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Alternative Monetary Policy and Central Banking

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Abstract: This paper points out policy suggestions for modern central banks to improve their effectiveness in terms of successfully targeting financial stability and employment. The theoretical foundations of the proposed policy suggestions rely on Minsky's conceptualization of financial fragility and instability. It is argued that Minsky's Financial Instability Hypothesis contextualizes how the financial structure of the effective demand and financial markets predispose to endogenous non-sustainable leverage and liability structures that result from position-making operations. We stress that Minsky advances an approach to central banking that is based on a cash-flow examination procedure to capture changes in the quality of leverage, solvency and liquidity of firms and banks that destabilize the macroeconomic system. We underline that Minsky patterns central banking and monetary policy within Ponzi financial practices and interconnections among financial institutions and financial markets. Following Minsky, we suggest discount window central banking, lender of last resort operations and targeting Ponzi finance as the most appropriate policies of modern central banks to deal with financial and macroeconomic instability.

Key words: Financial Fragility and Instability, Central Banking, Monetary Policy

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1. Introduction

The world financial crisis of 2007-08 challenged the policy-making of central banks and disputed the monetary policy implications and the intellectual foundations of the 'new consensus' approach to macroeconomics, which considerably influenced central banking before the crisis. The 'Great Crisis' makes apparent that conventional monetary and macroeconomic theories and models fail to recognise the systemic nature of the crisis and the implications for economic policy. Nevertheless, the depth of the recession that followed the financial crisis stimulated discussions among conventional economists, and in particular among new-Keynesian economists, about the goals and the procedures of central banks into the post-crisis 'new normal' (see e.g. Bayoumi et. al., 2014; Blanchard et. al., 2013; 2012; 2010; Mishkin, 2011).

Discussions range from the view that country characteristics matter and the challenges for monetary policy-making are different among countries; that price stability is insufficient for macroeconomic stability and, hence, other objectives in particular the stability of the financial system should enter the mandate of central banking. The 'divine coincidence' (Blanchard and Gali, 2007) that stable inflation keeps output around its efficient level, which was at the core of the inflation-targeting strategy, was broken down because of the failure of the New Keynesian models to consider the effects of credit frictions. Despite the fact that financial imbalances i.e. credit and asset booms are recognised as potential dangers for the financial system, conventional emphasis is still paid to inflation stabilization for the reason that credit constraints and balance-sheet shocks are considered as quantitatively small to affect the conduct of monetary policy (Bayoumi et. al. 2014). In this context, a flexible inflation targeting strategy is presumed to be more effective for macroeconomic stability and very much attention is paid to micro-prudential

and macro-prudential policy as a set of tools that can improve the effectiveness of fiscal and monetary policy.

Unfortunately, the thrust of conventional monetary and macroeconomic theory is still a system of self-adjusting equilibrium. It is still conceivable, especially by the new-Keynesians, that central banks can 'optimize' their fine tuning to respond to financial crisis (Bernanke, 2013), to the extent that the crisis is perceived to be the result of random, external shocks, or of idiosyncratic, fraudulent behavior.

The conventional approaches to central banking exclude from consideration the dialectic between financial institutions and financial markets and, also, the associate risks in the bank's asset and liability account balances. But as Hyman Minsky (1986a, p. 3) has long argued 'in an era when performance failures demonstrate the need for economic reform, any successful program of change must be rooted in an understanding of how economic processes function within the existing institutions. The understanding is what economic theory is supposed to provide'. Conventional economists avoid to discuss the case for deeper monetary, financial and institutional reforms, as well as to inquire into the 'fundamentals' of the economic theory which frame their policy proposals. There has been indeed little debate about the broader purpose of monetary policy and of central banking in a period that the problems of unemployment, underemployment, poverty, social exclusion and financial fragility and instability have been critical policy issues.¹

¹ There is a growing heterodox literature that attempts to understand the causes and the consequences of the global financial crisis (see e.g. Tymoigne and Wray, 2014; Wolfson and Epstein, 2013; Leclaire et. al., 2011; Whalen, 2011) and to propose policy reforms and alternative views on central banking and monetary policy (see e.g. Palley, 2013a; 2013b; 2006; 2004; Arestis and Sawyer, 2012; 2010; 2006; Rochon and Olawoye, 2012; Argitis, 2011; Tymoigne, 2009; Epstein and Yeldan, 2009; Rochon, 2007; Rochon and Setterfield, 2007).

