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# The fourfold relation between the essence of money, inflation, bubbles and debt—A theoretical macrofounded analysis

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## Abstract

The paper makes an unprecedented claim by identifying a significant relationship between money's (immaterial and intrinsic-worth-detached) essence and the measurement of inflation rates, on the one hand, and bubbles and private/public indebtedness, on the other hand. The inflationary potential of cryptocurrencies—among others: xenocurrencies and special drawing rights—is also analysed. Another added value is the consistently macroeconomic approach, which starts from the structural and interconnected mechanisms and then explains economic-financial crises and their increasingly common features.

**JEL CLASSIFICATION**
E31; E44; E51; G01

## 1 | INTRODUCTION

As a theoretical macroeconomist, I feel particularly duty-bound to enquire whether "inflation" as an issue might still provide any added value at all as it did in the 1970–1980s ("The Great Inflation was the defining macroeconomic period of the second half of the twentieth century [l]asting from 1965 to 1982" [Bryan, 2013]). In fact, in "era[s] of low inflation" (Abir, 2018) or "death of inflation" (Heinemann, 2001), the problem looks like there is *too less* of it being "below target" (Lane, 2019) as measured by consumer prices, which in 1981 rose by 12.5, whereas in 2018 by just 2.5% at the world level (The World Bank, 2019b).

My claim is that this picture is deceptive and inflation is significantly higher. But there is more, today's "inflation 2.0" is causally linked to economic bubbles, which are also fed by money overissuance, xeno- or more recently cryptocurrencies as even special drawing rights (SDRs). Soaring private/public indebtedness is also a consequence. However, the very first reason might be today's poor understanding of money essence. Today, in fact, money has no intrinsic or positive purchasing power if detached from a corresponding real backing. To show these

  
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relations in a clear-cut way, I will break them down, starting for simplicity's sake with Steps 3 and 1 to move later on to Steps 4, 2 and 5 (Figure 1).

## 2 | THE CONCEPT OF "INFLATION" AND ESSENCE OF MODERN MONEY

Semantically, the term "inflation" goes back to "Latin inflare [to blow into, hence distend or expand by blowing air into] and was first used in 1838" (Bernholz, 2003). A macroeconomist should have no doubt that the object "blowing up" is properly not the price level—this is rather an effect of inflation—but the quantity of money as compared with (real) product units. In other words, "[i]nflation is the process of making an addition to currencies not based on a commensurate increase in the production of goods" (Federal Reserve Board, 1919). Like Friedman (1992) rightly stated, "inflation is always and everywhere a monetary phenomenon". As it turns out, its common understanding has nonetheless evolved (Bryan, 1997) and from the 1990s onwards (i.e., concurrently with the adoption of "inflation targeting" strategies [Mishkin, 2000]) "a broad increase in the prices of goods and services, not just of individual items" (European Central Bank, 2019) has become the widely accepted definition.

Although this might tell us something about the "symptoms" (Frisch, 1990) of the pathology, it tells us nothing about its causes. Clearly, there is a huge factual distinction between industrial sectors *deciding* to increase their sale prices (to boost profits and finance new investments) and *being forced* to raise them because of generally increasing costs. As technological advancement tends to reduce costs and labour hours needed to expand production, prices should remain stable or even decrease, producing what is often summed up in the term "good deflation" (Brezina, 2011). If we agree that technology bears these cost-cutting features, then, necessarily, any thought that the economy as a whole might *spontaneously decide* to (enduringly) increase final prices becomes untenable. Therefore, this phenomenon can occur only *under duress* of inflation, the economic force driving the general price level up, *tertium non datur*.

