

Communication

On the Inflation-Debt-Bubble “Vicious Cycle” in Times of Evolving Money—A Memorandum of Forward-Looking Lessons

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Abstract: The global financial crisis (2008–2009) represents a notable example of a generally unpredicted crisis in economic history. Nevertheless, it presented features comparable to almost any previous (monetarily related) crisis episode. For instance, it was characterized by a “vicious cycle” made by over-issued money and/or over-granted loans nourishing private and public indebtedness and—eventually—affecting asset prices with stable consumer price indexes. While the post-COVID-19 inflation presents different characteristics because of being a crisis “exogenous” to the economic system, the present Communication claims that future crises (if endogenous to the economic system) are likely to follow usual patterns. The approach used to analyse the transmission channels contributing to economic and financial crises is theoretical. Nevertheless, the present Communication still contains statistical evidence in support of the predictability of such crises as soon as their usual dynamics is understood. The statistical analysis carried out is rather descriptive than causal in nature. Finally, this Communication reminds that “typical” economic and financial crises in advanced economies behave along some consolidated patterns. At their origins, there are mostly over-issued money and/or over-granted loans by central and/or commercial banks financing private and public debt. This phenomenon exacerbates risks in the economy and—while it incentivises money issuers and credit granters in good times to over-issue money and over-grant credits to earn extra-profits—it over-exposes economic agents to the risk of (even greater) economic losses in negative times. As soon as the bubble to be defined as over-proportionally grown prices of specific assets due to over-issued money and over-granted credits pops and funds are rapidly divested, prices collapse and drive the economy into a severe crisis.

Keywords: bubbles; cash payment limitations; debt; economic and financial crises; post-COVID-19 inflation



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1. Introduction

Decision-making processes of policymakers like international economic organizations and—especially—central banks were always complex. Nevertheless, the global financial crisis (2008–2009) proved that most economists did not see the turmoil coming (Rivas and Perez-Quiros 2015), and even if someone did, its multifaceted, pandemic-like effects surprised anyone. The only, apparently simplistic, question of late Queen Elizabeth II in November 2008—“Why did nobody notice it?” as reported in Chorafas (2013)—might have been formally answered on a visit to the Bank of England (2012) four years later, but the understanding of the *fundamental principles* to prevent analogous crises is still insufficient. If it were not, post-COVID-19 inflation would have not once again surprised most policymakers worldwide despite have been predicted by some isolated early contributions (Beretta 2021, 2023). Precisely this “surprise effect” resembles the astonishment of mainstream (i.e., orthodox) academia and institutions with regard to the Great Recession as exemplified by Blanchard’s (2008) statement just six weeks before the collapse of Lehman Brothers according to whom “[t]he state of macro is good”. There is no doubt, however, that some issues related to the US economy were well-documented in contributions like those of Barba and Pivetti (2009, 2012), who highlighted the household debt problem in the US as

even larger than its public indebtedness and the growing process of substitution of loans for wages.

While it is true that the post-COVID-19 inflation was due to different reasons—among others, “recovery demand” of consumers worldwide whose consumption expenditures were restrained during lockdowns, supply shortages due to bottlenecks in the global supply chain, the search for profits by companies after suffering economic losses because of the pandemic etc. (Beretta 2021)—it should not be forgotten that post-pandemic inflation rather represents an exception compared to more common inflationary episodes, which eventually led to the “typical” typology of economic and financial crisis. While central banks are struggling to cope with inflationary pressures because of representing an effect of non-economic causes like the COVID-19 pandemic, it should not be forgotten that inflation in advanced countries mostly:

1. Affects asset prices;
2. Derives from over-issued money and/or over-granted loans;
3. Leads to ballooning prices of real estate as well as specific financial instruments;
4. Fuels over-exposure to private and public indebtedness.

The result are bubbles suddenly “popping” with crumbling prices and unexpected economic losses as a consequence. The present Communication is, therefore, a memorandum of the mechanisms nourishing precisely such a “vicious cycle” (Figure 1) and an exhortation to remember that the next economic crisis (if endogenous to the system) might present similar dynamics.

