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Shvets, Serhii

State Organization “Institute for Economics and Forecasting,
Ukrainian National Academy of Sciences”

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HOW EXCESSIVE ENDOGENOUS MONEY SUPPLY CAN CONTRIBUTE TO GLOBAL FINANCIAL CRISES

“... money has the nature of a credit-debit relationship and it is endogenously created and demand-led.”

(Fontana et al., 2020, p. 348)

1. Introduction

The frequency and intensity of financial crises in the last decades have been a challenge for sustainable growth. The academic community is trying to find the way out by offering practical solutions. However, more and more issues are on the go because each crisis has different occasions induced by internal and external factors, which vary in their economic implications. There is an urgent need to develop an effective system of preventive measures based on early warning indicators. The indicators cover a great deal of economic activity but focus on the fundamental identities that are key elements of sustainable growth. One of those identities is a quantity equation of exchange. The modern interpretation of the Quantity Theory of Money (QTM) has much to do with the endogenous money approach. In contrast to the exogenous, the endogenous concept reveals debated questions about the origins of demand for money, its connection with money supply, and the potential to generate an excessive quantity of money.

The advancement of the endogenous money approach is moving in two main theoretical strands: horizontalism and structuralism. Concerning the differences between the two, the monetary authority can be a sole agent or share its power with banking system in accommodating the money supply to meet changing demand. However, the demand may change so fast within the short run that the money supply does not always adjust without delay. Therefore, very often, a situation arises when the banking system has to react more actively. Trying to be more responsive, commercial banks call for various measures that do not always align with the monetary authority's strategic goals. In addition, the central bank has limited capacity to regulate the entire volume of the money supply.

QTM guarantees the equilibrium between the output and money supply by price adjustment. The other variable in the equation of exchange – money velocity – does not change significantly, especially in the short run. Prices are the altering components that help to bring the money market close to the goods one. However, in the short run, prices are not flexible, so their ability to balance supply and demand is restricted in this case. Shifting to the indirect interest rate instrument, central banks have lost the power to adjust the money supply directly because it is impossible to simultaneously manipulate the monetary aggregate and interest rate. Thus, the QTM may be misguided in the short run if the indirectly adjusted money supply does not follow money demand. Moreover, if the money supply is accommodating persistently, there is a very occasion when real values of the output and the money supply do not balance with a dominance of the latter. Protracted dominance can turn into the excess money supply, mainly due to the unsettled demand for money. The present paper aims to study whether the endogenously created excess money supply can contribute to global financial crises.

2. Theoretical basis

The fundamental relationship between money and output goes back to QTM theory and has two versions. The first, called the “equation of exchange” and introduced by I. Fisher, considers institutional factors expressed as $M_S V_T = P_T T$. The money in circulation, M_S , the transactions velocity of money circulation, V_T , and transactions, T , presuppose to be independent, while the prices, P_T , follow a passive position and participate as a medium of exchange. The market equilibrium between the quantity of money and the number of transactions is guaranteed by adjusting prices.

The second version of QTM, the Cambridge approach, refers to money not only as a medium of exchange but also as a store of value. The motive of holding money by individuals is a key element that distinguishes the second approach from the first one. The demand for money, M_D , is a product of the reciprocal value of money velocity (real income that individuals want to hold in a liquid form), k , prices, P , and income, Y . If assume that the money market is in equilibrium, $M_D = M_S$, the last equation may be easily transformed to the Fisher’s expression. Cambridge approach takes a more favorable disposition because it focuses on the demand for real money balances, which influences, in such a way, Keynesian and Monetarist theories.

QTM theory is a constituent element of the monetarist approach that associates with the so-called verticalist view of money supply creation. This view considers the money supply as a product of the money multiplier and the monetary base that monetary authority sets exogenously to correlate with nominal income. The key element of QTM is market equilibrium. There are two markets in the QTM: money and goods. Those markets differ in the time that has elapsed to reach equilibrium. The money market is more responsive than goods due to the production factor. This disparity makes it impossible to adhere to QTM constantly (Salter, 2014).

The money market is operated by the monetary authority that opts for direct and indirect instruments. The direct instrument used to be a monetary aggregate, chronologically from the monetary base to broad money, defined as a policy target. According to Goodhart's law, the relationship between money and output is misguided if one or both components are used as a target. The law postulates that the adjusted money supply facilitates the substitution between liquid and illiquid assets and becomes an endogenous variable that prevents QTM compliance (Goodhart, 1984).