Therefore, the next question is: how does one explain not just an "increase in the cost of living" (Cencini, 2002) but also a pervading mechanism like inflation? To this question there would be no reasonable answer unless we would go back to the original monetary roots of "inflation". As "money is entered in the system of banks' accounts as an asset and simultaneously a liability, that is, an 'asset-liability' of no value of its own" (Rossi, 2001) and "nominal money [...] [,] a widely accepted medium of exchange [...] [,] has no intrinsic value [and] [...] is accepted not because it is useful as a commodity, but simply because the recipient knows that others will accept it in exchange for economic goods" (Goldberg, 2009), every money issue in excess to the pool of *real goods* making up the yearly GDP will induce an (inflationary) price increase. Without the latter, in fact, economic agents would "undersell" the economic result of their work. For instance, if goods/services making up the GDP of year "X" in nation "Y" were equal to 100 units (global supply (S)) whereas global demand (D), namely its economic-numerical form, corresponding to 120 instead of 100 units, those extra 20 units would be inflationary and responsible for potentially selling out the entire stock of goods/services (100) by spending just a subproportional amount (100 units, viz., 83.3%) of all new economic resources available (120). As a result, the general level of prices will *necessarily* go up across the board, whereas Jean-Baptiste Say's macroeconomic identity ($S \equiv D$) according to which "supply creates its own demand" (Dwiwedi, 2005) would (wrongly) turn into a nominal disequilibrium ($S < D$). An overhang of money

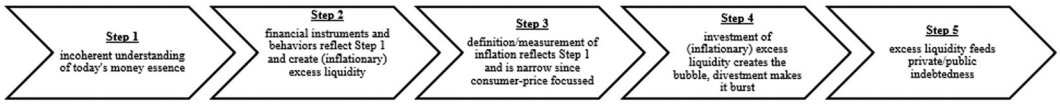


**FIGURE 1** The logical link between money, inflation and "bubbles". The figure highlights the monetarily pathological process leading to economic crises

to product units is, therefore—always and inevitably—"inflationary", namely "blows up" the circulating volumes of payment instruments without adding the new real value. Now, assuming that the reader agrees with the argument so far, a fundamental question remains: why are not inflationary effects like price increases out here yet?

## 3 | INFLATION AS MEASURED BY CONSUMER PRICE INDICES: THE OVERLOOKED FINANCIAL BUBBLE AND RELATION TO GENERAL INDEBTEDNESS

Consumer price indexes are defined by the Cambridge Dictionary (2019) as "a measurement of the changes in the cost of basic goods and services". Let us be clear: monetarily speaking, an increase in the general price level *might (or might not) be* inflationary, but the way this price increase is measured is indeed rather simplistic. In fact, in advanced economies (where, unlike in developing countries, a relatively minute portion of income is spent on necessity goods/services), excess liquidity pursues highly remunerative investment typologies such as financial instruments, foreign currencies and real estates, which contribute to the phenomenon of "asset inflation with stable consumer prices" (Utsumi, 2006). The bubble—or, if you prefer, an inflationary price increase—therefore may remain unnoticed by monetary-policy indicators. This does not mean that consumer-price levels in advanced countries will be forever condemned to low increases. For instance, it can be reasonably expected that—as soon as the acute phase of the coronavirus pandemic, which is dramatically shaping people's lives these days, will be over—even consumer prices will grow more significantly than previously. If so, this phenomenon would derive from the (perfectly legitimate and understandable) decision of companies to raise the price of selling of their goods and services to partly recoup the loss in revenue during the crisis. This occurred in China too, whose food prices have jumped by more than 21% in February 2020 (ABC News, 2020). Rising prices in dramatic circumstances like droughts, hurricanes, panic crises or pandemics are also a common event, which (ideally, i.e., without limiting the explanation to a mere search for profit) discourages excessive purchases by a few individuals and guarantees the widest possible access to a more diversified number of people. Hence, the underlying logic implies that the higher the price of selling the lower the risk of panic buying by a few individuals (who would contribute to rapidly deplete the remaining resources at the disposal of other potential buyers). But would such a price increase necessarily be driven by inflation? By far, not. In fact, under similar conditions, rising prices would derive from an entrepreneurial (i.e., voluntary) *decision*, which would for sure contribute to higher costs of living but would not have a monetary (i.e., inflationary) origin. The particularity of inflation is not—as already mentioned—that prices rise because of someone's *spontaneous* decision, but rather because they *have to*. Although this might sound like a subtle difference, it is by far not. Although in the first scenario entrepreneurs make an *unforced* decision, in the second case, they are *obliged* to raise prices (see Section 2).

