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AUTHORS

Serhii Shvets 



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Serhii Shvets, Ph.D. Candidate,
Associate Professor, Institute for
Economics and Forecasting, National
Academy of Sciences of Ukraine,
Department of Modeling and
Forecasting of Economic Development,
Ukraine.

Serhii Shvets (Ukraine)

HOW EXCESSIVE ENDOGENOUS MONEY SUPPLY CAN CONTRIBUTE TO GLOBAL FINANCIAL CRISES

Abstract

Financial crises have become a challenge for sustainable growth, given the frequency and intensity of crisis shocks and their destructive consequences in recent decades. The paper aims to study how the endogenously generated excess money supply can contribute to global financial crises. The creation of money supply is examined from the perspective of the Quantity Theory of Money (QTM) and endogenous money, namely Horizontalism, Structuralism, and Modern Money Theory. Given that prices are not flexible in the short term, increased volatility in the money market prevents a short-term ready balance between money supply and output. The overall result of money supply accommodation can be unpredictable if monetary authorities and commercial banks do not pool their interests, and the money demand volatility becomes extremely high. The study of the correlation between money supply and output allowed distinguishing between neutral countries in the creation of extra liquid assets and countries that can be a potential trigger for excessive money supply volatility. Monitoring the dynamics of M3 and GDP showed that before the significant crisis periods of 1997–1998, 2007–2008, and 2019–2020, the growth of money supply was more than 8%. The established critical level confirms the potential contribution of endogenously created excess money supply to global financial crises.

Keywords

quantity theory of money, endogenous money, financial crisis, monetary policy, quantitative easing

JEL Classification

B26, E41, E51, E52

INTRODUCTION

The frequency and intensity of financial crises in recent decades have become a challenge for sustainable growth. The academic community is trying to find the way out by offering practical solutions. However, more and more problems remain, because each crisis has different occasions induced by internal and external factors, which differ in their economic consequences. 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 features that are key elements of sustainable growth. One of these identities is the 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 concept, the endogenous concept reveals debated questions about the origin of demand for money, its relationship with money supply, and the ability to generate an excessive quantity of money.

The development of the endogenous money approach follows two main theoretical directions: horizontalism and structuralism. Concerning the differences between the two, the monetary authority can be a sole agent or share its power with the banking system in accommodating



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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. Commercial banks, in an attempt to be more responsive, 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 through price adjustments. 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. By switching to an indirect interest rate instrument, central banks have lost the power to adjust the money supply directly, since it is impossible to simultaneously manipulate the monetary aggregate and the 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, very often the real value of output and money supply is not balanced with the dominance of the latter. Protracted dominance can turn into the excess money supply, mainly due to the unsettled demand for money. This paper aims to study whether the endogenously created excess money supply can contribute to global financial crises.

1. 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

$$M_s V_T = P_T T. \quad (1)$$

The money in circulation, M_s , the transaction 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 for 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 . Assuming that the money market is in equilibrium, $M_D = M_s$, the last equation may be easily transformed to Fisher's expression. The Cambridge approach is more favorable in that it focuses on the demand for real

money balances, which thus influences Keynesian and Monetarist theories.

The QTM theory is a constituent element of the monetarist approach, which is associated with the so-called verticalist view of money 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. Market equilibrium is the key element of QTM. There are two markets in the QTM: money and goods. These markets differ in the amount of time it takes to reach equilibrium. The money market is more responsive than the goods market due to the production factor. This disparity makes it impossible to constantly adhere to QTM (Salter, 2014).

The money market is governed by the monetary authority, which chooses direct and indirect instruments. The direct instrument used to be a monetary aggregate, chronologically from the monetary base to broad money, is 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).

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 a 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. A salient paper by Poole (1970) verifies the mentioned case and concludes that 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 market.

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).

The 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 horizontalist 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 additional instruments. Following the accommodation plan, the central bank chooses the optimum set of instruments, but retains the commercial banks' duty to create money 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 important but inconsistent work of 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 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, pp. 341-342).

There is a demand for money that changes over time. As correctly stated by 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 authorities do 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.

Well-known monetary instruments used by central banks do not guarantee equitable accommodation of money supply. 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 influence credit-deposit operations, but the autonomy of commercial banks in deciding to increase the quantity of money is a convincing argument that 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 this study.

It is challenging to investigate the relationship between endogenous money supply and financial crises, which depends on the factors of money market adaptation. 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.

The movement towards equilibrium in the money market has two different spillovers depending on the direction of movement. If the demand aggressively stimulates the growth of money supply, monetary aggregates actively grow in advance, which is an anticipated step if the process continues for some time. The opposed situation is different when the demand for money shrinks and the money supply does not catch up with in response. Weak backward reaction links to a shortage of effective monetary instruments, which accordingly lead to the collapse of the money supply. 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 credit-deposit operations (an adverse multiplier factor).