The modern monetary institutions have shifted to the indirect instrument, short-run nominal interest rate, which is widely used to adjust the money supply. There is not just the exogenous money position in the QTM but a lack of conventional correlation between money supply and income that encourage monetary authority to focus on the interest rate instrument (Fontana et al., 2020: p. 343). It should be emphasized that by shifting to an indirect interest rate in exchange of a direct monetary aggregate instrument to maintain the target lending rate, the monetary authority's duty is to meet the banking system's demand for liquidity by issuing new money. The monetary authority becomes the lender of last resort; otherwise, the interest rate will fluctuate following the equilibrium of supply and demand. In the transitory period, the problem was to employ monetary aggregate and interest rate simultaneously. The salient paper of Poole (1970) verifies the mentioned case and concludes that the targeting monetary aggregates are less agreeable in favor of the interest rate. The focus on the monetary aggregates reduces the impact on the output caused by the violation of demand for money. If choosing the interest rate instead, there is the demand for money that is a

matter of the reduced impact. So, the interest rate target is preferable if the money market is more volatile than the goods one.

Besides the orthodox QTM approach, in which money is rendered exogenously, the next heterodox generation chooses an endogenous view that meets horizontalism, structuralism, and Modern Money Theory (better known for its acronym, MMT). It is important to emphasize that the endogenous view of the money supply has been generally accepted not due to fundamental origins but interest rate targeting instead (Palley, 2013, p. 10).

Horizontalist (or accommodationist) approach traces its name from the horizontal curve of the money supply granted by the monetary authority. Thus, the demand for money is fully accommodated by the 'infinitely elastic' money supply endogenously using external short-term interest rates regardless of the situation and for the sake of financial stability (Moore 1988). By giving supreme power in lending activity to central banks, commercial banks are constrained to manipulate liquid assets, which is a challenging disadvantage of the horizontalists approach.

The structuralist approach alleviates the disadvantage mentioned above and expands the set of tools for money supply accommodation. Those are portfolio preferences, uncertainty, balance sheet position, profit-seeking behavior, microeconomic financial constraints, financial innovations, and expectations for money supply impact (Wray 1990). The structuralist's supply curve takes a semi position between the horizontal and vertical LM schedules, assuming the money supply does not fully accommodate the demand due to different impediments provided by the additional instruments. Following the accommodation plan, the central bank chooses the optimum toolset but retaining the commercial banks' duty of money creation to meet liquidity preferences.

MMT takes on the fiscal side of creating money by mobilizing the costs of government funds. If the economy is not at full employment, the risk of inflation is minimal. The government must exploit all potential of taxes to cool the overheated economy and move money out of the private sector. The interest rate is not a target replaced by the deficit spending option to encourage investments and stimulate the economy (Wray, 2015). In addition to preserving the endogenous side of money

creation, the value implication of the fiscal funding operations is that the central bank cannot be independent in light of the government discharge by its budget undertaking performance (Lavoie, 2017, p. 178). It is an essential element of the monetary transmission mechanism, where the triangular involvement of the budget, private, and monetary sectors does an important but inconsistent job in creating money.

The further evolution of theoretical approaches to money creation goes in line with empirical research. The modern New Synthesis Consensus employed in the dynamic stochastic general equilibrium (DSGE) models proceeds to put the interest rate target at the forefront of monetary policy. The interest rate rule follows the well-known Taylor principle (Taylor, 1999) to minimize inflation and the output gap by establishing a responsive answer to fundamental disparities. In the DSGE models, money used to be a residual variable and rather a volatile one. The current mainstream adheres to an endogenous perspective that adopts a horizontal slope of the money supply curve (Fontana et al., 2020: p. 341-342).

There is a demand for money that changes over time. As correctly stated by B. Moore (1988), the money demand makes its first step before supply accommodates. That is, loans generate deposits in the banking system, producing money simply 'out of air.' Monetary authority does not have adequate power to control the demand for money generated by the private sector and the growth rate of that demand (Lavoie, 2017, p. 182). Thus, it is the accommodation of money supply that is under control.

The well-known monetary instruments used by central banks do not guarantee the accommodation of money supply is quite due. Interest rate is a powerful instrument that can boost or restrict growth. However, there are examples where external reserves considerably distort the adequate response of the monetary system, partially isolating the transmission mechanism and limiting the sovereignty of the central banks. Available administration tools impact the credit-deposit operations, but the autonomy of the commercial banks in deciding whether to increase the quantity of money is a convincing argument that is direct and indirect actions do not always follow the established rules (Arestis & Sawyer, 2006, Fullwiler, 2013).