The excess (or nominal) liquidity we are here writing about potentially moves from one economic sector to another, resulting in a "void" (and price decrease) where it moved from while causing an increase in prices at the point of arrival. In the same way, as any "air bubble" generates instability, it can also explain unclear trends as soon as those inflationary liquidity volumes split up among different economic sectors. This would be the case, for instance, of the 20 excess units of liquidity mentioned earlier, if 5 units were invested, respectively, in four different markets (e.g., real-estate, financial, foreign-exchange and consumer-goods).

The bubble would continue to be unobserved, ignored, indeed it may even be confused with a price increase induced by sound economic growth. Nothing more evident happened as the global economic and financial crisis burst (2007–2008) followed by financial markets indices plummeting, which explains why "monetary authorities were puzzled by the coexistence of stable goods and product prices in a flat Consumer Price Index (CPI) with booming asset prices" (Mera & Renaud, 2015). Figure 2 is a graphic representation of the overexpansion and overcontraction of invested (excess) liquidity before and during the crisis.

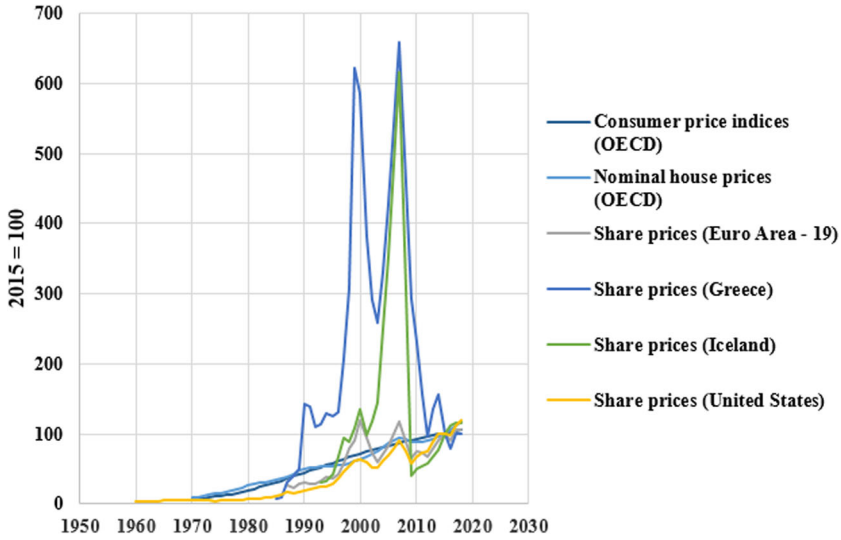


**FIGURE 2** Price trends in the housing, stock and consumer-goods markets. When the bubble builds up in the corresponding market, fluctuations may be vertiginous (see Greek and Icelandic share prices)

But there is more: the "bubble" also feeds private and public indebtedness, which has dramatically risen in the last decades and is, after all, nothing more than the flip side of excessive loan-granting by the financial sector. If we just take the United States, private debt (all instruments) ranked at 76% of GDP in 1950 and at 202% in 2017 (International Monetary Fund, 2019b), whereas in Japan public debt grew from 14% to 248% of GDP in 2015 (International Monetary Fund, 2019c), after decades of low-interest policies. In good times (when debtors are likely to repay their obligations), this sector will make extra-profits because of having overlent, but in bad times (when borrowers may find it harder to repay), financial institutions might suddenly suffer even greater losses than if they had not overlent. If we easily accept that the credit-granting activity of someone corresponds to someone else's debt—in fact, this is a tautology—then, *necessarily*, we are bound to accept that overlending by the financial sector has fuelled indebtedness in other economic sectors. Figure 3 confirms exactly this assumption, namely that especially private debt is fuelled by domestic credit provided by the financial sector, which is made up of "all credit