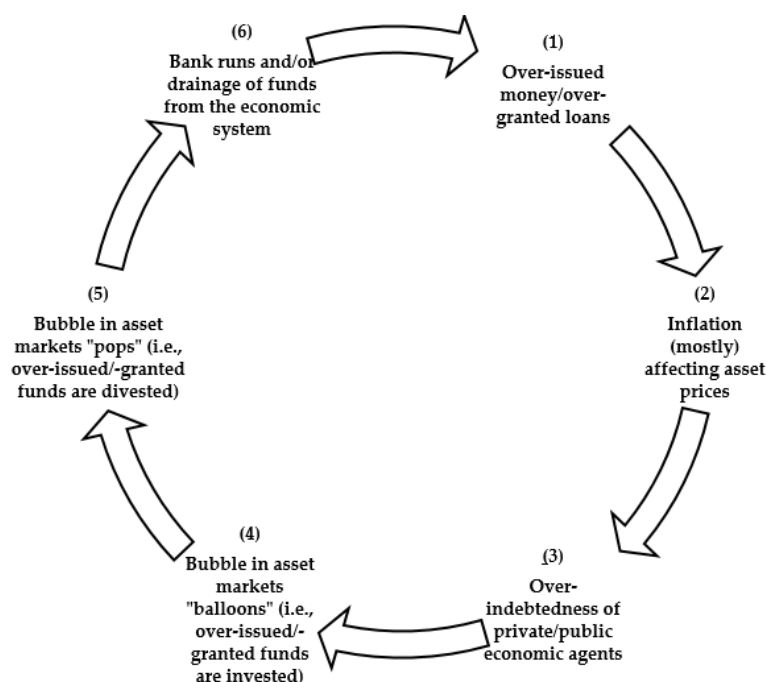


Figure 1. The inflation-debt-bubble “vicious cycle” leading to (most) economic and financial crises (own elaboration).

2. Objectives

We argue that no *regulatory measure* as summed up by the [Financial Stability Board \(2022\)](#)—among others, building resilient financial institutions, ending too-big-to-fail, introducing effective resolution regimes, policies and supervision, making derivatives markets safer, and enhancing the resilience of non-bank financial intermediation—is truly effective unless there will be a sound *theoretical framework* identifying the *structural* sources of almost any economic and financial crisis. For instance, monetary aggregates like M1 (“narrow money”) and M2 or M3 (“broad money”) over-proportionally increasing with respect to

real—present or future—wealth such as GDP historically paved the way for bubbles, which are “are typically associated with dramatic asset price increases followed by a collapse. Bubbles arise if the price exceeds the asset’s fundamental value” (Brunnermeier 2008). Our claim is also in line with the most recent economic literature according to which “the recent economic recovery and the excessive supply of M2 from fiscal and monetary policies have increased the core inflation rate beyond a transitory phase” (Gharehgozli and Lee 2022), but it also reflects some historical contributions by economists like Friedman (1968) or Brunnermeier and Sannikov (2016).

Certainly, wealth cannot be created with the stroke of a pen nor can central and commercial banks simply generate “assets” to discharge real-term obligations *ad libitum* (Helliwell 1973). Despite there still being no univocal consensus on how to define “money” (Dick 2021; Fand 1970), banking systems record it as a liability precisely because of representing nothing more than a spontaneous, not redeemable “acknowledgement of debt” (Cencini 2016). If fiat money has to be “backed” by real values—hence, present or future GDP—to acquire a positive purchasing power for the macroeconomy in its entirety (and not only for the microeconomic agents having the right to create it), over-issuing it systematically does not represent a convincing solution. In this specific regard, the monetary aggregate M2¹ in the US corresponding to 72.5% with respect to GDP rose by USD 5426.9 bn (+34.8%) from the first COVID-19 case in Q1/2020 to Q1/2023 reaching 79.5% with respect to GDP (Federal Reserve Economic Data 2023d). In the Euro area, M1 increased “only” by 22.1% and stood in 2021 at 74.3% with respect to GDP (European Central Bank 2023b), but before, at the end of 2020 (Bé Duc et al. 2022), the money supply even more than doubled. With specific regard to the monetary aggregate M3 including “currency, deposits with an agreed maturity of up to two years, deposits redeemable at notice of up to three months and repurchase agreements, money market fund shares/units and debt securities up to two years” (Organization for Economic Co-operation and Development 2023a), it grew in OECD countries on average from an index number of 130.7 in Q1/2020 to 171.0 in Q4/2022 (2015 = 100).