The prices are not flexible in the short run, so accommodation becomes a comprehensive solution that does not necessarily expect a quick response. Due to the

inconsistency in time, the period of re-establishment of the new equilibrium is prolonged. As a result, the volume of income and the quantity of money in real terms may deviate in favor of the latter. A case where the quantity equation may not be valid for a significant period can potentially contribute to a financial crisis. This case is a matter of discussion in the preceding sections of the current study.

It is challenging to investigate the relationship between endogenous money supply and financial crises that depends on the money market adaptation factors. On the one hand, the monetary authority is trying to develop a flexible system to control the money supply. On the other hand, the banking community demonstrates an incentive to increase the money supply that does not follow the multiplier factor but is rather an outcome of financial innovations. Extreme volatility in the money market hinders the ready balance between money supply and output, given that prices are not flexible in the short term. Thus, the fluctuated demand for money puts pressure on the money supply.

Going towards equilibrium in the money market has two different spillovers depending on the direction of the movement. If the demand aggressively prompts the supply of money up, the monetary aggregates actively grow in advance that is an anticipated step in case the process carries on for some time. The opposed situation differs when money demand contracts and money supply does not catch up with in response. The weak backward reaction links to a shortage of effective monetary instruments that make the money supply collapse accordingly. The central bank does not have sufficient power to control all the money supply using the available direct and indirect instruments. At the same time, it is difficult for commercial banks to immediately shrink the supply due to many counterparts involved in the credit-deposit operations (an adverse multiplier factor).

The presented short-run scenario of money market performance stresses attention to the risk of the money supply domination over the output for some time. Variables are measured in real terms because prices are not flexible in the short term. Following the Cambridge approach of QTM in real terms, the real money demand (M/P) must be equal to the real money supply (the money stock in terms of goods, Yr) multiplying by the reciprocal value of the velocity of money (k).

Orthodox economics assumes that money's velocity of circulation does not change much over the short term. Abstracting from the k variable, the balance between the real money demand, M/P , and the real money supply, Y_r , is examined. The starting point is a balanced position A in Figure 1. Money demand shock shifts the demand curve to the right from $Md1$ to $Md2$. The balanced position A changes to the midway point B. The real demand for money increases from $M1/P$ to $M2/P$ while the money supply does not change. As a result, the interest rate moves up from the steady-state i' to level i . It takes some time before the market is balanced. Usually, additional measures are required to maintain a new equilibrium in the short run. Many derivatives and, in particular, virtual money, which has become widespread due to the rapid development of information communications, are actively employed by financial agents. The adjusted money supply restores the balance and shifts the supply curve from $Ms1$ to $Ms2$. The new balanced position C determines that the money demand $M2/P$ equals to money supply Y_{r2} , and the interest rate returns to its steady-state. In the next period, the money demand contracts from $M2/P$ to $M3/P$, shifting the demand curve from $Md2$ to $Md3$. This time, the money supply Y_{r2} does not hurry up to follow the money demand $M3/P$, and the new position D will be a starting point of further movement of the demand-supply volatility (Fig. 1).

