care) or legitimate businesses engaged in tax evasion (e.g. cash in hand for asbestos removal).

²⁷ The former are part of M2 whereas the latter are also in M1. On the other hand, M1 has been misleadingly low due to “sweeps”, which occur when banks shift funds from checking accounts (M1) into savings accounts without reserve requirements.

²⁸ Comments by Alan Greenspan to a Congressional Testimony, July 1993

Broad is too broad

So “narrow” money might be considered *too* narrow, but that doesn’t make “broad” money appropriate. The key issue here remains the definition of money, which Congdon defines as “assets with a given nominal value” (Congdon 2007, p.9). However this conflicts with *our* prior definition, which requires that the asset be used in exchange. Even if the nominal value is fixed, if an underlying asset needs to be sold in order to cash it in, it isn’t money in our sense.

The concept of monetary disequilibrium shows how the real balance effect works, “if... real broad money balances differ from their desired levels in the aggregate, equilibrium can be restored only by changes in demand, output, employment and the price level” (Congdon, 1995, p.25)²⁹. However there is a balance between incorporating any assets that play a role in the transmission mechanism, and *money*.

When discussing M4, an important caveat is required. In late 2007 the Bank of England proposed to exclude intermediate “other financial corporations” (OFCs) because they view them as containing interbank transfers.³⁰ Indeed this is a timely decision because whilst quantitative easing boosted the money holdings of intermediate OFCs, they did not necessarily find their way into the real economy. By contrasting M4 and M4 excluding intermediate OFCs (M4x) we can see an almost divergent relationship (see the May 2009 Inflation Report). However for our purposes we will retain M4, and this is for three reasons. Firstly, we want to compare monthly series, and M4x is only available quarterly³¹. Secondly, we want to show the relationship between monetary aggregates over time, and M4x is only available since the Q2 of 2006.³² Thirdly, M4x has only been released *after* the financial crisis, which runs the risk of the measure following the data. Although MA was first compiled (but not published) in October 2008, the whole point is that the definition is constant. Therefore it has not been created in *response* to economic events.

Some argue that there is no real middle ground on the spectrum of liquidity, for example a popular economics textbook says, “Once we leave cash in circulation, the first sensible place to stop is M4” (Begg et al, 2008, p.442), However a tight definition of money does allow a non arbitrary balance, and this middle ground receives empirical validation. Figure 2 shows how MA compares to Notes & Coin³³

²⁹ For Congdon the transmission mechanism is basically: broad money → asset prices → national expenditure/income (Congdon, 2007, p.1)

³⁰ See “Proposals to modify the measurement of broad money in the United Kingdom: a user consultation” *Bank of England Quarterly Bulletin*, September 2007

³¹ The Bank do produce monthly *estimates* but “these monthly proxies are volatile” (Janssen 2009).

³² See Table A.2.2.3 of Bankstats. In addition year on year growth rates are only available from June 2010 (series code RPMB3DC)

³³ Monthly average amount outstanding of total sterling notes and coin in circulation, excluding backing assets for commercial banknote issue in Scotland and Northern Ireland total (in sterling millions) not seasonally adjusted (series code LPMAVAA)

and M4³⁴. As is obvious it falls between the two measures, and as of December 2010 whilst Notes & Coin constituted 2.76% of M4, MA accounted for 66.50%.