The purpose of this paper is to pinpoint the importance of Minsky's conceptualization of financial fragility and instability for an alternative approach to central banking and to monetary policy.² We will argue that this approach draws a realistic policy framework for modern central banks and especially for the European Central Bank³ to promote financial stability, employment and price stability. The rest of the paper is organised as follows: Section 2 draws attention on Minsky's analysis about the crucial role that financial fragility plays in the interrelation between the financial and the macroeconomic instability. Section 3 focuses on how unsustainable leverage structures and low quality of solvency structures create fragile balance sheets of firms and banks that in turn generate conditions for financial fragility and instability. Section 4 marks out Minsky's suggestion that central banks must use a cash-flow examination procedure to evaluate creditworthiness, credit risk and the margins of safety of borrowers and lenders in terms of the quality of balance sheets and contractual relations; and pinpoints that Minsky's financial macroeconomics contextualises the goals and the procedures of central banking in monetary production economies. Central banks must use discount window mechanisms and lender of last resort interventions to target risky position-making operations, the solvency of liability structures and the stability of financial markets to build conditions necessary for the coherence between the financial and the macroeconomic system. Furthermore, it is argued that central banks should also focus their attention on the monitoring of financial innovations and the regulation and management of Ponzi position making operations in order to promote developmentally friendly and stable financial structures targeting full employment with price stability. Section 5 concludes.

² *For a critique of Minsky's approach in a fully endogenous money perspective, see Parguez (2003).*

³ Minsky's theoretical foundations and monetary policy prescriptions are very important for the European Central Bank for the reason that its mandates continuous to reflect the influence of the "new consensus" approach to macroeconomics. However, in the last two years the European Central Bank implements non-conventional policy interventions, which do not have solid theoretical foundations.

2. Financial and macroeconomic instability

Minsky's Financial Instability Hypothesis (henceforth FIH) conceptualizes and contextualizes central banking and monetary policy in relation to position-making processes in real and financial assets. The thrust of Minsky's approach is that central banks must deal with risky position making processes that trigger endogenous non-sustainable leverage and liability structures, which affect negatively the financial structure of the effective demand and the cohesion between the financial system and the macroeconomic system.

More specifically, Minsky develops a financial macroeconomic approach to elucidate the interaction between the macroeconomic system and the institutional evolution of the financial system. Minsky (1980a; 1980b) envisages this interaction to have a crucial role for the coherence of the monetary production economies. The reason for this is that financial and macroeconomic instability and debt-deflation processes happen in capitalism because of the evolution of financial institutions and of the financial markets that swing between robustness and fragility. In other words, the understanding of the financial and the macroeconomic instability requires the comprehension of the process of macroeconomic change in the light of the evolution of financial institutions and of financial markets and their response and interaction with changes in the policy-making of governmental institutions and especially of the central bank.⁴ It is crucial to mark out that for Minsky (1981; 1986a; 1993), macroeconomic stability means a process of

⁴ At this point, it is worthy to note that Minsky's financial macroeconomics discard the idea that macroeconomic stability can be a natural outcome of a *laissez faire* market economy and fine-tuning (see e.g. Tymoigne and Wray, 2013; Argitis, 2013a; 2013b).

capital development that generates full employment with price stability under the presumption that these effects can be achieved and sustained by financial market processes. In this vein, macroeconomic stability advances the implementation of macroeconomic policies that target full employment rather than growth (Minsky, 1975a). The distinction between growth and full employment is essential because it put forward that Minsky conceptualises the goals of full employment and economic growth as independent goals (Tymoigne, 2006).