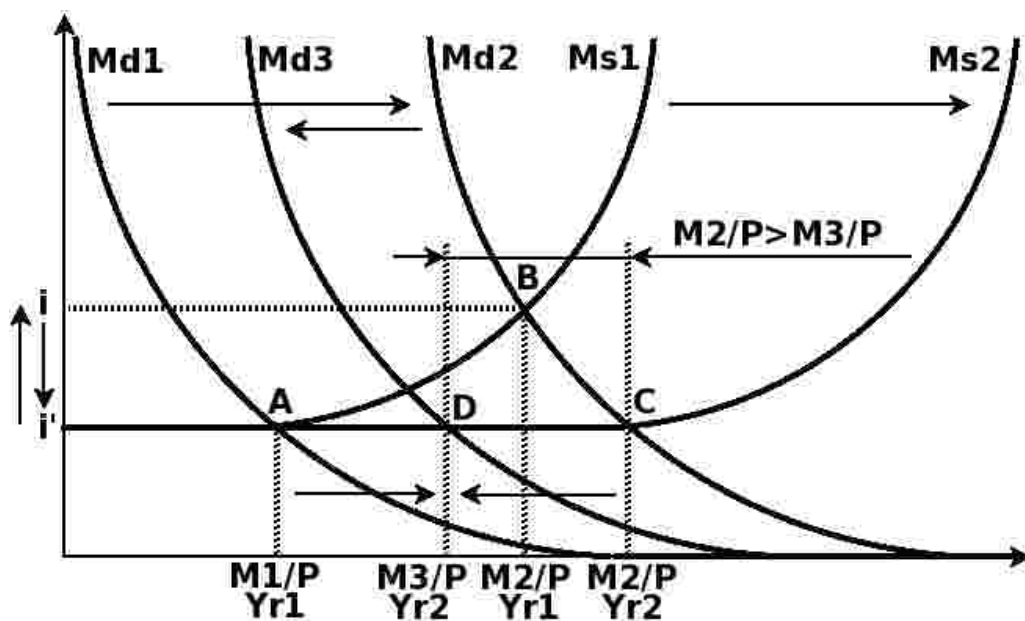


Figure 1. Demand, supply, and equilibrium in the money market

Source: reproduced in line with foundations of money market equilibrium and a creative vision of the author.

Due to the indicated above contracting of the demand for real money, the supply of real money stays ahead, determining an excess position for a short period, as $M2/P > M3/P$. The volatility that the money market performs following the illustrated sequence of steps may change over time by magnifying the range of deviation and shifting to the nonlinear area of the demand-supply relationship. If the deviation is large enough, an interest rate shock or a sizeable excess money supply or both of them can hypothetically run the economy into a financial crisis. Lessig (2012) has done solid work by examining financial crises over 1850-2010. The interest rate factor has been at the center of the study and turns out to be a significant factor if the origin of money is endogenous. Empirical verification has confirmed that the interest rate can contribute to financial crises when validating the endogenous money environment in several developed economies.

Under unexpected conditions of an installed downturn, the uncontrollable creation of money can break down the QTM relationship and intensify inflation instead of growth. There are successful attempts in the empirical literature to verify the link between money supply and financial crisis. Working on a large dataset of 113 crises in 112 countries, Mathonnat and Minea (2018) have proved that the growth of $M3/GDP$ can be a significant contributor to banking crises. That is, the occasion the two events are interconnected is highly possible. Zhang et al. (2018) give special attention to leverage and conclude that excess leverage and its unexpected expansion, in particular, can increase the probability of currency crisis, asset price collapse, and banking crisis.

The presented theoretical foundations of creating excess money supply and its critical aftermath have demonstrated how important it is to monitor the relative dynamics of money and goods markets in real-time. The high volatility of the demand for money is a significant disposition that requires the short-run monitoring of money supply accommodation. The results of the short-term monitoring can be of great importance in preventing the negative consequences of an aggressive demand shock, as well as in the case of cumulative impact scenarios.

Results

There were three global financial crises in recent decades: the 1987 stock market crash known as Black Monday, the 1997 Asian financial crisis, the 2007 credit crisis, and the 2020 Covid-19 pandemic. The underlying conditions that may contribute to financial crisis usually are: debt accumulation and public debt, in particular, stock market 'bubble' collapse, striking foreign exchange turbulence, force-major occasion, etc. All of these deductive triggers are associated with aggressive monetary expansion. Graff (2015) has done a routine study of empirical evaluation of the equation of exchange employing panel data from 1991 to 2012 for 109 countries and setting aside the velocity component. The results have not been absolute and confirmed that the QTM is 60% close to reality regarding the growth of excess money supply.

Economic history posits that aggressive monetary expansion usually brings to the excess money supply. To verify the phenomenon of excess money, the monthly observable correlation between money supply and output in real terms for a range of different countries: the USA, the UK, the Euro Area (28 EU members), Japan, South Korea, South Africa, Mexico, and Ukraine (available period for Ukraine data is 2001-2020) is monitored. The plan is to grasp developed and developing economies and consider available monthly data over a long 1990-2020 period. Variables are in real terms, and money velocity is ignored because prices are not flexible in the short term, and the money velocity proves to change only a little during this term. Their records in such a case have no economic value and should be adjusted to force minimal statistical discrepancy. Real money supply and output data expressed by M3 and GDP are deflated respectively by CPI and GDP deflator. All data are seasonally adjusted by consistently employing ARIMA and EMA (exponential moving average) filters and scaled to the 2015 constant prices (Fig. 2).

