

Central Banks' Contribution to Financial Instability

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Abstract: Financial stability has been a largely-debated issue since the bursting of the global financial crisis in 2008. Central banks seem to have discovered that price stability on the market for produced goods and services is not enough to avoid financial instability through monetary policy interventions. This paper explains that, in fact, both pre- and post-crisis interventions by monetary authorities have been contributing to inflate asset prices, thereby increasing in various ways the level of financial instability and fragility of the economy as a whole. This paper puts forward a monetary–structural reform to eradicate this problem definitively.

Keywords: bank money, financial crises, monetary policy.

JEL classification: E42, E52, E58.

INTRODUCTION

Since the bursting of the global financial crisis in 2008, central bankers around the world have been discussing, together with financial supervisory authorities, how to deal with the issue of financial instability. Defining financial (in)stability is already problematic *per se*, as there exists no single definition (yet) – contrary to what appears to be the case for the definition of price stability, as measured on the goods market (Panzera, 2015). This is so much so that, as Padoa-Schioppa (2003: p. 287) pointed out, central bankers “tend either to avoid the question of how to define financial stability” or to “explicitly acknowledge the elusiveness of a consistent definition”. As a matter of fact, “there is currently no good way to define, nor certainly to give a quantitative measurement of, financial stability” (Goodhart, 2004: pp. 2-3). A number of authors focus therefore on financial instability, notably when they study the origins of financial crises (see for instance Davis, 2003; Haldane et al., 2004; Borio and Drehmann, 2011; Beck et al., 2014).

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According to Crockett (1996: p. 532, italics in the original), financial instability is “*a situation in which economic performance is potentially impaired by fluctuations in the price of financial assets, or in the ability of financial intermediaries to meet their contractual obligations*”. In this definition, short-term and long-term interest rates’ fluctuations are ignored, but two factors of financial instability emerge from it: on one hand, asset price fluctuations can affect economic performance negatively, as they increase the fragility of financial markets and institutions, thereby threatening financial stability at the systemic level – that is, for the economic system as a whole. On the other hand, financial institutions may need the financial support of public authorities (usually central banks) to address a situation of financial turmoil appropriately, particularly when they have been unable to price financial assets and their risks correctly.

Allen and Wood (2006: pp. 159-60) define financial instability rather differently, namely as “episodes in which a large number of parties [...] experience financial crises which are not warranted by their previous behaviour, and where these crises collectively have seriously adverse macroeconomic effects.” This definition considers financial instability as a crisis-situation affecting a large number of economic agents, including those agents that have not been entering into excessive risk-taking across financial markets. The economy as a whole is thereby affected negatively, which gives rise to a systemic (financial) crisis.

Such a crisis occurred at the global level in the aftermath of Lehman Brother’s collapse (on 15 September 2008). At the behavioural level, there have been a number of agents whose economic decisions were wrong, but this cannot explain the systemic dimension of such a crisis. As a matter of fact, a systemic crisis is a crisis of the economic system as a whole – whose functioning cannot be understood through so-called ‘microfoundations’, that is, an analysis relying on agents’ behaviour only. A systemic crisis reveals the existence of a system’s disorder, which implies something more than agents’ behaviour: it implies that something is out of order in the structural and institutional framework, within which the agents’ forms of behaviour give rise to micro- as well as macroeconomic outcomes.

This paper explains that there exists a monetary–structural disorder affecting our economic systems negatively, namely the possibility for a variety of banks to open credit lines to any kinds of agents (including banks and non-bank financial institutions) that inflate thereby the volume of bank deposits without increasing produced output simultaneously. These “non-GDP-based transactions”, as Werner (2012: p. 29) calls them, largely occur

across financial markets, thereby increasing financial instability that can give rise to a systemic financial crisis eventually. The workings of our monetary systems should therefore be reformed on structural grounds, to avoid the occurrence of systemic financial crises in the future, even though it will be impossible to avoid that any (behaviourally induced) financial crisis will ever occur. Indeed, the issue is not to avoid financial crises, but to avert that their nature is of a systemic (dis)order.

The next section explains the monetary–structural disorder that affects the economic system negatively. The third section argues that monetary policies have been inflating asset prices both before and after the crisis burst in 2008 at the global level. The fourth section puts to the fore a monetary–structural reform in order to address the systemic origins of financial crises. The last section summarizes the main arguments developed in this paper.