Therefore, to draw out the essence of Minsky's view of macroeconomic instability, it is important to think about the endogenous nature of financial instability and the institutional logic of the evolution of financial linkages and practices among financial and non-financial organizations and financial markets. Financial instability is the process through which financial fragility impacts on the non-financial side of the economy (Tymoigne, 2006; 2012). Financial fragility results from the 'natural' propensity of economic units to make positions in order to make profit. In complex financial systems position-making⁵ operations increase the likelihood for maturity mismatch between assets and liabilities on the balance sheets of firms and banks. This effect makes the asset and/or the liability side of the balance sheet very sensitive to changes in e.g. the interest rate, the income amortization rate, which affect the solvency and the liquidity of the organizations. In this manner, the safeguarding of a stable financial system is fundamental for a capitalist economy to achieve full employment and price stability.

As a result, Minsky develops an institutional specific approach to central banking that works up his conceptualization of the 'Wall Street' model of capitalism as an integrated production, trading and wealth owing capitalist

⁵ The notion of 'position making' is fundamental to Minsky's approach and implies the process that investors make investment and financing decisions and in particular portfolio transactions to meet balance-sheet commitments. See also footnote 8.

economic system with banking. The special characteristic of this capitalist model is that its cohesion depends on processes that generate structures of financial claims and commitments. Central banking should establish functions and operations to sustain the coherence between the financial system and the macroeconomic system and to cope with the 'natural' financial and macroeconomic instability. The origin of this 'natural' instability is the inability of deficit spending units to meet their financial commitments, because of maturity mismatch between assets and liabilities on the balance sheets of firms and banks. In this sense, financial fragility and instability dominate the relations of production and distribution in determining the macroeconomic stability and performance. A stable monetary and financial system that accommodates the funds needs of capital development targeting full employment should be the overriding goal of central banks and of monetary policy in order to promote financial and macroeconomic stability. Central banks must focus attention on the micro and macro dimensions of financial fragility that is to monitor and manage the quality of the leverage structure and the solvency of the liability structure of firms and banks. In other words, monetary policy must sustain flows of liquidity between the 'real' sector and the financial sector that would in turn sustain the level of the effective demand that promotes full employment with price stability. The dialectic between the evolution of financial institutions-financial markets and of the macroeconomic environment contextualizes Minsky's approach to central banking.

3. Position making and financial fragility

Minsky (1975a; 1986a) has put forward a 'two-price systems' to illustrate the interaction between the financial system and the macroeconomic system and, arguably, the role that the fragility of the financial system plays in generating endogenously conditions for financial and macroeconomic instability.

Minsky's 'two-price systems' is an institutional process that describes the interconnection between asset prices, capital development and the importance of central bank's functions in building a macroeconomic safety net.⁶ According to Kregel (1992), Minsky's 'two prices' approach contains two levels of analysis⁷. The first level, which is presented by Keynes in the *Treatise*, distinguishes between the prices of current output and of capital goods output. The second level, which is added by Keynes in the *General Theory*, distinguishes between the prices of new and existing capital assets from the prices of new and existing financial liabilities. Kregel (1992) argues that the first level conceptualizes the financial instability hypothesis; the second level brings out how changes in asset prices and the quality of the leverage structures of firms and banks are likely to affect confidence in their liability structures.

At the centre of Minsky's 'two-price systems' is the process of capital development that connects the macroeconomic structure and the financial structure of a capitalist economy. The crucial role of the asset price system is related to the investment uncertainty and the amount of investment undertaken by the firms, which, in turn, determines the effective demand and the amount of aggregate profit to be realised and distributed among the firms. The process of capital development is a position making process in real and financial assets, which is structured as dated payment commitments. In other words, position making builds leverage structures and creates liability structures, which will be validated or repudiated by the solvency and the liquidity posture of economic units.