All critical deviations are associated with global financial crises in 1997-1998, 2007-2008, and 2019-2020. The deviations from linear trend and velocity, in which the monetary aggregate follows the output path, are different among the selected countries. Japan has revealed the highest instability in the relationship between money supply and output. The USA, Mexico, and Ukraine have demonstrated the most irregular volatility. Same Ukraine, as well as the Euro Area and the UK, have exhibited long-term deviations. Before the 2007-2008 financial crisis, the United States promoted conservative monetary expansion, and the growth of output was more pronounced than

the money supply. Later, the situation changes, and the rate of monetary expansion has increased while the output and money supply growth continues to be in a relative parity. Ukraine has replayed a vicious circle of events through the significant crisis points in 2008, 2014, and 2019, which seize its marginal positions. It is not the only country that has experienced a noticeable contraction in the money supply, followed by depression during six years. The euro area and the UK have seen a similar decline, but only for a one-two year term (see Fig. 2).

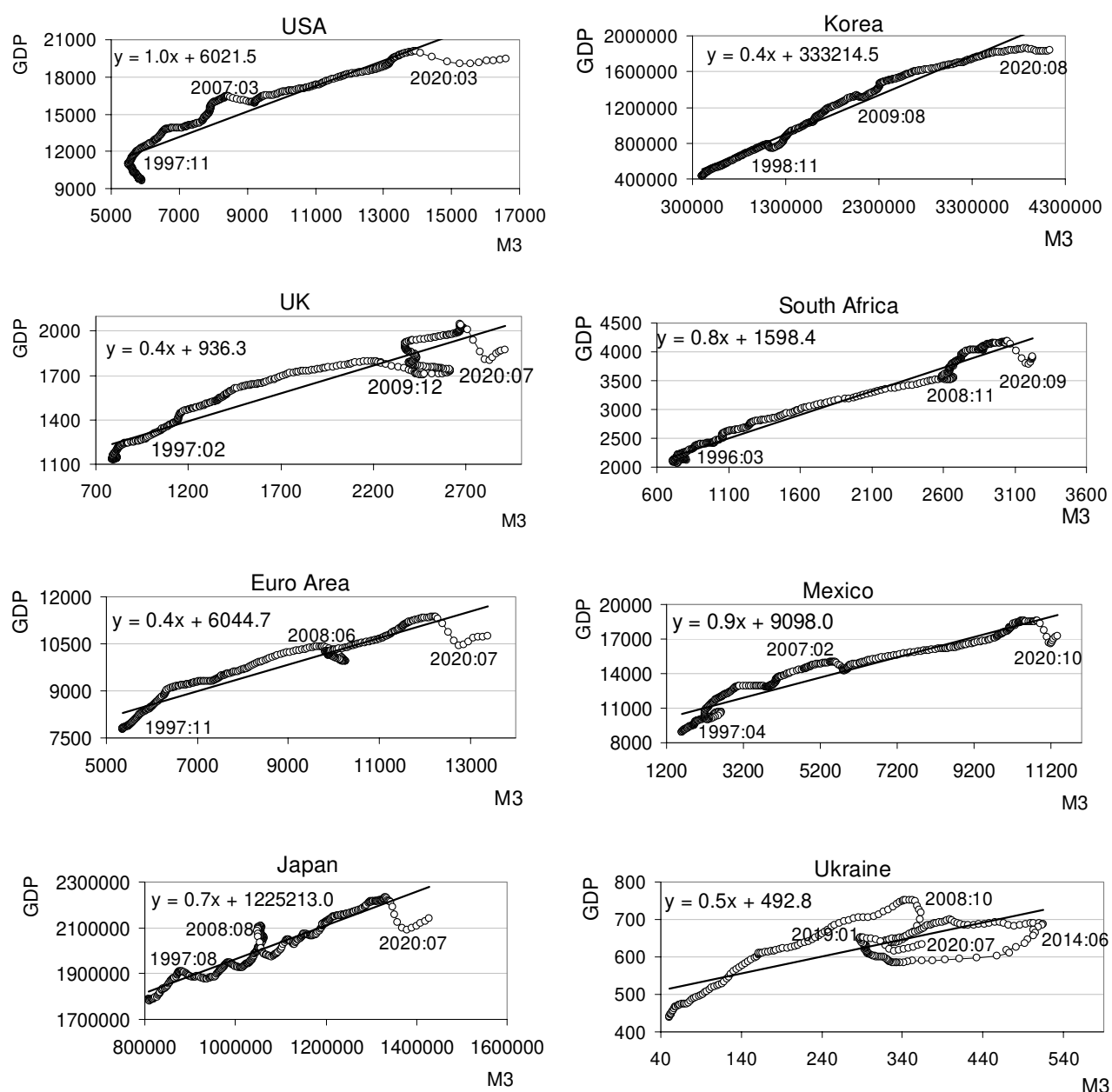


Figure 2. Correlation between money supply and output in real terms for several countries (seasonally adjusted data in bln national currency, 2015=100)