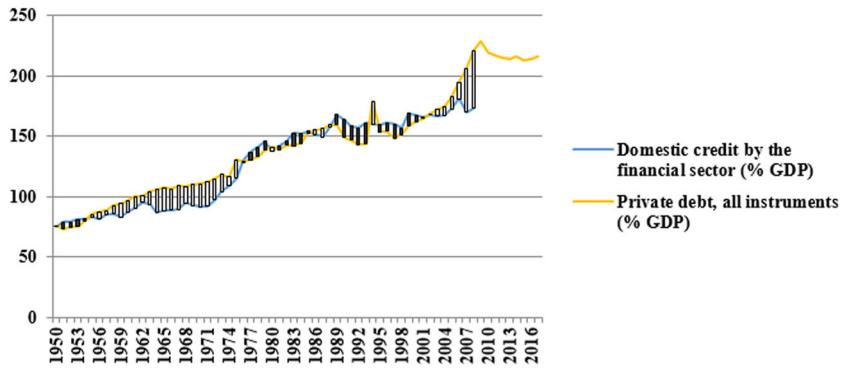


**FIGURE 3** The financing of private indebtedness by an overlending financial sector. The causality between domestically overgranted credits by the financial sector and private indebtedness is highlighted

to various sectors on a gross basis, with the exception of credit to the central government, which is net" (Organisation for Co-operation & Economic Development, 2019).

The double-check that one's debit is another's credit and, more precisely, that overlending by the financial sector is a source of overindebtedness of private individuals—the public sector, in fact, tend to have access to further financing sources, such as monetary authorities—is confirmed by the two (nearly) overlapping curves. The entire mechanism logically explains the unexpected crashes of financial agents and their unforeseeable losses during crises. Monetary policy is ineffective too if the roots of evil are not identified. With specific regard to this last point, let us test our argumentation for a common objection, namely that "since late September 2008, banks have hoarded liquidity instead of lending excess funds in the interbank market. The malfunctioning of interbank markets endangers the stability of the banking system" (European Central Bank, 2009). Well, someone could argue that under these conditions no inflationary risk would subsist. More precisely, according to this argument, excess liquidity would still exist but bear no inflationary potential because of being hoarded at the central bank. However, this conclusion would not be right as we are about to demonstrate. It is namely common knowledge that money demand ($M^D$) increases proportionally to nominal income and is negatively related to the interest rate (i). At the same time, an increase in money supply ($M^S$) causes a reduction of the interest rate. At point A where the money supply curve crosses the money demand curve ($M^S = M^D$), the equilibrium interest rate is achieved. This well-known relation is also depicted in Figure 4.

However, if it is true that commercial banks have hoarded billion-high volumes of liquidity at central banks, Figure 4 does not well represent reality. Otherwise stated, money supply might *nominally* correspond to $M^S$, but—as a significant part of it has not been lent to the real economy—the *actually* circulating money volumes are by far lower than what *originally* thought. Therefore, because of hoarding, money supply does not correspond to $M^S$, but instead to $M^{S'}$ where $M^{S'} < M^S$. Precisely, this money supply gap is depicted in Figure 5 (see shaded area).