⁶ It is worth pointing out that Minsky has frequently connected the absence of attention to his 'two price systems' in the conventional literature with the belief that economic policy is exhausted by the fine-tuning of the economy (see Ferri and Minsky, 1989). For a more detailed exposition of Minsky's 'two price systems' see e.g. Wray and Tymoigne (2008).

⁷ Kregel (1992) argues that Minsky develops his concept of financial instability for the reason that he focused his attention on Keynes' analysis of prices.

Minsky's major contribution to central banking is that firms and banks customarily make use of leverage with diminishing cushions of safety (see e.g. Papadimitriou and Wray, 1998; 2010; 2012; Kregel, 2007). The reason is that for an organization, the generation of sufficient cash flows to fulfil financial commitments becomes the prevailing expectation. If the realised cash flows are substantially less than the cash commitments, firms and banks are exposed to the risk of insolvency, default and liquidation. In this manner, the realised cash flows of firms and banks and in particular their expected and realised profits are the centre around which financial fragility revolves (see e.g. Minsky, 1986a; Tymoigne, 2006; 2009; Tymoigne and Wray, 2014). Minsky (1985-6, p. 7) in particular observes that profits 'are the raw material for the formation of bankers' and businessmen's expectations, that lead to investment and financing conditions, and they furnish funds to financing institutions, which enable them to acquire new issues that finance investment'. When actual profits come about to be lower than the expected ones, economic units have probably engaged in leverage structures that make them unable to sustain the solvency of their liability structures. This result is likely to bring on banks to deleverage and so to affect negatively firms' decisions to make new positions in real capital assets. In this sense, financial fragility causes financial and macroeconomic instability.

Minsky (1970) contextualises his conception of financial fragility in the institutional environment of a euphoric economy (see also Tymoigne, 2006; Tymoigne and Wray, 2014). The thrust of his argumentation is that when a euphoric transformation of expectations takes place, the present value calculations of gross profits reflect over-optimism and less uncertainty about the future behavior of the economy. As the belief in continuing expansion prevails, positive expectations of gross profits increase investors' willingness to make new positions in capital assets creating liability structures that are likely to have been considered undesirable in other times. Banks that supply

financial resources and live, hypothetically, in the same expectational climate with those that demand more financial resources will accommodate liability structures that would have been considered undesirable in other times. Therefore, the supply conditions from banks for financing new positions in capital development improve simultaneously with an increase in the willingness of firms to emit liabilities to finance these positions.

Minsky (1970) pinpoints that economic euphoria downgrades the business cycle effect on the present value of profits and of cash flows and makes firms and banks to demand assets whose returns depend upon the performance of the economy. Banks' illusions about the risk of a liability structure reflect changes in the state of expectation that represent a higher confidence in expected cash flows. This process of changes in conventions causes the undervaluation of the credit risk of borrowers and lenders as well as their margins of safety.

In this institutional setting, the shift to higher leverage is likely to reduce the quality of leverage and to make banks to engage in liquidity-decreasing portfolio transformations, accepting low quality liability structures –their own and those of borrowers. A hypothetical large fall in asset prices increases uncertainty about the ability of firms and banks to meet payment commitments and to sustain their leverage and liability structures. Higher uncertainty evaporates the confidence in views that firms, banks and financial institutions held about several probable alternative prospects of the economy. Any fall in the value of real capital assets relative to the price level of current output and money may induce changes in portfolio preferences that will reduce new positions in real assets and thus in income and employment. If the new investment generates cash flows substantially less than the cash commitments, firms and their creditors exposed to the risk of default and liquidation. The default risk depends on the degree of firms' leverage and

increases when the quantity of investment rises, because lenders and borrowers perceive greater risk associated with a higher amount of lending and informal rules of thumb to appreciate their margins of safety. Uncertainty over the value of a bank's liabilities and low margins of safety are a possible source of financial panic. As a result, over-leverage and changes in conventions may cause the financial markets to evolve from robust to fragile increasing the possibility of a debt-deflation process, if governments and central banks do not prevent these processes.