Source: OECD data available at <https://data.oecd.org/> and the author's calculation results.

It is worth noting that China is not included in the current study as the required monthly data is only available from 1999. However, Jung (2011) performed a similar analytical procedure to study the long-term growth of the money supply in China in 1999-2010. The study results have shown that the ratio between the growth of the money supply and GDP is three times higher in favor of the money supply. In addition, short-term fluctuations in money supply and demand differ due to the monetary authority's intentions to regulate the money market. Therefore, the document concludes that the long-term trend in the money supply is a potential threat of imminent destabilization.

The relative movement of money supply and output is examined by drawing up a linear trend. If the slope is close to unity, the progressive movements of the two components are in relative agreement. On the other hand, the lower the slope value is in comparison to unity, the more money market dominates the goods one. Selected countries are segregated into two groups assuming a critical level of 0.6. The first group, $0.6 < \text{slope} < 1$, which demonstrates a relatively close relationship between money and goods markets, is chosen to be neutral regarding the generation of the excess money supply. That group includes the USA, Japan, South Africa, and Mexico. What is interesting, the group includes developed and developing economies. Thus, the level of economic development does not reasonably determine the potential for creating an excess money supply.

Closing the second group, $\text{slope} < 0.6$, the size of the money market is considered that can be affected by developed economies with powerful and diversified monetary assets. Therefore, the second group includes the Euro Area and South Korea. However, since the UK has been a member of the EU for a significant period of the selected time span 1990-2020, this developed economy does not participate in the second group. Notably, South Korea has been documented as a trigger of the 1997 Asian financial crisis; and the first sign of the 2007 credit crisis began in the Euro Area when Britain's Northern Rock bank has requested emergency funding from the Bank of England.

The 2020 Covid-19 pandemic has induced an economic downturn followed by the global financial crisis. The general trend in the correlation between money supply and

output is distorted due to the acceleration of the movement of money supply compared to the output. The most aggressive monetary expansion has been exposed by the developed countries, which have strong financial support in case of emergencies (the USA, the Euro Area, Japan, and South Korea. There is an interesting aspect: the larger the money market of the national currency circulation, the more aggressive monetary expansion boosts the recovery of the national economy. The highest degree of monetary expansion, the money supply overrun the output, is observed in the United States (see Fig. 2).

The correlation between money supply and output is evolved to develop an original solution that determines a contributing factor to global financial crises. Money supply (M3) growth contrasts with output (GDP) growth. The output is represented by the average GDP aggregated for the US, Eurozone, Japan, South Korea, and South Africa and serves as a corresponding variable for the global economy. That is, the selected economies are chosen as major drivers of the world economy dynamics among the eight ones shown in Fig. 2. Mexico and Ukraine are omitted due to their relatively minor impact as opposed to the selected ones. The UK is also excluded because it repeats the Euro Area dynamics right up to the Brexit story. The economies actively participated in M3 growth prove to be potential contributors to the generation of the excess money supply. They are the Euro Area and South Korea, the members of the above-mentioned second group.

The dynamics of M3 and GDP are located on one graph to compare them and easily establish critical points. GDP fluctuation is examined by pending the considerable crisis periods of 1997-1998, 2007-2008, and 2019-2020. It is not merely an occasion that the money supply growth has rated over 8% before the first two global financial crises. As to the third crisis event associated with the Covid-19 pandemic, the monetary expansion arises after the first evidence of the severe downturn. The prolonged liquidity-enhancing measures arranging to mitigate pandemic fallouts have been an aggravator of several economic misbalances. As accurately noted by Reinhart (2021: p. 7), it is a typical incident that “different types of crises ... have often traveled together.” The researcher suggests unique terminology of the event, called it

‘conglomerate crisis.’ In the case of Covid-19 pandemic, the critical level the money supply growth is passed before the world economy has moved to the bottom of the recession. So, the critical level is validated, and the excess money supply proves to be a potential contributing factor to financial crises (Fig. 3).