In the recent past, excessive money issues in advanced economies mostly pursued highly remunerative investments resulting in “asset inflation with stable consumer prices” (Utsumi 2006) occurring in countries like Iceland (e.g., Icelandic financial crisis in 2008), Ireland (e.g., post-2008 Irish banking crisis), or Spain (e.g., Spanish property bubble in 2008), as Table 1 with its shadowed cells highlighting the over-proportional increase of specific assets shows. The reason for such economic phenomenon is simple: unlike in developing countries, only a small share of income was (and is) usually spent on necessity goods. As a result, asset-price inflation remained unnoticed or was disregarded by monetary policy indicators (Belke et al. 2010). As mentioned in the Introduction, this was not the case for the post-COVID-19 inflation since especially consumption goods (previously stable in terms of price increases) grew by 8.3% at the global level (The World Bank 2023b). This outcome is not surprising insofar as those goods and services for which demand and, partially, supply were restricted during the pandemic were precisely consumption goods like for instance vacation and travel opportunities, food outside the home, recreation expenditures, etc. Especially in advanced countries, post-COVID-19 inflation took place in the consumption goods market which was previously less affected by inflationary pressures. For instance, OECD countries recorded an increase of the consumer price index (CPI) by 9.6% in 2022, but food and energy prices grew even more significantly and respectively by 13.2% and 30.0% (Organization for Economic Co-operation and Development 2023c). While the US was particularly often plagued by economic and financial crises, it should be kept in mind that country groups like the Euro area are still particularly at risk because of their “superfix” currency regime. In fact, in a monetary union its stability relies on the heaviness of (a)symmetric economic crises and on the ability of member countries to cope with them.

Table 1. The bubble in the financial and housing market (with stable consumer prices) nourished by domestic credit: evidence from selected European countries (see shadowed cells).

		Domestic Credit to Private Sector by Banks	Share Prices	Housing Prices	Inflation (CPI)	Crisis Episode ¹
		% GDP		2015 = 100		
Iceland	1998	88.5	88.5	-	42.8	The Icelandic financial crisis in 2008 led to the default of three major commercial banks. More precisely, “[t]he root cause was the banks’ excessive balance sheet growth, to an aggregate size of 10 times Iceland’s GDP, and an outsized share of both foreign assets and liabilities” (Baudino et al. 2020).
	2000	135.1	135.1	-	46.4	
	2004	249.8	249.8	-	54.7	
	2006	482.9	482.9	-	60.7	
	2007	616.5	616.5	-	63.8	
	2008	309.1	309.1	-	71.9	
	2010	49.4	49.4	-	84.9	
Ireland	2002	75.3	75.3	95.6	82.1	The post-2008 Irish banking crisis can be explained by analyzing “the size of the banking sector [which] grew significantly and became increasingly reliant on property-related lending in Ireland” (Baudino et al. 2020).
	2004	87.8	87.8	121.3	86.8	
	2006	128.5	128.5	151.4	92.4	
	2007	140.5	140.5	162.7	97.0	
	2008	79.1	79.1	151.4	100.9	
	2010	47.2	47.2	106	95.5	
Spain	2002	67.3	67.3	95.6	76.1	The Spanish property bubble (2008) confirms the nexus with the disproportionate domestic credit provided by the banking and financial sector, since “lending standards are softer in the boom than in the bust. [...] too soft lending standards and excessive risk-taking in the boom” (Akin et al. 2014).
	2004	79.6	79.6	127.0	80.8	
	2006	122.6	122.6	154.6	86.5	
	2007	151.0	151.0	164.2	88.9	
	2008	118.2	118.2	156.3	92.5	
	2010	99.7	99.7	142.0	93.9	

¹ Own elaboration based on [Organization for Economic Co-operation and Development \(2023b, 2023c, 2023d\)](#).

Clearly, the present Communication has to adopt some simplifications from a logical-analytical perspective to “isolate” the most relevant elements. For instance, the idea of demand as a potential source of inflation has been influential and still is. Nevertheless, over more than forty years of debate on inflation in the economic literature, it also faced numerous theoretical and empirical critiques, partially incorporated into some New Keynesian models of the labor market and the Phillips curve, and inflation. This body of research partly challenges “Friedmanian positions” and recent studies by [Vernengo and Perez Caldentey \(2023\)](#) claim that “[t]he main culprit for the inflationary acceleration in the U.S. and most advanced economies is related to the supply side snags, and the shock to energy and food prices resulting from the pandemic and the war in the Ukraine”. Undoubtedly, post-COVID-19 inflationary pressure is also due to supply-side factors depending on massive geopolitical instability after the Russian invasion of Ukraine ([Arce et al. 2023](#); [Caldara et al. 2022](#)) and/or bottlenecks originating from COVID-19-related lockdowns ([Gordon and Clark 2023](#); [Liu and Nguyen 2023](#)). At the same time, there is also no doubt that “forced” savings accumulated in 2020 and spent in 2021–2023 (Figure 2) fueled the demand-side price increase.