The presented short-run scenario of the money market dynamics draws attention to the risk that the money supply will dominate over the output for some time. Variables are measured in real terms, since 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, Yr , 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 mon-

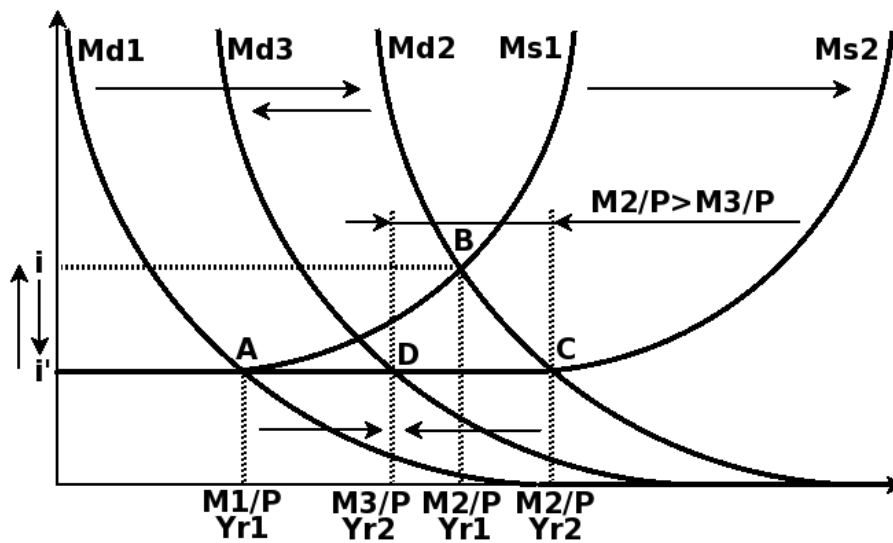


Figure 1. Demand, supply, and equilibrium in the money market

ey, 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 money supply Yr2, 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 Yr2 is in no hurry to follow the money demand $M3/P$, and the new position D will be a starting point for the further movement of demand-supply volatility (Figure 1).

Due to the above reduction in 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 a solid job of examining financial crises of 1850–2010. The interest rate factor has been at the center of the study and turns out to be a significant point if the origin of money is endogenous. Empirical testing has confirmed that the interest rate can contribute to financial

crises when validating the endogenous money environment in several developed economies.

Follow 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 case when two events are interconnected is very likely. Zhang et al. (2018) pay 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 demand for money is an important factor 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.

2. RESULTS

There have been four 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 a 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 to empirically evaluate the equation of exchange using 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 excess money phenomenon, the monthly observable correlation between money supply and output in real terms for a range of different countries, such as the USA, the UK, the Euro Area (28 EU members), Japan, South Korea, South Africa, Mexico, and Ukraine (available period for Ukraine’s 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. The records of money velocity 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 (Figure 2).