THE MONETARY–STRUCTURAL DISORDER OF DOMESTIC PAYMENTS

The endogenous nature of money is so that banks do not need any pre-existent deposits in order for them to open credit lines to any of their potential borrowers – among them, other banks and non-bank financial institutions have been featuring prominently since the early 1980s (see, for instance, Moore, 1988; Rochon, 1999; Rossi, 2001, 2007). Clearly, every bank can lend any amount that it has not recorded in its books yet, because bank deposits are the result of a bank's credit line logically (see Rochon and Rossi, 2013, for analytical elaboration). The central bank can have only a very limited impact on the volume of bank lending, through either its policy rates of interest or reserve requirements: as shown by so-called 'quantitative easing' and negative interest rates policies in the aftermath of the global financial crisis (see Rossi, 2019), a reduction of reserve requirements or in the policy rates of interest is not enough to induce banks to provide more credit if they expect not to be able to recover principal and interest payments from their potential borrowers – even though the central bank can influence asset prices by changing its policy rates of interest (see Deleidi and Levrero, 2021). Further, demand for loans by both firms and households depend not so much on the interest rates they will have to pay, but rather more on their expected earnings as a result of the contracted loan. Hence, even if the central bank increases its policy rates of interest or reserve requirements, this is not enough to prevent a further increase in bank lending, if banks expect to earn interests from what they consider creditworthy borrowers.

However, as Brancaccio and Fontana (2013) have pointed out, central banks can affect the solvency degree of borrowers through their interest rate policy, which they put into practice to reduce insolvencies across the economic system. To be sure, “[t]he central bank cannot close the ‘discount window’ without endangering the solvency of the banking system” (Kaldor, 1982: p. 27).

Now, when a bank opens a credit line in order for a firm to pay the wage bill, this payment gives rise to both a new bank deposit and a new income, corresponding to produced output, thereby preserving the money–output relationship without inducing any inflationary pressures within the economic system. By contrast, when banks open new credit lines for “non-GDP-based transactions” (Werner, 2012: p. 29), as this occurs largely across financial markets, then there are new bank deposits to which no newly-produced output corresponds. As a result, there exists an inflationary gap in the money-to-output relation, which cannot be observed by looking merely at the consumer price index that central banks consider as relevant for their monetary-policy decisions.

This monetary–structural disorder, which blurs the distinction between money and credit in banks’ book-keeping, gives rise to credit bubbles, that is, a situation where the volume of credit is excessive with respect to available income – which is needed to repay banks’ debt eventually. To be sure, the accounting identity between credits and deposits in the banks’ books considered as a whole is not enough to make sure that every bank deposit has a purchasing power originally, that is, as a result of production and the corresponding remuneration of wage earners. Being the result of credit-induced financial transactions, which have nothing to do with production, a number of bank deposits originate without purchasing power. They merely have a purchasing power as they absorb it by osmosis, from those bank deposits that are the result of wage earners’ remuneration. Now, if the holders of these originally-void bank deposits spend them on the market for produced goods and services, the relevant price index may increase, inducing perhaps the central bank to intervene, usually increasing its policy rates of interest, to make sure the targeted rate of inflation is not trespassed from above. However, if these bank deposits are spent on financial markets, as this has been occurring (generally speaking) since the early 1980s, the monetary–structural disorder pointed out above does not give rise to observed inflation, as the consumer price index targeted by the central bank remains unaffected in this case.

Indeed, using Keynes’s (1930: Ch. 15) terminology, the provision of credit lines by banks can give rise to either “industrial circulation” or “financial

circulation” of bank deposits. The former circulation refers to “deposits used for the purposes of industry” (Keynes, 1930: p. 217), whilst the latter has as its objects “those [deposits] used for the purposes of finance” (Keynes, 1930: p. 217). In this regard, Keynes (1930: p. 217, italics in the original) explains that “[b]y *industry* we mean the business of maintaining the normal process of current output, distribution and exchange and paying the factors of production their incomes for the various duties which they perform from the first beginning of production to the final satisfaction of the consumer. By *finance*, on the other hand, we mean the business of holding and exchanging existing titles to wealth (other than exchanges resulting from the specialisation of industry), including stock exchange and money market transactions, speculation and the process of conveying current savings and profits into the hands of entrepreneurs”. In this view, it is therefore “financial circulation” that originates a series of credit bubbles over time, which central banks’ policies have not contained actually but rather amplified in recent times (Rossi, 2010). Let us expand on this issue in the next section.