As Figure 2 poignantly shows, the US personal saving rate jumped to unprecedented levels of more than 30% at the beginning of the COVID-19 pandemic (April 2020), stayed high for several months and went back to levels of more than 25% in March 2021 before declining steeply (i.e., being spent by individuals after months of restrictions). At the same time, the unemployment rate at the global level decreased to 5.8% (2022) from the recent peak of 6.9% in 2020 ([The World Bank 2023c](#)), meaning that the world economy is still recovering from the economic recession in 2020 induced by the pandemic. The decreasing unemployment rate is also likely to have contributed to rising inflation, as the economic literature traditionally associated the first with the second one ([Eisner 1980](#)) but more recently challenged these findings at least for the 2010s characterized by decreasing unemployment and over-proportionally shrinking inflation rates ([Barros 2022](#)). This said, the post-COVID-19 inflationary episode is far from having been exhaustively comprehended and, moreover, it is particularly complex because of consisting of several demand- and supply-related but also monetary components.

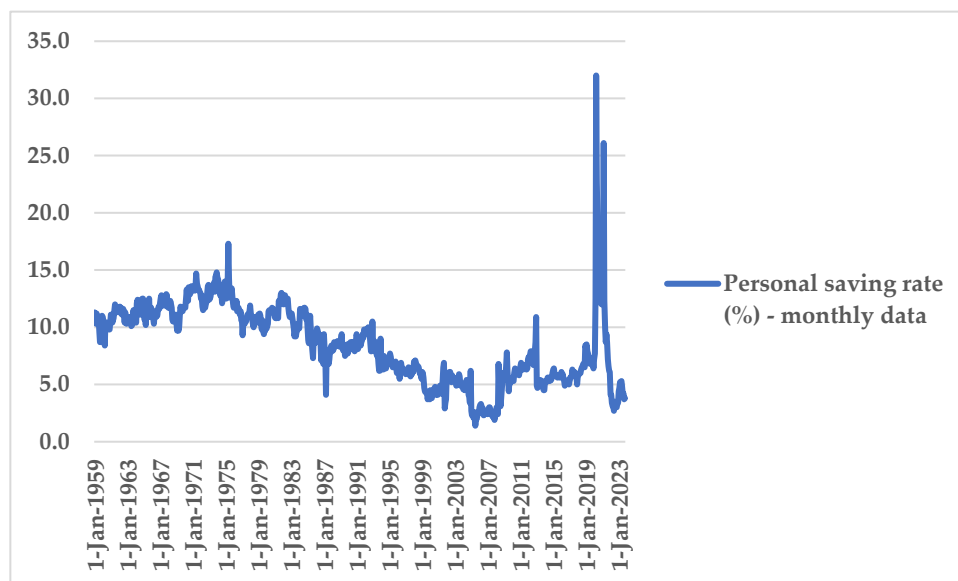


Figure 2. Personal savings (as a percentage of disposable personal income) from January 2019 to October 2023 (monthly data) in the United States measured by the [Federal Reserve Bank of St. Louis \(2023\)](#).

In the present Communication we, hence, explore some of the main mechanisms at the basis of several inflationary episodes due to economic–financial and not to pandemic- or geopolitics-related factors, which are respectively endogenous and exogenous to the economic system. This is relevant insofar as:

1. Pandemics and their economic effects are still less frequent than “typical” economic and financial crises despite “[i]t seems that the occurrence of pandemics getting more frequent over time” ([Poorolajal 2021](#));
2. The volumes of over-issued money/over-granted credits might depend on the economic conjuncture, but there is still sufficient empirical evidence that especially commercial banks do not engage in controls to check “either before or during the granting of the loan [...], whether we keep sufficient funds with our central bank [...]. Therefore, we did not engage in any checks or transactions in order to provide liquidity” ([Werner 2014](#)). Moreover, as reminded by the [Deutsche Bundesbank \(2017\)](#), “banks can create book money just by making an accounting entry: [...] this refutes a popular misconception that [...] that banks can only grant credit using funds placed with them previously as deposits by other customers. By the same token, excess central bank reserves are not a necessary precondition for a bank to grant credit (and thus create money)”. Otherwise stated, the theoretical framework defining what over-issued money/over-granted credits are is still too vague and behavior-dependent rather than structured. Nowadays and especially since the introduction of the monetary policy of “inflation targeting” (which focuses on the inflation target) substituting that of “monetary targeting” (which focuses on the money growth rate), the newer definition of “inflation” lost some of its key elements which are in turn necessary to understand its sources. As we will further highlight in the next section, the [Federal Reserve Board \(1919\)](#) early defined “inflation” as “the process of making an addition to currencies not based on a commensurate increase in the production of goods”. Hence, the “older” definition abstracts from consequent price increases of consumer goods and/or assets, which are nevertheless bound to occur whenever there is excessive liquidity to be spent and/or saved. If the percentage change ($\% \Delta$) of the pool of goods/services originating from GDP (Y) is limited while that of available means of payments defined as (over-issued) money (M) and (over-granted) credits (L) is not as described above, the following condition is likely to be verified:

$$\% \Delta(M + L) > \% \Delta Y \quad (1)$$

3. Under these conditions, private and/or public economic agents taken as a whole would be, for instance, able to spend a sub-proportional amount to potentially buy up the entire pool of available goods/services and even save a part of the remaining means of payments in circulation. Prices *necessarily* have to catch up to avoid underselling the goods/services produced.