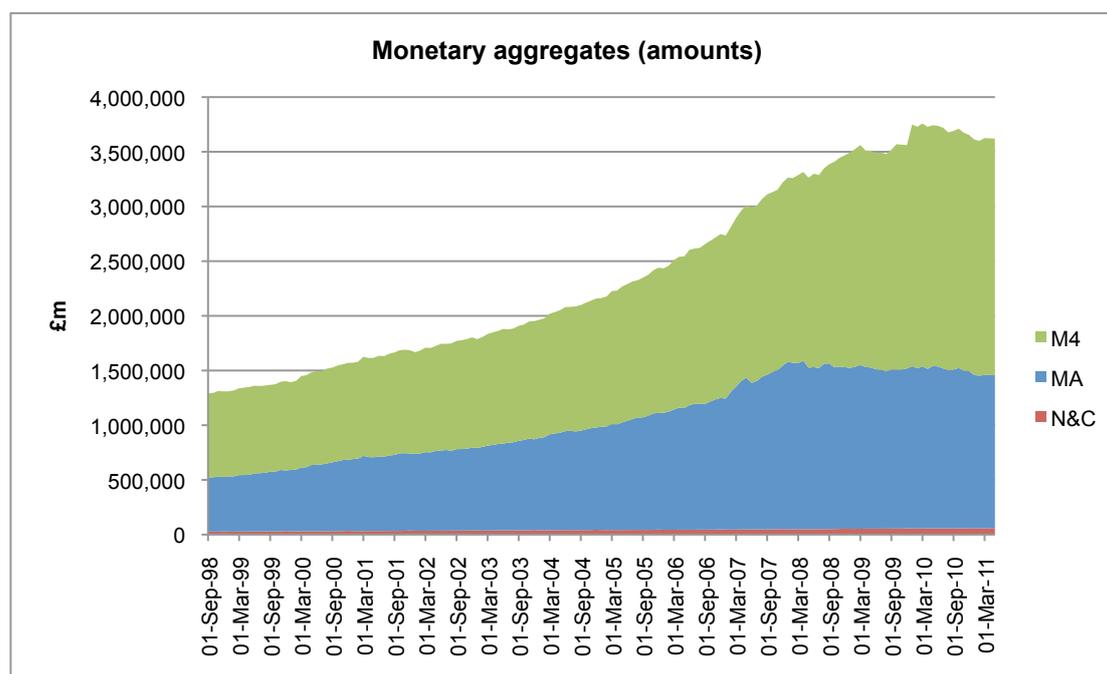


Figure 2: Monetary aggregates (amounts) September 1998 – May 2011

Perhaps more revealing is a look at the rate of change of the three measures over time. Figure 3 shows the year on year growth rate of MA compared to equivalent figures for Notes & Coin³⁵ and M4³⁶. As previously mentioned the credit crunch is visible in MA but N&C and M4 are actually *rising* during late 2008/early 2009. Although M4 displays a dramatic fall in the growth of money from Summer 2009 (becoming a monetary contraction in October 2010), it is mild compared to the monetary contraction displayed by MA. Notes and Coin “merely” suggests a slowdown in new money creation, from above 10% per month to under 5%.

³⁴ Monthly amounts outstanding of M4 (monetary financial institutions' sterling M4 liabilities to private sector) (in sterling millions) not seasonally adjusted (series code LPMAUYM)

³⁵ Monthly 12 month growth rate of total sterling notes and coin in circulation outside the Bank of England (in percent) not seasonally adjusted (series code LPMVQUX)

³⁶ Monthly 12 month growth rate of M4 (monetary financial institutions' sterling M4 liabilities to private sector) (in percent) not seasonally adjusted (series code LPMVQLC)