At the same time, Figure 5 clearly shows that—if a money supply gap (M – M') has to be taken into consideration and the money supply curve has actually to correspond to $M^{S'}$ instead of $M^S$—interest rates should not be at point i, but much higher, namely stand at a point i'. Admitting that commercial banks have hoarded a part of the (excessive) money supply at the central bank, but not recognising that the money supply curve has to be shifted correspondingly to the left would be, in fact, profoundly inconsistent. If we admit that this phenomenon has occurred and that the money supply curve we have to look at is $M^{S'}$ (and not $M^S$), we equally have to be aware that the equilibrium interest rate should have been higher (i.e., i' instead of i) too. Even in the case of hoarding, excess liquidity, therefore, fuels the financial bubble because, on one hand, it is used in an unproductive way (i.e., not to the

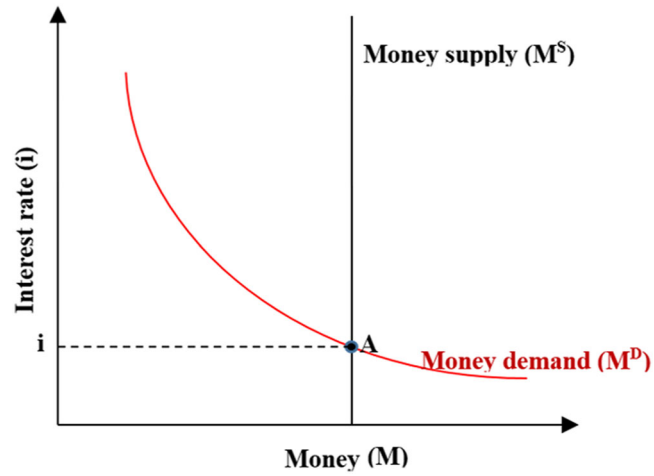


**FIGURE 4** How the interest rate is determined according to mainstream economics. At point A where the money demand curve ($M^D$) meets the money supply curve ($M^S$) the equilibrium interest rate is reached

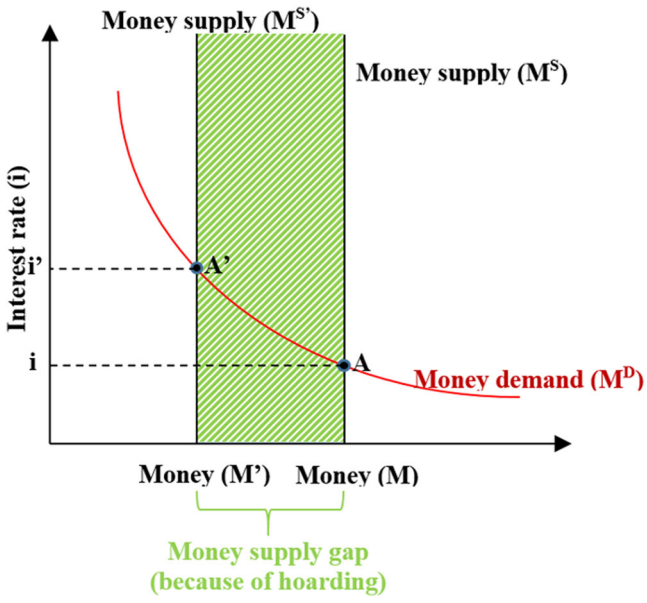


**FIGURE 5** A money supply gap (M – M') has to be taken into consideration too, if hoarding of liquidity is implied. It would be inconsistent to claim that commercial banks have hoarded a part of the money supply during the economic and financial crisis and, at the same time, keep $M^S$ at the same level (as without hoarding)

benefit of the economy as a whole), whereas, on the other, it keeps interest rates at a wrongly low level instead they should be higher. If the reader should disagree with this conclusion and argument that modern hoarding has to be interpreted in a broader sense, namely as keeping liquidity at the banking level and lending it just on the interbank market, he would implicitly confirm that these money volumes would nourish the financial bubble—no matter where it places itself—and contribute to inflationary pressures as already described. Either way, excess liquidity as a monetary phenomenon is always and everywhere at the origin of inflation. Let us now sum up how it also comes about.