As the Communication duly points out in the next sections, we are operating some simplifications and focusing solely on the monetary sources of inflation. In any case, considering M and L as relevant causes of price increases is largely confirmed by the existing economic literature. In this specific regard, “[c]redit creation is linearly related to inflation. While credit expansion tends to raise inflation, this pattern seems to have weakened or even turned negative since the crisis. [. . .] In contrast, the positive link of M2 growth with inflation has strengthened since the crisis” (Baumann et al. 2021). The analysis of M and L —respectively, over-issuing money and over-granting credits because of being at the origin of further economic effects potentially leading to a “vicious cycle”—is also consistent with Friedman’s (1958) definition of “stock of money” to analyze the relationship with inflation which includes “a wide range of assets possessing to a greater or lesser degree the qualities of general acceptability”. Among the statistical figures we will provide in the next sections, there is therefore both the evolution of monetary aggregates as well as the amount of domestic credit granted by the banking sector to private economic subjects.

3. Methods and Results

In such a changing (and challenging) landscape, what remains unaltered is the essence of “inflation” semantically going back to Latin “inflare” (“to blow into/up”) (Bernholz 2003). What “balloons” is, emblematically enough, not simply the general price level but the quantity of means of payments over which real wealth is “diluted”. Although the causality between monetary aggregates and inflation weakened over the last decade (De Grauwe and Polan 2005; Mankiw and Reis 2018), it also depends on how the latter is measured. For instance, consumer price indexes do not distinguish an “increase in the cost of living” due to *spontaneous decisions* of economic agents to boost profits or to finance new investments from monetary-related “inflation”, which in turn *forces* them to raise prices because of generally increasing costs despite technology’s cost-cutting features (Cencini 2005). Following Friedman’s (1970) famous statement, “inflation is always and everywhere a monetary phenomenon”, this principle is not altered by factors like the monetary strategy (e.g., monetary-, inflation-, or price-targeting (Hatcher and Minford 2014)). Moreover, Goodhart (2001) early noted that “some asset prices, notably housing, are closely associated with the main trends in inflation, and via “bubbles and busts” with output disturbances”. Since the primary objective of institutions like the European Central Bank (2023a) consists in keeping price stability at 2% over the medium term, correctly measuring price increases across economic sectors becomes a strategic task.

The present Communication adopts, therefore, a theoretical approach to analyse the dynamics behind barely any economic and financial crisis that occurred in the past and potentially taking place in the future. Additionally, this Communication makes use of statistical data whose purpose for the sake of space is not necessarily to show a causal relation but rather to display that financial bubbles were often before everybody’s eyes well in advance.

3.1. From (Excessive) Money and Credit to Inflation and Bubbles

As soon as the “monetary” origin of the term “inflation” is rediscovered, an additional (etymological because of presenting the same root *flō*, but also factual) relation with another economic phenomenon can be established, namely with (financial) bubbles. In fact, over-issued money typically moves among economic sectors resulting in a “void” (price decrease) where it moved from while causing a price increase at the point of arrival. If this bulk of over-

issued money splits up among different economic sectors—for instance, between consumer goods, real estate, financial, and foreign exchange markets—the bubble is likely to remain unobserved or to be confused with a regular price dynamic due to economic growth.

As shown in Table 1 containing notable examples of European countries having recently experienced asset price inflation with stable consumer prices, domestic credit provided by banks to the private sector often grew in an over-proportional way contributing to boost share and housing prices because of having been invested in such markets. As soon as risks became excessive and investors divested resources from these assets, share and/or housing prices collapsed. Interestingly, this crisis dynamic would have become evident in advance “just” after analyzing the price trends as regularly mapped on a quarterly and yearly basis. At least at the country-level, the global financial crisis was somehow predictable.