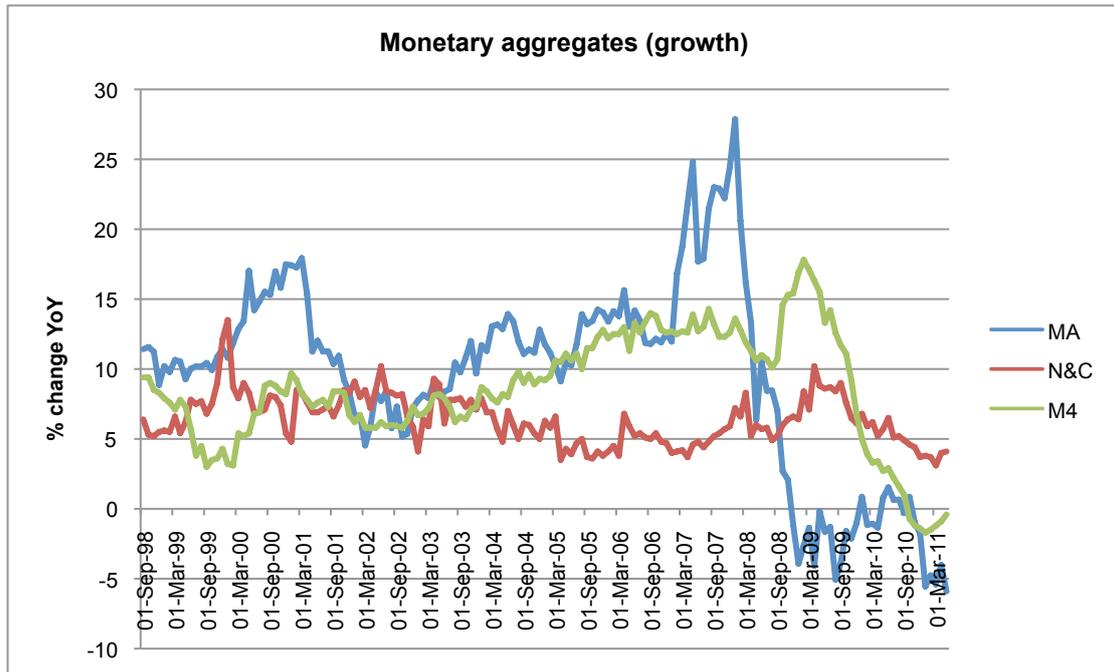


Figure 3: Monetary aggregates (growth) September 1998 – May 2011

4. Conclusion

This paper defines and presents a pioneering measure of the money supply (MA), based on an Austrian-school approach. The intention has not been to perform a robust statistical test of this measure vis-a-vis existing alternatives, but to focus on the theoretical sturdiness. It finds a middle ground between Notes & Coin and M4, avoiding some of the problems with the conventional data. A cursory look at how it relates to key macroeconomic variables suggests that it warrants further attention, and the full methods are presented in this paper to encourage future research in this direction. Monetary aggregates do matter, and as policymakers and commentators increasingly turn their attention to money growth a discussion about the definition of money should become mandatory. The money supply – accurately defined and measured – plays a crucial role in understanding the path of the real economy over the shorter term, as well as being the root cause of price inflation. Existing measures may have a less than exemplary track record, but this is all the more reason to devote serious attention to the compilation of the measure. By providing a brief history of the present, we might take a step in that direction.

References

- Barnett, W.A., 1980 “Economic Monetary Aggregates: An Application of Aggregation and Number Index Theory” *Econometrica* 14:11-48
- Belongia, M.T., 1996, “Measurement Matters: Recent Results from Monetary Economics Reexamined” *Journal of Political Economy*, 104(5):1065-1083
- Begg, D., Fischer, S and Dornbusch, R., (2008) *Economics*, McGraw Hill, 9th Edition
- Böhm-Bawerk, E., 1891 *The Positive Theory of Capital*, Book 6, chapter 5, Macmillan and Co.,
- Carlson, J.B., and Keen, B.D., 1996, “MZM: A Monetary Aggregate for the 1990s?” *Federal Reserve Bank of Cleveland Economic Review*, II, pp. 15-23
- Congdon, T., 1995, “Broad money vs. narrow money” *The Review of Policy Issues*, pp.13-27
- Congdon, T., 2007, “Special report: broad money vs. narrow money” *Lombard Street Research*, (April 4th)
- Friedman, B.M., 1986, “Money, Credit and Interest Rates in the Business Cycle” in R.J. Gordon (ed.) *The American Business Cycle* Chicago: University of Chicago Press
- Hart, A.G., and Kenen 1948 *Money, Debt and Economic Activity*,
- Hayek, F.A., 1937, “Economics and Knowledge” *Economica New Series*
- Hazlitt, H. 2008, “The Velocity of Circulation” *Mises Institute Daily Article*, 17th March 2008
- Horwitz, S., 1990, “A subjectivist approach to the demand for money” *Journal des Economistes et des Etudes Humaines*, Vol 1, No.4, pp.459-471
- Horwitz, S., 2000. *Microfoundations and Macroeconomics, An Austrian Perspective*, Routledge
- Hutt, W.H., 1956 “The yield from money held” in Sennholz, M., ed, *On Freedom and Free Enterprise: Essays in Honour of Ludwig von Mises*, Princeton: Von Nostrand
- Janssen, N. 2009 “Measures of M4 and M4 lending excluding intermediate other financial corporations” Bank of England *Monetary and Financial Statistics* May 2009
- Menger, C., 1892, “On the Origins of Money” *Economic Journal*, Vol. 2 pp. 239-55
- Mises, L.von, 1980, [1912] *The Theory of Money and Credit* Indianapolis: Liberty Press
- Radford, R.A., 1945, “The Economic Organization of a P.O.W. Camp” *Economica*, Vol 12, No. 48, pp. 189-201
- Rothbard, M.N., 1978, “Austrian Definitions of the Supply of Money” in *New Directions in Austrian Economics*, Spadaro, L.M. (ed), Kansas City” Sheed Andrews and McMeel
- Rothbard, M.N., 2005, *What has government done to our money?* Mises Institute (5th Edition)
- Salerno, J.T., 1987, “The “True” Money Supply: A Measure of the Supply of the Medium of Exchange in the U.S. economy” *Austrian Economics Newsletter*, Ludwig von Mises Institute

Shostak, F., (1999) “Asian Recovery?” *The Asian Wall Street Journal* June 15th

Shostak, F., 2000, “The Mystery of the Money Supply Definition” *The Quarterly Journal of Austrian Economics*, Vol. 3, No. 4, pp.69-76

Teles, P. and Zhou, R., 2005. “A stable money demand: Looking for the right monetary aggregate” *Federal Reserve Bank of Chicago Economic Perspectives* pp.50-93

Yeager, L.B., (1997), *The Fluttering Veil: Essays on Monetary Disequilibrium* Liberty Fund

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