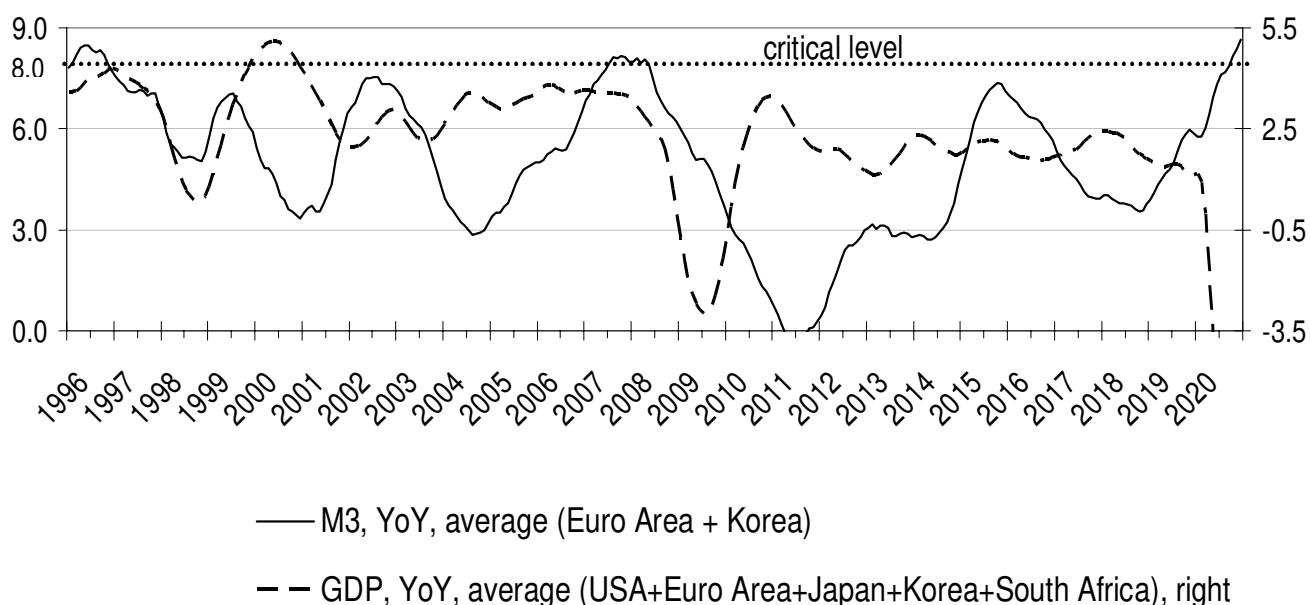


Figure 3. Testing a critical level of money supply growth

Source: OECD data available at <https://data.oecd.org/> and the author’s calculation results.

4. Discussion

It is important to center on the creation of the excess money supply and its contribution to global financial crises. Monetary expansion, carried out in quantitative easing, produces different results if an economy is in recession or lives in normal times. In case of recession, the cost of placing excessive reserves becomes minimal, and commercial banks actively participate in creating extra lending resources held by the central bank. As a result, the effect of a conventional multiplier is mitigated, as well as inflation pressure. On the other hand, the situation changes in normal times when the extra liquidity provided by the monetary authority forces commercial banks to avoid allocating excessive reserves due to their relatively high placement costs. This time, the multiplier effect is in full action, and the interest rate takes over its regulatory function.

The degree to which the monetary authorities are offering additional liquidity and the activity of commercial banks to meet money demand volatility could trigger a

financial crisis in normal times. The demand for credit in the economy determines the amount of money supply created by commercial banks and, in the end, the monetary base. In trying to control the interest rate, the central bank is always prepared to produce extra liquidity resources for commercial banks to guarantee the equilibrium between demand and supply.

The rise in money supply is a final step in going to the equilibrium of the money market. At first, prices change as demand rises, and the money supply tries to follow the shock to meet demand and reduce inflationary pressures afterward. Since, in the short run, the prices are not flexible, the response of prices to money demand volatility is limited from the short perspective. Thus, the communication between the demand and supply of money translated through price adjustment is distorted.