3.2. The Identity between Over-Lending and Over-Borrowing

Noteworthy to mention, over-issued money and credit in its broadest sense (i.e., “over-lending”) also nourish public and private indebtedness (i.e., “over-borrowing”) where the latter is the flip side of excessive loan-granting by the banking and financial sector:

$$\text{over-lending} \equiv \text{over-borrowing} \tag{2}$$

The identity between over-lending and over-borrowing is also confirmed by a closer look, respectively, at the balance sheet of a commercial bank before and after granting a loan (Table 2):

Table 2. How commercial banks’ balance sheets vary after granting credits (see shadowed cells).

Commercial banks’ balance sheet (before granting a loan)	
Assets	Liabilities
Reserves	Deposits
Currency	
Commercial banks’ balance sheet (after granting a loan)	
Assets	Liabilities
New loan	New deposit
Reserves	Deposits
Currency	

Own elaboration based on [McLeay et al. \(2014\)](#).

Additionally, at the balance sheet of a borrower before and after receiving a loan (Table 3):

Table 3. How borrowers’ balance sheets vary after granting credits (see shadowed cells).

Borrowers’ balance sheet (before receiving a loan)	
Assets	Liabilities
Deposits	Non-money
Currency	
Borrowers’ balance sheet (after receiving a loan)	
Assets	Liabilities
New deposit	New loan
Deposits	Non-money
Currency	

Own elaboration based on [McLeay et al. \(2014\)](#).

If the commercial bank over-lends (see shadowed entry titled “new deposit” matched by an equal “new loan” in Table 2) in the sense explained above, another economic agent

over-borrows by the same amount (see shadowed entry titled “new loan” matched by an equal “new deposit” in Table 3). From a numerical perspective, it has also to be noted that total global financial assets reached, according to the [Financial Stability Board \(2022\)](#), USD 486.6 tn. in 2021 equal to 504.1% of total GDP. Moreover, domestic credit provided by the financial sector already globally stood in 2016 at 184.1% of global GDP moving from 140.6% of global GDP in 1990, as reported by [The World Bank \(2023a\)](#) for the last year of mapping. This figure is even higher for countries like the US (289.3% in 2021). While in good times debtors may repay their obligations enabling the over-lending bodies to earn extra profits, in bad times borrowers find it more difficult to repay them and over-lenders suffer even greater economic and financial losses than if they had not over-lent. Subsequent austerity measures also proved to be so contractionary that debt-to-GDP ratios in selected countries even rose from 2010 to 2014 ([House et al. 2020](#)). In this specific regard, the increase of interest rates due to post-COVID-19 inflation sharpened the risks derived from over-lending and explains the sudden liquidity and solvability crises of some major banks in the US and Europe. Since the Eurozone was characterized by a severe sovereign debt crisis (2009–2012), keeping public and private indebtedness at a sustainable level is strategic also in times of recovery from the COVID-19 pandemic. In this specific regard, according to [Eurostat \(2023\)](#), the government debt-to-GDP ratio in the Euro area moved from 86.1% (Q1/2020) to 99.8% (Q1/2021) first and to 91.5% (Q4/2022) then.

Despite the general validity of the above-mentioned accounting principle, it should also be noted that States and households do not face the same problems in terms of exposure to creditors and, more specifically, of budget constraints. In this specific regard, [Ciccone \(2013, 2020\)](#) reminds that public deficits generate additional private savings, which would have not occurred in the absence of those deficits. Such way of reasoning is also intuitive in the sense that public obligations represent an alternative way of holding (i.e., investing) individuals’ savings. The same conclusion does not apply to household debt, which is less elastic in terms of expandability and is generally perceived as a liability *tout court* (and most likely not as an alternative way of investing excessive funds). Moreover, according to [Ciaffi et al. \(2022\)](#) “government investment is the most effective tool for promoting public debt sustainability”, which strongly resembles [Draghi’s \(2020\)](#) distinction between “bad” (i.e., unproductive) and “good” (i.e., productive) debt.

The present Communication does not distinguish between debt typologies (i.e., whether over-issuing money/over-granting credits mostly finances public or private indebtedness), but it simply ascertains the general validity of the identity between over-lending and over-borrowing which are literally “two sides of the same medal”. Future research should analyze which economic agents are mostly involved in that process of excessive exposure to debt.