## 4 | THE SOURCES OF INFLATION: FROM MONEY OVERISSUANCE TO XENO- AND CRYPTOCURRENCIES AS WELL AS SPECIAL DRAWING RIGHTS

The main cause of inflation is (even historically) over-issued money (as compared to GDP, viz., real values). You only have to look at data such as "total global financial assets of all financial corporations" having reached 339.9 trillion USD in 2016, that is, 540% of total GDP (Financial Stability Board, 2018) or the expansion of "shadow banking" to grasp the risk potential involved. In addition, domestic credit provided by the financial sector has also globally moved (as compared with world GDP) from 75% in 1960 to 173% in 2018 (The World Bank, 2019a). Besides this very first source of inflation, as far back as the 1970s, economist and top-adviser of the French Government Jacques Rueff identified some critical aspects in today's international payments system based on "key currencies" like the US Dollar. To be clear: not (only) because of the disparity of its treatment (as only a limited number of currencies is internationally accepted), but mainly because of its inflationary risks. In fact, "[f]unds flowing out of the United States […] increase […] the money supply in the recipient market, whereas the money supply in the American market is not reduced. The bank of issue that receives the funds, while entering them directly or indirectly in its reserves, leaves them on deposit in the New York market. There they contribute, as before being transferred, to the credit base" (Rueff, 1971). In other words, there is a factual duplication of the international credit base as the central bank of the receiving country "monetises a false asset, the money issued against it cannot

be reabsorbed by the sale of the asset" (Triffin, 1947). The problem arises because foreign currencies used to settle international payments remain (or are redeposited) in the paying country, whereas the payee nation monetises (i.e., issues the countervalue in local currency (i.e., "xenocurrency"), a claim on bank deposits having simply changed owner but not banking system ("[n]o money is "used up"; the banking system simply records a change in ownership" [Newman, 2011]).

But other, though less used, financial instruments are inflationary from a monetary perspective: SDRs allocated by the International Monetary Fund is created with the stroke of a pen—as such, therefore, they have a "nominal" nature—though they can be used to obtain "freely usable currencies of IMF members" (International Monetary Fund, 2019a) and settle "real" current account expenditures. By being added to existing national monetary aggregates (instead of representing a part of them at the international level), SDRs blow up money volumes—it is not relevant that the official statement of the International Monetary Fund (2017) specifies that, given the allocated amounts, inflation is "not likely". If the reader agrees with the simple principle that fiat money has to be backed by real values (i.e., GDP) to acquire a positive purchasing power, there is no room left for compromise either when dealing with cryptocurrencies. The problem is neither their underlying technology or potential illegal use nor is it the risk of breaking up central banks' money-issue monopoly. No, the only "structural" concern is that no one—not even central banks, which wield "divinity-like" powers in monetary matters—can discharge their real-term obligations simply by issuing their means of payments. If they did, it would be a "nonpayment" or "false payment", which once more would end up in ballooning money volumes, instead of matching GDP figures, their "real" backing. Should the reader surprisingly disagree, at this point, then it would mean that they will have come up with a simple solution to poverty, namely "easy printing of new money".

## 5 | CONCLUSION

The paper applies a theoretical, purely macrofounded approach to inflation, searching for the reasons why it goes unnoticed today despite its undeniable presence, and which causal relation exists between it and a persistent, still widespread understanding of money as "naturally" endowed with a positive value. In an innovative way, the article also explains the connection between these two elements and the so-called "economic bubbles" and soaring private/public debt levels. More specific or new financial instruments like cryptocurrencies have been studied, too, as they contribute to clarifying how "post-modern" inflation truly works. Future research should focus on the quantitative translation of this theoretical framework by taking a group of countries over sufficiently long periods and exploring inflationary patterns according to each of the sources mentioned. Ultimately, however, the key aporia remains how to determine the true essence of inflation, enabling us to fully grasp current and future economic risks. Not to be discounted.

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## Non-technical Summary

The paper identifies a significant relationship between money's essence, the measurement of inflation rates, bubbles and private/public indebtedness. It also analyses why cryptocurrencies as well as xenocurrencies and special drawing rights are inflationary too. By means of a rigorous macroeconomic approach, the article also explains the structural mechanisms at the origin of economic-financial crises and their increasingly common features.

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