Furthermore, in Minsky's 'two price systems', the administration of prices might be used by firms to increase their control over nominal cash inflows. Argitis (2013a) argues that inflation is a mean for firms to affect the formation of the expectations of banks about their financial posture, the quality of leverage structure, solvency and liquidity. However, at the macroeconomic level, inflation is likely to influence the distribution of income at the expense of wage-income and, in a Kaleckian manner, to decrease the effective demand causing realization problems in firms' cash inflow process. Unfulfilled cash inflow expectations lead firms to fail to honour their debt commitments, stimulating liquidation processes that bring about falls in capital asset prices. Liquidation negatively affects the quality of bank assets and the value of bank liabilities and increases lenders' solvency risk. Uncertainty over the quality of banks' leverage and the value of their liability structure is the source of a cumulative causation process that might trigger financial panic, instability and crisis. Consequently, the normal functioning of a capitalist economy induces endogenous changes in the quality of leverage and the solvency of the liability structures of firms and banks making the financial system fragile and unstable and a Fischer's type debt-deflation process possible. In addition, Minsky (1970) argues that a change in the desired portfolio composition is associated with certain features of the financial system that determine its stability or instability. The domain of stability of the financial system is an

endogenous process that depends upon the quality of the leverage structure and the solvency of the liability structure as well as institutional arrangements. The exogenous elements in determining the domain of financial stability are the government and central banking arrangements.

Consequently, the financial system and in turn the macroeconomic system are fragile and unstable in two senses. One is the willingness of firms to make new positions in real capital by emitting high-cost liabilities increasing the demand pressures on the available liquidity. Over-leverage includes risk or uncertainty born by borrower's risk. The second is the acceptance by banks and financial institutions of low-yield assets, when the yield is adjusted to allow for lender's risk. However, for Minsky (1970; 1986a; 1986b) the root source of financial and macroeconomic instability is the evolving institutional and structural characteristics of the financial system that affect the nature of the primary assets, the extent of financial layering and the evolution of financial institutions and usages that change the terms and directions of the flow of liquidity. Higher uncertainty upon the cash flows generated by real and financial assets changes the expectations about the quality of the leverage structure and the solvency of the liability structure of firms and banks and at a sectoral level can escalate to a systemic financial fragility and instability.

In this context, Minsky argues that units, in order to protect their solvency, tend to demand assets that offer protection against a liquidity crisis or temporarily disorganized asset markets. According to Minsky (1970, p. 27) 'liquidity preference is defined as a rational person's demand for money as an asset; this leads to a determinate demand function for money for any "value" of higher order uncertainty'. And he adds: 'The risk averter reaction to a decline in confidence is to attempt to increase the weight of assets that yield flexibility in portfolio choices, in other words, to increase the value not only of money but also of assets that have broad, deep and resilient markets' (p. 27).

An increase in uncertainty, because of a decreasing quality of leverage, shifts the liquidity preference function, and this shift can be quite marked and sudden. If risk averters are dominant then it is likely that a sharp increase in uncertainty will result in the price of unprotected assets falling relative to protected assets inducing changes in the quality of the leverage structure of firms and banks and their capacity to cover their liabilities. This endogenous dynamics of a capitalist economy contextualizes Minsky's evolutionary understanding of central banking.

4. Central banking and monetary policy

Minsky's view of central banking arises from his institution-specific conceptualisation of the 'Wall Street' model of a capitalist economy. Central banking takes place in a complex environment. Complexity arises from the interconnection between the macroeconomic system and the financial system that involves financial and investment relations among banks, firms and households which determine the financial structure of the effective demand. Minsky pays particular attention to the evolution of the economic and financial structures and institutions, the responsiveness of central banks to changes in the economic, monetary and financial environment and the possible incompatibility among policy objectives. Furthermore, central banking must be evolutionary in a sense that any set of policies and interventions generate counter-reactions by economic units.