3.3. The Bubble “Popping” and Cash and Funds Getting Drained from the Economy

But there is another consequent phenomenon related to the “identity between over-lending and over-borrowing”. Recent crises ranging from bank runs in the UK and US due to the global economic and financial crisis (2007–2009) to those in Greece and Cyprus (2012–2013) due to the European debt crisis and to those in the Czech Republic right after the invasion of Ukraine (2022) and the most recent one in California (2023) vividly remind that in uncertain times economic agents withdraw, not just transfer, their bank deposits so that they can (partly) hold them in their physical form. This has been the case during the Northern Rock bank runs in the UK in autumn 2007 when cash was still used for 61% of all payments. Despite having dropped to 34% in 2017 and to 17% in 2020, also due to the COVID-19 pandemic ([Beretta and Neuberger 2021](#); [UK Finance 2018, 2021](#)), the value of circulating notes rose from GBP 5.1 bn. (1975) to 37.4 (2007) and GBP 81.2 bn. (2023) ([Bank of England 2023](#)) suggesting that cash might be less used as a means of payment, but is strengthening its function of store of value. This trend is also confirmed for the US as the birthplace of the first credit card where, according to data provided by the [Federal Reserve Economic Data \(2023a, 2023b\)](#), the value of currency in circulation rose from USD 572.0 bn.

(2000) to USD 811.7 bn. (2007) and rapidly reached USD 2270.9 bn. (2022)—respectively, 5.6%, 5.6%, and 8.9% compared to GDP.

Clearly enough, the drainage of funds as a consequence of an economic and financial crisis occurs even through the bank-to-bank channel. For instance, the massive drop of deposits and repos of non-MFIs in MFIs from the Greek banking system from the peak of EUR 294.9 bn. (June 2010) to its post-crisis low of 153.5 bn. (April 2016) (Bank of Greece 2023) cannot be explained with cash withdrawals alone. However, no matter how we put it, the inflation-debt-bubble “vicious cycle” often leads to bank runs. Hence, there is an additional, potentially significant element of risk whenever cash is legally restricted in its use as several European countries—among others, Greece, France, Italy, Portugal, and Spain—decided to (Centre Européen des Consommateurs France 2020). While the European Council agreed in 2022 to limit cash payments to a maximum of EUR 10,000, the Committee on Economic and Monetary Affairs and Committee on Civil Liberties, Justice and Home Affairs of the European Parliament (2023) began exploring in March 2023 an even stricter upper threshold of EUR 7000. While these limits may sound “loose” compared to the average value of a commercial/financial transaction, it should be macroeconomically questioned whether cash payment limitations are consistent with the potential introduction of a digital Euro intended as a wholesale central bank digital currency (CBDC) accessible to non-banking subjects up to EUR 3000/4000 per capita (Panetta 2022). In fact, such a strategy does not appear to be sufficiently convincing to support the intended complementarity of the digital Euro to “physical” cash on the one hand and to boost “public money” in an environment increasingly characterized by a return of “seigniorage” at the private level due to financial innovation on the other. Reducing the costs of issue of money (which currently stand at USD 17 cents per USD 100 note and at USD 7.5 cents for USD 1 and USD 2 notes (Board of Governors of the Federal Reserve System 2022)) and facilitating its digital distribution through monetary channels can incentivize the phenomenon of “seigniorage”, namely the right of the “lords” (*seigneurs*) such as commercial and central banks to issue (previously mint) money (European Central Bank 2017). In the absence of a clear theoretical framework, the same applies to credit granting by the banking and financial sector including so-called “non-bank financial intermediation” (NBFIs) roughly known as “shadow banking” whose size reached USD 217.9 tn. worldwide (Financial Stability Board 2023) at the end of 2022. As recently summed up by Jones (2023) and as another proof of the riskiness of over-issuing money/over-granting credits, “[t]ackling hidden leverage across the multi-trillion dollar “shadow banking” sector is next year’s priority” of the G20’s Financial Stability Board and IOSCO, a global grouping of securities markets regulators.

4. Discussion

Among the potential actions at the disposal of policymakers to prevent the inflation-debt-bubble “vicious cycle” there are, at least, the following:

1. Monitoring that the increase of monetary aggregates like M1 and M2 occurs at a linear pace. Whenever the economic situation requires it, central banks might counter-cyclically expand the monetary base while keeping in mind that over-issued money should be backed by present or future GDP to prevent inflationary pressures. This process is not dissimilar to the situation when “purchasing foreign exchange brings inflationary pressures through an increase in reserve money [and] monetary authorities step in to sterilize the excessive liquidity to mitigate inflationary pressures” (Terada-Hagiwara 2004). Moreover, Canofari et al. (2020) remind that for the economic assessment, it is crucial to “combine forward-looking indicators with backward-looking information resulting from econometric tests”, which—transposed to the present Communication—implies a continuous (i.e., forward- and backward-looking) approach to the evolution of monetary aggregates over time;
2. Taking also other price increases—specifically, those affecting assets—into consideration;

3. Monitoring public and private indebtedness whenever financed by over-issued and/or over-granted credits. The fact that “accessing data [of the NBFIs sector] could hamper the process” (Jones 2023) confirms once again that there is potentially no limit to over-issued money/over-granted credits unless there will be a sufficiently rigorous theoretical framework defining (non-)inflationary practices;
4. More generally, keeping risks in the economic system at a foreseeable level. This statement might sound obvious, but the empirical evidence made precisely of crises episodes due to a disproportionate risk level shows that it is not. By reducing risks in the economic environment, bank runs and drainage of funds from the economic system can be significantly avoided.