THE MONETARY POLICY CONTRIBUTION TO FINANCIAL INSTABILITY

Central banks’ instruments, such as policy rates of interest or reserve requirements, are not in a position to impede that “loans make deposits” – as Schumpeter (1954: pp. 1110–17) noted famously – within the banking system. Simply, monetary authorities may try to discourage banks to increase the volume of their lending activities, by increasing reserve requirements or the rate of interest that banks will have to pay if they obtain a loan from the central bank when they ask for it (be it for their own convenience or necessity). Even so, the decision to provide a credit line to any potential borrower remains entirely in the hands of the relevant bank. This does not change when a bank must increase its reserves as a result of the central bank’s decision to increase the reserve requirement (which might be defined with respect to the assets side, rather than with respect to the liabilities side, of a bank’s balance sheet; see Palley, 2003, 2004, for analytical elaboration).

In fact, in the so-called Great Moderation period (1986–2006), the major central banks in the world have been reducing both their reserve requirements and policy rates of interest, considering that inflation was not a problem any more in light of the low and stable rate of inflation measured on the market for produced goods and services. In the United States, for instance, the then Chairman of the US Federal Reserve claimed that inflation

was actually not a problem unless consumers began to react to observed or expected price increases on the goods market by adjusting their consumption behaviour accordingly (Greenspan, 1994). This means, as Greenspan (2002) made it clear, that central bankers ignore the phenomenon of ‘asset-price inflation’, that is, the increase in asset prices that has nothing to do with the expansion of economic activity but is just the result of speculation in financial or real-estate markets. According to Greenspan (1999: p. 5) – who advocates the so-called ‘Jackson Hole consensus’ – central bankers should not intervene to avoid asset-price inflation, as they are not in a position to know if the increase in asset prices is the result of an inflating credit bubble or is supported by real economic growth. To be sure, when banks inflate such a bubble, the macroeconomic debt–income discrepancy cannot be revealed by the evolution of the relevant price index on the market for produced goods and services. Hence, this does not pose a threat, apparently, for the financial stability of the whole economic system – as maintained, for instance, by Greenspan (2004) when the real-estate bubble was inflating in the United States during the period from 1996 to 2006.

Inflation-targeting central banks were thereby persuaded that their own policy strategy was instrumental for the price stability framework observed on the goods market, as a result, in fact, of both globalization and financialization, which exert a persistent downward pressure on the wage and employment level across the world. Central bankers ignored thereby asset-price inflation, which epitomizes the monetary–structural disorder of our monetary systems as explained in the previous section and that pre-crisis monetary policies in fact contributed to generate through their lowering of policy rates of interest. To elaborate on this, one can indeed understand that an inflation-targeting strategy, as practised by several central banks since the early 1990s, is a factor of financial instability (and crisis eventually), because it does not induce banks to reduce their credit granting as long as price stability prevails on the market for produced goods and services despite a credit bubble that inflates asset prices. In the words of Greenspan (1999: p. 5), “bubbles generally are perceptible only after the fact”, that is, once they burst. If so, then, according to the ‘Jackson Hole consensus’, central bankers must do whatever it takes (using ‘conventional’ as well as ‘unconventional’ tools) in order for them to address the negative consequences of this event, thereby trying to avoid a debt deflation (Fisher, 1933). In fact, the consequences of the global financial crisis that burst in 2008 show that monetary policy cannot live up to its promises once the damage has been done – as a result of banks’ granting too much credit that

is “several layers removed from any real economic activity of value creation” (Guttman, 2008: p. 9). Both in the United States and in Europe, particularly across the euro area, neither the US Federal Reserve nor the European Central Bank has been able to kick-start and then support economic growth, using their policy tools in an expansionary mood. In all these cases, as a matter of fact, the expansionary monetary policy carried out by the relevant central bank has merely inflated the “financial circulation” (Keynes, 1930: p. 217) of the newly-created bank deposits across the banking sector, without supporting “GDP-based transactions” (Werner, 2012: p. 29) that would have contributed to reduce unemployment and the number of ‘working poor’ in the world – thereby supporting real economic growth and thus enhancing financial resilience.