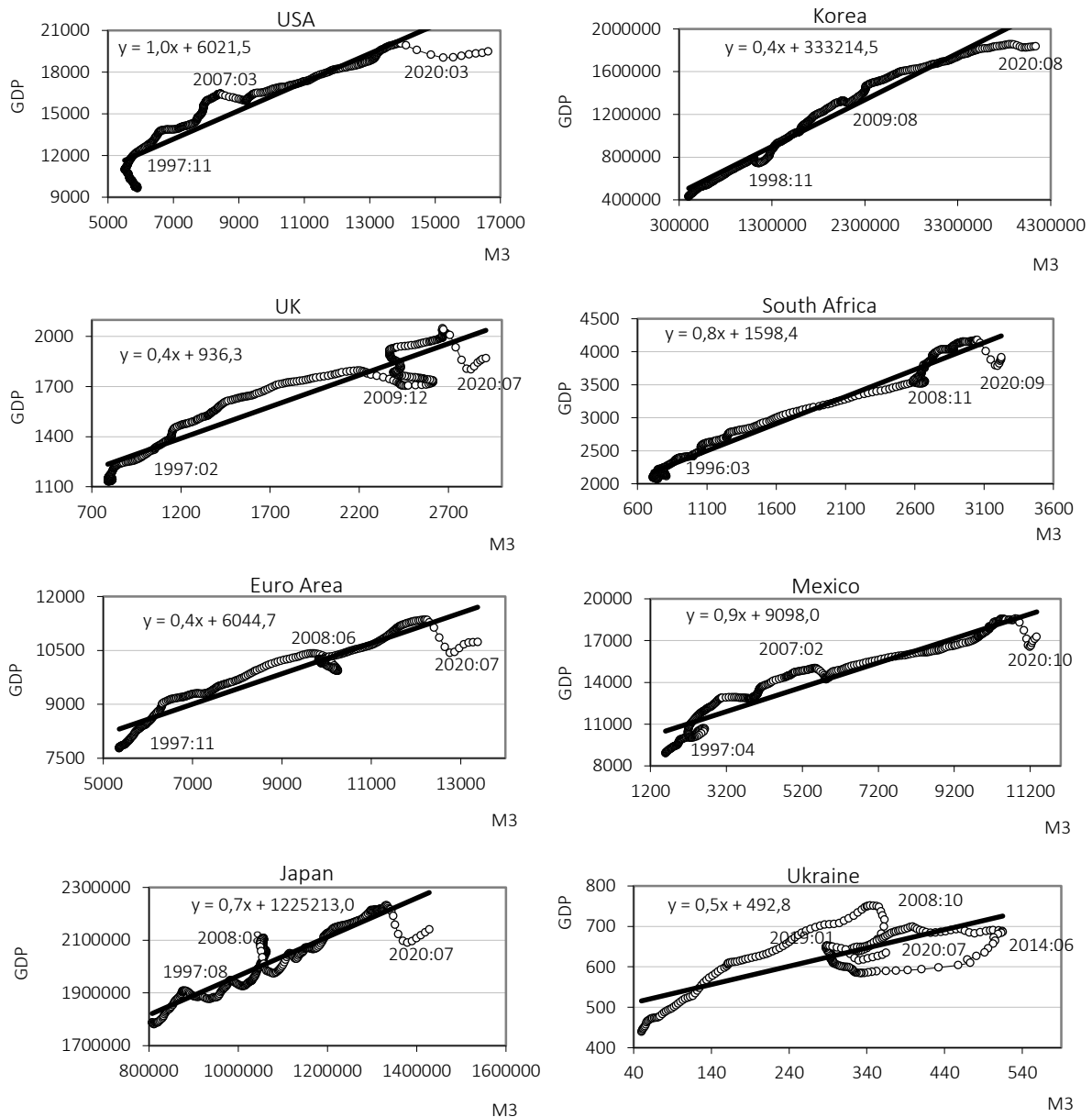
All critical deviations are associated with global financial crises in 1997–1998, 2007–2008, and 2019–2020. The velocity and deviations from linear trend, in which the monetary aggregate follows the output path, are different among the selected

countries. Japan has shown the highest instability in the relationship between money supply and output. The USA, Mexico, and Ukraine have demonstrated the most irregular volatility. Ukraine, as well as the Euro Area and the UK show 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 one or two years (see Figure 2).

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 the money market dominates over the goods market. 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. This group includes the USA, Japan, South Africa, and Mexico. Interestingly, the group includes both 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 quite a long time in the chosen period of 1990–2020, this developed economy does not belong to 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

Source: OECD (n.d.).



Note: Seasonally adjusted data in billions of national currency, 2015 = 100.

Figure 2. Correlation between money supply and output in real terms for several countries

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 mon-

etary 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, when the money supply overruns the output, is observed in the United States (see Figure 2).

The correlation between money supply and output is used to develop an original solution that determines the factor contributing 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, Euro Area, Japan, South Korea, and South Africa and serves as a corresponding variable for the global economy. That is, the selected economies are chosen as the major drivers of the world economy dynamics among the eight shown in Figure 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 generating 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 the same graph in order to compare them and easily establish critical points. GDP fluctuations are 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 finan-

cial 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 the COVID-19 pandemic, the critical level of the money supply growth is passed before the world economy has moved to the bottom of the recession. So, the critical level is confirmed, and the excess money supply proves to be a potential factor contributing to financial crises (Figure 3).

3. DISCUSSION

It is important to focus on the creation of excess money supply and its contribution to the 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