Clearly enough, not every price increase (even if vigorous) represents the prelude of a bubble. Even if it does, it might not be the effect of over-issued money and/or over-granted credits, but simply of foreign capital inflows or of a sustained demand of economic agents displacing funds from one economic activity to another. For instance, there were several OECD countries in 2022—among others, the Czech Republic (215.3), Hungary (253.6), Iceland (214.8), Lithuania (195.0) Russia (225.5), and Turkey (601.7)—ranging significantly above the average index number of 165.9 (2015 = 100) measuring nominal house prices. The same is true for share prices where OECD countries like Brazil (220.4), Denmark (180.4), Estonia (211.0), Hungary (207.1), Iceland (209.7), India (211.5), Latvia (236.7), Norway (206.1), and Turkey (369.3) experienced a particularly rapid growth compared to the basis year 2015 (100) (Organization for Economic Co-operation and Development 2023d). Therefore, only a more complex *set of economic variables* and their analysis as a whole provides sufficient indications about the existence of a bubble. Among them, there is certainly the monetary-aggregates-to-GDP ratio which provides information about the rapidity of growth of M1 (i.e., “narrow money” in circulation) with respect to GDP (i.e., yearly new real wealth at the economy’s disposal). In this specific regard, the COVID-19 pandemic with the massive countercyclical measures of central banks and governments (whose policy actions do not have a direct effect on monetary aggregates) implemented within just a couple of years (2020–2022) largely created an overhang of “narrow money” compared to GDP. This phenomenon poses a potential risk in terms of economic stability if it should persist (i.e., not be sterilized). While following “a sufficiently aggressive monetary policy conforming to the Taylor principle” does not completely rule out the occurrence of bubbles in markets such as real estate (Brito et al. 2016), a stricter adherence of the evolution of monetary aggregates to current and future GDP growth would at least reduce the probability of economic and financial crises caused by excessive liquidity.

Finally, it cannot be excluded that future crises will once again entail precisely these elements: over-issued money/over-granted credits (i.e., ballooning of the bubble) first and a sudden decrease of prices of specific assets, generalized economic losses, and then bank runs (i.e., bursting of the bubble). Because this is not a new pattern, all countries should proactively take the opportunity to identify their exposure to these risks and to reduce it. Where there is a will, there is a way.

5. Conclusions

The present Communication does not aim to represent a full-fledged research paper, as its theoretical approach with just some statistical evidence best sums up. Moreover, the present contribution avoids on purpose any referral to specific policy actions undertaken by governments or international economic institutions other than commercial and central banks, which are still the only economic actors able to issue money. Although we are aware (as we duly specified in the Communication) that general price increases do not derive from monetary actions only, our focus is nevertheless on over-issued money/over-granted credits as a particularly frequent source of inflation.

While the underlying mechanisms leading to bubbles are not entirely new, such crisis episodes are still recurrent on the one hand and remain mostly unpredicted on the other. The present Communication aims therefore, in its brevity, at presenting some fundamental

reflections on inflation in its monetary (and older) meaning, its relationship to (older as well as newer) bubbles and “typical” economic and financial crises, but also on the physicality of means of payments in crisis times and on the role of “seigniorage”.

In fact, it is not only relevant to revamp some of the most common causes leading to a “vicious cycle” consisting of inflationary pressures, excessive indebtedness, and bubbles, but it is also necessary to understand which role plays the “loss of physicality” of money and of means of payments in general. This is particularly significant because there have always been, historically speaking, tendencies to speculate between the face value of money issued and its cost of issue as well as between the amount of credits granted and their actual backing in the banking system. In addition, given that digitization is reducing the costs related to issuing money and granting credits, the renewed analysis of the inflation-debt-bubble “vicious cycle” appears to be particularly timely.

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Notes

- ¹ We take M2 instead of M1 because of a statistical shift of items from M2 to M1 occurred between February and March 2020 (Federal Reserve Bank of St. Louis 2022). Gross of such effect, the M1-to-GDP ratio ballooned even more from 18.9% to 72.8% (Federal Reserve Economic Data 2023b, 2023c).

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