Commercial banks first try to generate credit money and only later verify their reserve position. Therefore, the overall result of money supply accommodation in the economy may be unpredictable if monetary authority and commercial banks do not pool their interests (that is often the case), and the money demand volatility becomes extremely high. That is a likely reason for creating excess money supply, which could be a contributing factor to global financial crises.

The demand for money proves to be time-varying and plays a great part in promoting destabilization in the money market. There are many reasons the demand for money may change considerably in the short run. The fundamental orthodox view posits three main motives: asset, speculative, and portfolio. The given motives can easily be associated with technological innovations, financial deregulation, household's real balance effects, sharp fluctuations in the foreign exchange market, disappointing expectations, speculation actions, force-major conditions, fiscal expansion measures, etc.

Fiscal-monetary operations and their coordination is a special case that impinges on fluctuation in the money market. Central bank autonomy is a questionable item if taking into account fiscal needs. The critical point is the coordination between the fiscal and monetary policy that is difficult to consider if a financial crisis is knocking on the door. The "monetary side of fiscal operations" discussed by Tymoigne (2016) poses

more questions than answers regarding the MMT and accommodationist approach. Regardless of intertemporal budget constraint, fiscal direct and indirect operations can challenge the monetary authority's strategic objectives to adjust interest rates and product prices. The reality of the Covid-19 pandemic has demonstrated how far the Government may go in its ability to suppress negative consequences of the crisis by employing aggressive monetary expansion and flooding the economy with surplus liquidity resources (Resende et al., 2021).

The decisive spot has much to do with central bank independence and fiscal discipline, which may be challenging to abide by regarding the complex interaction between monetary and fiscal policy. In aspiration of finding a working solution for the given joint fiscal-monetary issue, with a backend of influential followers Adair Turner, Willem Buiter, and Jordi Gali, Ben Bernanke has introduced a new policy Money-Financed Fiscal Program (MFFP). The intention is to invent a monetary channel to support fiscal expansion without increasing the debt burden and contributing to future tax pressure. The given policy regime is supposed to use only in a special crisis event, providing delimitation of fiscal and monetary measures. Kroll (2018) has gone further and suggests a similar policy to implement the UN Sustainable Development Goals using new 'monetary finance' tools like zero-coupon perpetual bonds and economic circle balancing bonds.

All suggested instruments of the MFFP policy contribute to money supply growth that does not prevent from creating an excessive quantity of money if fiscal relish for free cash balances is only limited exogenously. The good intention to take the public debt factor out, to reduce inflationary pressures and to mitigate the crowding-out effect theoretically does not reject the fact that at the end of the MFFP policy implementation, the money supply can overrun the money demand, and the excess liquid assets may be a contributor to a global financial crisis. Regardless of who may be tempted to violate the MFFP policy, monetary or fiscal authorities, there is always the risk of breaking down the prescribed rule and getting into trouble, which will be difficult to resolve quickly later.

5. Conclusion

The paper has made a try to investigate the endogenous occurrence of excess money supply creation and its potential contributor to global financial crises. The creation of excess money supply is examined from the standpoint of QTM (verticalist view) and endogenous money perspective. Due to the higher responsiveness of the money market than goods, it is impossible to adhere to QTM constantly. There are three contemporarily theoretical strands of endogenous money evolution: horizontalism, structuralism, and MMT. While horizontalism and structuralism differ in delegating power to accommodate the money supply between monetary authority and commercial banks, the MMT is a triangular involvement of the budget, private, and monetary sectors to do an important but inconsistent job in creating money.

Extreme volatility in the money market hinders the short-run ready balance between the real value of money supply and output, given that prices are not flexible in the short-term term. The overall result of money supply accommodation may be unpredictable if monetary authority and commercial banks do not pool their interests (that is often the case), and the money demand volatility becomes very high. Empirical research on the correlation between money supply and output has identified countries that are neutral about the creation of extra liquid assets and countries that can be a potential trigger for excessive money supply volatility. Furthermore, the larger the money market of the national currency circulation, the more aggressive monetary expansion boosts the recovery of the national economy.

It is proved by monitoring the dynamics of M3 and GDP, the money supply growth has rated over 8% before the considerable crisis periods of 1997-1998, 2007-2008, and 2019-2020. Therefore, the critical level of 8% validates the potential contribution of the excess money supply to global financial crises. The freshly introduced MFFP policy to vindicate fiscal expansion without increasing the debt burden and contributing to future tax pressure adds to money supply growth that does not prevent from creating an excess money supply if fiscal relish for free cash balances is only limited exogenously.