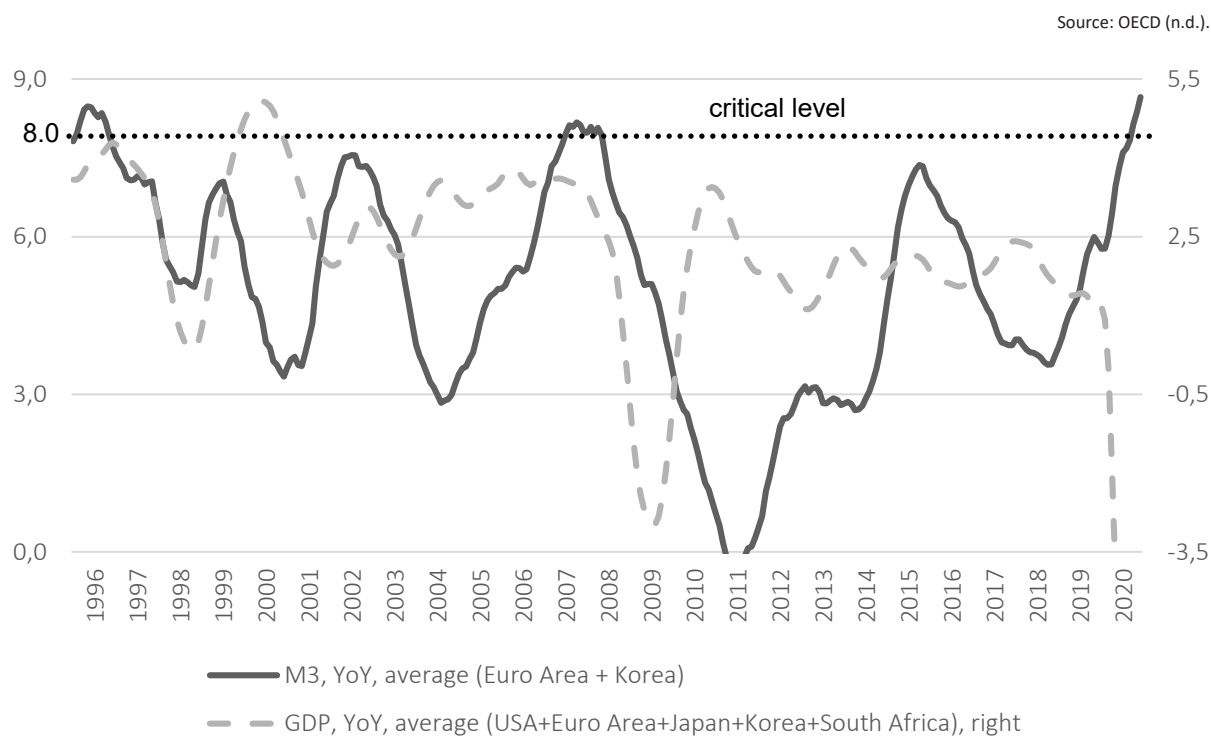


Figure 3. Testing the critical level of money supply growth

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 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, ultimately, 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 authorities 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 the factor contributing 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. This is a typical case where the demand for money can change considerably in the short run for many reasons. The fundamental orthodox view posits three main motives: asset, specula-

tive, 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 given fiscal needs. The critical point is the coordination between the fiscal and monetary policy, which is difficult to consider when the 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 shown 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 the central bank independence and fiscal discipline, which may be challenging to abide by regarding the complex interaction between monetary and fiscal policy. In an effort to find a working solution to this joint fiscal-monetary issue, with the support 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 suggested 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 proposed MFFP policy instruments contribute to the money supply growth, which does not prevent the creation of an excessive quantity of money if fis-

cal interest in free cash balances is limited only exogenously. Eliminating the public debt factor, reducing inflationary pressure and mitigating the crowding-out effect do not theoretically reject the possibility that the money supply can overrun the money demand due to established measures of MFFP policy, and the excess liquid assets may contribute to the 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.

CONCLUSION

The paper attempts to investigate the endogenously created excess money supply and its potential contribution to global financial crises. The creation of excess money supply is viewed from the perspective of QTM (verticalist view) and endogenous money. Due to the higher responsiveness of the money market than the goods market, it is impossible to consistently adhere to QTM. There are three modern 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 authorities and commercial banks, the MMT represents a triangular involvement of the budget, private, and monetary sectors to do the important but inconsistent job of 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. The overall result of money supply accommodation may be unpredictable if monetary authorities 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.

This is verified by monitoring the dynamics of M3 and GDP, the growth of the money supply before the considerable crisis periods of 1997–1998, 2007–2008, and 2019–2020 was more than 8%. Therefore, the critical level of 8% confirms the potential contribution of the excess money supply to global financial crises. The recently introduced MFFP policy, which aims to vindicate fiscal expansion without increasing the debt burden and contributing to future tax pressure, does not prevent the creation of excess money supply if the fiscal attractiveness for free cash balances is limited only exogenously.

AUTHOR CONTRIBUTIONS

Conceptualization: Serhii Shvets.

Data curation: Serhii Shvets.

Formal analysis: Serhii Shvets.

Funding acquisition: Serhii Shvets.

Investigation: Serhii Shvets.

Methodology: Serhii Shvets.

Project administration: Serhii Shvets.

Resources: Serhii Shvets.

Software: Serhii Shvets.

Supervision: Serhii Shvets.

Validation: Serhii Shvets.

Visualization: Serhii Shvets.

Writing – original draft: Serhii Shvets.

Writing – reviewing & editing: Serhii Shvets.

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