This is so much so that even after the eruption of the global financial crisis in 2008, central banks’ policies (making use of ‘unconventional’ monetary policy tools, such as zero (if not negative) interest rates and ‘quantitative easing’ interventions) have been inflating a variety of real as well as financial assets’ prices in all those countries where monetary policy is the main (if not unique) expansionary economic policy put into practice – as fiscal policy must balance the government’s budget and nothing else, according to the neoliberal policy stance (see Mastromatteo and Rossi, 2015, 2019, for a critique).

As a matter of fact, a central bank’s negative rate of interest on bank deposits with it makes these deposits costly for banks and induces them to increase their lending across real-estate and financial markets, thereby inflating asset prices as a result of the credit bubble. This is the case, for instance, in Switzerland, where the national central bank has been practicing a negative interest rate policy since January 2015, thereby overheating the housing market as a result of banks’ excessive lending on it (see Rossi, 2019, for analytical elaboration). Such a situation makes an increasing number of debtors (households) as well as creditors (banks) more and more fragile on financial grounds as time goes by: mortgage loan holders, indeed, are induced to demand (and usually to obtain) a mortgage loan that exceeds their borrowing capacity and solvability. When a number of them enters into financial troubles, for different reasons, then their creditors can also experience some financial problems, as the assets side of their balance sheets is not as solid as it used to appear earlier on: the volume of so-called ‘non-performing loans’ may therefore show a mushroom growth within a very short period of time, generating a situation of increasing financial instability that may eventually end up in a financial crisis once the credit bubble bursts.

This situation cannot be avoided with the monetary policy tools that central banks are used to consider enough to address financial instability at systemic level. Indeed, increasing both reserve requirements and policy rates of interest is not enough to avoid the inflation of asset prices and the underlying credit bubble. These central bank interventions can just impact on how banks react to the expansion of bank deposits as a result of their decisions to open new credit lines to any kinds of borrowers. Now, instead of simply trying to affect the result of a new credit line, monetary authorities should have an impact on banks' capacity to open new credit lines. Clearly, this means that banks should not be in a position to grant a credit for a "non-GDP-based transaction" (Werner, 2012: p. 29) that does not rely on a pre-existent bank deposit. This would make sure that all financial market transactions across the world, hence "financial circulation" (Keynes, 1930: p. 217), would rely on some existing income to finance these transactions in an orderly-working monetary system. No credit bubble could thereby exist, and asset-price inflation would never occur in such a system. Let us turn to it in the next section.

A MONETARY–STRUCTURAL REFORM OF THE BANKING SYSTEM

As a result of the global financial crisis that burst in 2008, a number of central banks and financial supervisory authorities have introduced a series of micro- and macro-prudential instruments to avoid financial instability. These instruments (such as liquidity requirements and countercyclical capital buffers), in fact, can just palliate the consequences of a financial crisis on banks' balance sheets. They cannot avert such a crisis to occur for sure, since they leave the banks' capacity to grant credit lines unaffected. To intervene on this capacity, and thereby impede the inflation of credit bubbles with the possible bursting of them eventually (and the resulting financial crisis), one needs to intervene on structural grounds, rather than just on agents' behaviour. This is why a monetary–structural reform is compulsory in such a framework, even though a debate on such a reform does not (yet) exist within the central bankers' community unfortunately.

The history of monetary thought provides an illuminating example of such a reform, which Ricardo (1951[1824]) proposed in the 1820s, and the Bank Act of 1844 put into practice, at central bank level. At that time, the debate between supporters of the Banking School (see Fullarton, 1844; Tooke, 1844) and advocates of the Currency School (among them Ricardo, 1951 [1824], features prominently) ended with a parliament decision to

separate the Bank of England's ledger into two accounting departments, namely, the Issue Department and the Banking Department. In the first department, all money emissions of the central bank were entered, whilst the second department recorded all credit operations carried out by the Bank of England. This 'departmentalization' of the central bank's books was meant to avert that it may generate inflationary pressures in the national economy – as a result of over-issuing central bank money with regard to available income.