For Minsky, an effective central banking requires an appropriate type of bank examination from the standpoint of the FIH. Minsky proposes a 'cash-flow' based bank examination procedure that involves a 'banking theory' for all units to consider the role of central banks in an economy with banking. Minsky and Campbell (1988, p. 255) argue that such an approach 'needs to look behind the runs and analyze the structure of balance sheets, payment

commitments and position-making activities. Position-making for a bank consists of the transactions undertaken to bring the cash position to the level required by regulation or bank management. In the position-making view, bank failures do not arise simply because of incompetent or corrupt management. They occur mainly because of the interdependence of payment commitments and position making transactions across institutions and units’.

The central point of the cash-flow examination procedure is that it perceives liquidity not as an innate attribute of an asset but as ‘a time related characteristic of an ongoing, continuing economic institution’ (Minsky, 1967, p. 1). ‘Any statement about a unit’s liquidity, therefore depends upon estimating how its normal activities under which its assets (including its ability to borrow as an “honorary” asset) can be transformed into cash.... Any statement about the liquidity of an institution depends upon assumptions about the behavior of the economy and financial markets. As the assumptions are changed, the estimate of the liquidity of the institutions will vary’ (Minsky 1967, p. 2). Minsky distinguishes between ‘position liquidity’ and ‘market liquidity’ to pinpoint the ‘dual vulnerability [that] emerges whenever cash flows from operations are insufficient to meet financial commitments’ (see Kregel 2014, p. 6). In this context, central banks should identify systemic risks and stabilize financial markets through protecting various assets to accommodate the liquidity needs of organizations.

Tymoigne (2006) discusses that Minsky introduced a ‘cash box condition’ to focus emphasis on the fundamental role of the coordination failure between the payments required by a liability structure and the generation of cash to fulfill such commitments. For each economic unit, sector or economy, there are different sources and uses of funds from economic activities that involve

income transactions, balance sheet transactions and portfolio transactions.⁸ In his *Stabilising an Unstable Economy*, Minsky (1986a) defines financial fragility and instability according to the proportion of income transactions to the balance-sheet transactions and the portfolio transactions. Financial fragility is associated with the relative importance of income, balance-sheet, and portfolio cash flows. However, Minsky pinpoints the significance of the income cash flows for the reason that they form the basis upon which the balance-sheet and portfolio cash flows rest on. An economy in which income cash flows fulfill the financial commitments is robust. An economy in which portfolio transactions are used by organizations to meet liability commitments is potentially fragile and is prone to debt-deflation processes.

Tymoigne (2006) offers the consideration of two significant points in Minsky's cash flow approach. The first is that financial fragility and instability appear to depend upon position-making processes that are necessary for the organizations to meet balance-sheet commitments with portfolio transactions. The second point is that the 'cash box condition' advances that there are different margins of safety for economic units. The availability of liquidity depends on the margins of safety that are embodied in the expectations about the excesses of cash inflows over financial commitments. Tymoigne (2006, p. 17) argues that in terms of the 'cash box condition', the margins of safety corresponds to the expected existence of a positive net cash inflow on income and balance-sheet operations, the expected capacity to increase cash at low cost from portfolio operations (speculation and position making) and the existence of a secure idle amount of cash and superfluous liquid assets that reduce the need to liquidate strategic assets.

⁸ Tymoigne (2006, p. 16) analyses the sources of cash inflows as follows: Cash from income operations: Production and sale of output; Cash from balance-sheet operations: Financial contracts; Cash from portfolio operations: a) Refinancing: Sales of unsecured debts and sales of secured debts, and b) Liquidation: i) Sales of liquid and superfluous assets and ii) sales of illiquid and strategic assets.