The Currency School, indeed, argued that money emission and financial intermediation must be separated at central bank's level, in order to distinguish money and credit in its book-keeping. As Ricardo (1951[1824]: p. 276) pointed out, “[t]he Bank of England performs two operations of banking, which are quite distinct, and have no necessary connection with each other: it issues a paper currency as a substitute for a metallic one; and it advances money in the way of loan, to merchants and others.” Having “no necessary connection with each other”, these two operations can be carried out by two separate departments, “without the slightest loss of advantage, either to the country, or to the merchants who receive accommodation from such loans” (Ricardo, 1951[1824]: p. 276).

This monetary–structural reform of the Bank of England induced other European countries to adopt it for their own central banks in the second half of the nineteenth century. This was the case of France (1848), Italy (1874), Germany (1875), and Sweden (1897), as explained by De Kock (1939) and Goodhart (1988). Now, the logic of separating in accounting forms the emission of money from the opening of new credit lines should be applied to the whole banking system, rather than simply to the central bank, to avert the inflation of some credit bubbles and the ensuing negative effects (Schmitt, 1984: pp. 192-209). This would make sure that all credit-financed transactions, including those on financial markets, cannot generate a situation of financial instability threatening a financial crisis similar to the one that burst in 2008 at global level (see Figuera, 2010).

Through two separate departments, each bank will be able to know how much income has been deposited within it by its clients, so that it will not be led to over-issue money when it provides new credit lines to any of its clients. If, nevertheless, this bank provides too much credit with regard to available income, to finance “non-GDP-based transactions” (Werner, 2012: p. 29), then both monetary authorities and financial supervisory authorities will be in a much better position than today to sanction the bank appropriately, thereby discouraging a series of banks to exploit their credit

potential as they have been doing to date increasingly. To be sure, it will be difficult to know in advance whether a credit line will be used to pay out wages for a new production process or rather to increase “financial circulation”. Hence, the ‘departmentalization’ of banks’ book-keeping could be enhanced through the creation of a credit investigation authority to make sure that credit lines are not opened from scratch to entities that claim to pay out wages but in fact use these lines for speculative transactions falling into the category of “financial circulation” with the purpose of counteracting the fall in the rate of profit as a result of a lack of aggregate demand due to firms’ strategies as well as economic policies inspired by neoliberalism.

Let us illustrate the workings of banks’ ‘departmentalization’ with two stylized examples.

Suppose that a bank (B) carries out a payment order for the remuneration of wage earners on behalf of some firm (F). This will give rise to the accounting records shown in Table 1.

Table 1: The result of a payment of wages through two accounting departments of the bank

| Bank B | | | |
|----------------------|---------|---------------|-------------|
| Issue Department (I) | | | |
| Assets | | | Liabilities |
| (1) Credit on firm F | +x m.u. | Department II | +x m.u. |
| (2) Credit on firm F | -x m.u. | Department II | -x m.u. |
| (B*) | 0 | | 0 |

| Bank B | | | |
|-------------------------|---------|-----------------------|-------------|
| Banking Department (II) | | | |
| Assets | | | Liabilities |
| (1') Department I | +x m.u. | Wage-earners' deposit | +x m.u. |
| (2') Credit on firm F | +x m.u. | Department I | +x m.u. |
| (B*) Credit on firm F | x m.u. | Wage-earners' deposit | x m.u. |

Note: (B*) is the balance of those entries that are recorded in the relevant department.

Entry (1) records the emission of x money units (m.u.) on behalf of firm F, which thereby remunerates the relevant wage earners, who are thus credited with a bank deposit by entry (1'). As soon as the bank carries out this payment order, it transforms the monetary debt of firm F (entry 1) into a financial debt of the same firm (entry 2'). As a result of these entries, the firm has a financial debt to the bank, to which corresponds a financial debt of the latter to wage earners (see the balance of the second department) – similarly to today’s result of a wage payment recorded in a bank’s ledger.

Things change (with respect to today’s book-keeping by banks) when a bank provides some credit lines to carry out financial market transactions

that do not rely on pre-existent income as explained earlier. Within the new accounting structure of banks' 'departmentalization', a bank cannot grant such credit lines beyond the amount of income deposited within it (that is to say, x units of money income in Table 1). If such an over-issuance of credit money were to occur, the bank would need to record it in its two departments, making it thus transparent that the money-to-output relationship has been affected negatively by this bank's violation of the logical separation between money and credit. This transparency of banks' ledgers is enough to disincentivize banks to continuing expanding their credit volumes beyond some reasonable threshold with regard to available income.

Considering the amount of x m.u. deposited with the bank (see Table 1), the latter can only provide this amount for "financial circulation" (Keynes, 1930: p. 217). Indeed, it cannot lend on financial markets more than the sum total of bank deposits within it. Suppose therefore that the bank opens a credit line for x m.u. to some agent ('speculator S'), who spends this amount on financial markets. Table 2 shows the book-keeping results of this stylized case, where firm F sells on these markets a number of corporate bonds that allow it to reimburse its debt to the bank.

Table 2: The result of a financial transaction respecting the money–output relationship

| Bank B | | | |
|--|-----------|---------------------------------|-------------|
| Banking Department (II) | | | |
| Assets | | | Liabilities |
| (B _I) Credit on firm F | x m.u. | Wage-earners' deposit | x m.u. |
| (3') Loan to speculator S | $+x$ m.u. | Securities sold to wage earners | $+x$ m.u. |
| (4') | | Wage-earners' deposit | $-x$ m.u. |
| | | Deposit of speculator S | $+x$ m.u. |
| (5') | | Deposit of speculator S | $-x$ m.u. |
| | | Deposit of firm F | $+x$ m.u. |
| (6') Credit on firm F | $-x$ m.u. | Deposit of firm F | $-x$ m.u. |
| (B _E) Loan to speculator S | x m.u. | Securities sold to wage earners | x m.u. |

Note: (B_I) is the initial balance resulting from Table 1. (B_E) is the ending balance after the transactions recorded in entries (3'), (4'), (5') and (6') have been carried out.

Entry (3') records the loan that the bank grants to the speculator in light of the available income deposited with the same bank. In order for this bank to be able to provide such a credit, it sells a corresponding amount of securities to wage earners, thereby obtaining an income that finances (rather than money creation) the speculator's loan, who thus obtains the bank deposit's ownership previously in the hands of wage earners (entry 4'). Entry (5') records the purchase of firm F's output by the speculator. The

firm is thereby in a position to reimburse its bank loan, which is thus deleted from the bank's ledger (entry 6'). The ending balance in the Banking Department shows two things. On one hand, wage earners have replaced their claim on a bank deposit with an equivalent amount of securities. On the other hand, the credit line opened to the firm has been replaced with a credit granted to the speculator. The money-to-output relation remains thus unaffected, and the only issues that remain to be considered refer to the value of those securities in the hands of wage earners and the creditworthiness of the speculator, who will have to reimburse the bank loan with some earned income at maturity. Actually, these two issues boil down to the latter one, if the securities bought by wage earners were issued and sold by the speculator. This is where and when micro-prudential tools of financial supervisory authorities may play their role, in making sure these securities as well as any other financial claims have a solid collateral. In the contrary case, a financial crisis could burst in the worst-case scenario (that is, when the issuer of these securities is bankrupt), but without any systemic consequences, as the latter have been eradicated by the monetary–structural reform proposed in this section (see Cencini and Rossi, 2015, for analytical elaboration).

CONCLUSION

This paper has shown that central banks have been increasing financial instability with their policy stance and strategy, rather than reducing it in order to avoid the bursting of systemic financial crises such as the global financial crisis that erupted in 2008 and whose negative consequences are still ravaging both the economy and the society in a number of countries. In particular, the analysis presented in this paper explains that money's endogeneity, that is, the capacity of banks to issue money when opening a credit line from scratch, cannot be in any case controlled by the central bank's policy tools – nor can it be controlled by financial supervisory authorities' instruments and regulations. In fact a monetary–structural reform is needed in this regard. This reform must begin by understanding that money and credit have to be recorded separately in banks' book-keeping, to avoid blurring the distinction between monetary and financial intermediations – where the former refers to money's emission and the latter to the opening of a credit line to any (creditworthy) borrowers. Since “loans make deposits”, as Schumpeter (1954: pp. 1110–17) recognized, it is vain to increase policy rates of interest or the amount of reserves that banks must keep within the central bank, in order to avoid a financial crisis.

Central banks should elaborate on a monetary–structural reform of banking that makes sure banks cannot escape the constraint to finance all financial market transactions with a pre-existent income rather than with an *ex-nihilo* creation of money that exerts inflationary pressures on asset prices as a result of the credit bubble whose origin lies within the banking sector as explained in this paper.

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