Minsky associates the margins of safety with the liquidity and solvency risk of organizations. The liquidity risk depends upon a unit's way to obtain cash from financial markets. A unit is perceived as liquid when its net cash inflow is positive and solvent if the present value of strategic assets is greater than the present value of its liabilities. Besides, the structure of assets and liabilities (quality, maturity, liquidity, proportion) plays significant role for the solvency and the liquidity of a unit. Minsky classifies these considerations in his well known three financial postures i.e. hedge, speculative and Ponzi.⁹ Tymoigne (2012, p. 3) notes that 'Ponzi finance relies on an expected growth of refinancing loans (taking on debt to repay other debts), and/or an expected liquidation of asset positions at a growing asset prices in order to meet debt commitments on a given level of outstanding debts'. For Minsky this possibility depends to a significant effect on the operations and functions of central banking and of other governmental institutions and their capacity to originate policy processes that can sustain the viability and the sustainability of leverage and liability structures.

In this context, Minsky (1970) thinks about that the domain of stability of the financial system depends on the evolution of the following three factors: the relationship between the cash flows and cash receipts; the weight in the units' portfolios of those assets that can be easily sold or pledged; the effect that the expectations of growth and of rising asset prices have on current asset prices that are used from units as collateral in order to have access to

⁹ In the vein of the 'cash box condition' a unit is hedge when the net cash inflows from income production and distribution are less than cash outflows on balance sheet commitments. In this case, there is no need for a unit to make positions. A unit is speculative if the expected net cash inflows from the main income production activities and cash reserves cannot cover the cash outflows and in particular the capital component of liabilities. In this case, refinancing does not increase liabilities, however it is a flaw in a unit's financial structure because it increases its dependence on the money markets and its sensitivity on changes in interest rates. A Ponzi unit is not expected to create the net cash flow for its main production activities nor to have adequate liquid assets to fulfill the capital and the interest components of balance-sheet commitments. As a result, a Ponzi unit involves defensive position making operations, i.e. refinancing and asset liquidation (see Tymoigne 2012, p. 3).

liquidity. Financial fragility and instability is more probable the closer the articulation of payments, the smaller the weight of protected assets and the larger the effect of growth expectations and realised increases in asset prices on current asset prices.

In this complex environment, a central bank is the institution that should have the power and the responsibility to build a 'macroeconomic safety net' (Minsky, 1987), in order to cease financial fragility and instability and to enforce coherence between the financial system and the macroeconomic system.¹⁰ In achieving these goals central banks should act as a) the stabiliser of the monetary and financial systems and b) the regulator of financial practices and usages targeting Ponzi finance.

4.1. Central bank as the stabilizer of the monetary and financial systems

Minsky's cash-flows examination procedure implies the principle that central banking should pay attention to position-making operations and to the uncertain nature of the actual cash flow relationships, for the reason that they are essential sources of information. A forward looking cash flow analysis provides information about the impact of alternative policy operations upon the cash flow and hence for a more precise evaluation of bank's capital adequacy and liquidity needs. In addition, central banks must be able to estimate the direct and the indirect impact of variations in national income upon the ability of the economic units in various sectors to fulfill their financial commitments. Another implication of the cash-flow examination procedure is that it reveals the importance of orderly secondary markets. The

¹⁰ It is worthy to note that for Minsky, institutions and interventionist policies cannot permanently stabilize financial markets and cannot bring the economy to stable full employment, but can only set ceilings and floors to tame with 'natural' instability (see e.g. Minsky and Ferri, 1991; Minsky et. al., 1994).

capacity of economic units to sell assets in order to refinance their position making depends on whether purchased liabilities are guaranteed sources of cash at guaranteed prices. The solvency risk makes units to demand assets that offer protection against a liquidity crisis or temporarily disorganized asset markets.

Minsky proposes that the central bank should be the institution that can guarantee the breadth, depth, and resiliency of a market by choosing the instruments to finance position takers in order to stabilize asset prices. This procedure is even more necessary if new asset classes become important in units' portfolio preferences. In such a case financial stability depends on central banks' targeting the development of new or strengthened secondary markets or additional discount facilities. Therefore, secondary markets can stabilize the financial system when they provide the liquidity that transforms assets into a reliable source of cash whenever an economic unit has to finance or refinance a position. The central bank is the only institutional source of refinancing that can be truly independent of changes in confidence of the financial markets.

In this context, the domain of stability of the economic system requires central banks that are effective to stabilize the monetary system and the financial system. Central banks can be effective if they function as a controller of the domestic liquidity and of financing terms and as a lender of last resort.¹¹ This function, as it has been argued by Minsky (1977), requires that the central bank to be discretionary aiming to act as a direct participant in the

¹¹ Minsky (1977) marks out two more functions of central banking that stabilize the monetary and financial system: a central bank as a protector of exchange values and as a fiscal agent of the government.

financial markets where the prices of the financial assets, the quality of leverage and the solvency of emitting liabilities are determined.¹²

More specifically, in monetary production economies the money supply emerges out of financial processes and it changes as the financial structure of the economy evolves. As a result, the evolution of the financial structure contextualizes the operations and the instruments that central banks must use to affect liquidity and the financing terms. The mix of operations and instruments institutionalizes particular relations between central banks, banks and financial institutions and channels through which the liquidity allocated to businesses and households influencing the financial structure of the effective demand. Minsky (1977) distinguishes between two types of central banking-private banking system relation. In the one type the central bank's contact with the economy is through the discount window and the instruments that are used reflect private debt. In the other type the contact is through operations on bank reserves by buying and selling treasury securities on the open market. In this type central banks do not directly take part in the financing processes of private banking except when the financial system exhibits functional problems.

Minsky's key suggestion is that central banks are more effective to stabilize the monetary and financial systems when they use the discount window as a major source of banks reserves. Kregel (1992, p. 88) notifies that 'Minsky's support of discount policy is an attempt to introduce monetary policy at the beginning rather than at the end, of the process which determines capital asset prices, i.e. at the moment when banks and firms evaluate the future profitability of investment in drawing up lending agreements.' Minsky (1977) discusses several attributes of the discount window central banking that

¹² See e.g. Kregel (1992), Tymoigne (2009), Tymoigne and Wray (2014) and Wray (1992; 1995; 2007).

improve the domain of financial stability. Borrowing from the central bank is at short term and it is collateralized by approved classes of instruments. The short-term nature of the indebtedness of banks to the central bank and the short term nature of the business debt that was eligible for collateral compose a process of a steady flow of cancellation between private debt, bank deposits and borrowing. Besides, when central banks change the terms upon which they accommodate bank borrowing, it is likely this change to be transmitted to the terms upon which banks and financial institutions provide liquidity to business and households. In addition, in the discount window technique of central banking, the initiative for changes in the quantity of discounting and the quantity of bank reserves comes from the market and in particular from the banks that hold eligible assets, despite the fact that central bank decides the terms upon which discounting is available.

In this vein, Minsky's proposition that a central bank should not limit rediscounting to specific assets is crucial for the stability of the financial system. His argument is that any financing instrument can be afforded the protection of a guaranteed market, especially when they generate a large cash flow to the lending institutions. Central banks should target to maintain orderly conditions in some markets that create sustainable conditions of refinancing to position takers. The protection of position takers is necessary for the solvency of the liability structures of economic units. The central bank should intervene before the collapse of market asset values, which is likely to cause a serious depression and debt deflation, in order to stabilize income and the solvency of firms and financial institutions.

It is worthy to pinpoint that in Minsky's system, the minimization of the impact that financial instability has upon income and employment depends on the increasing use of central banks' discount window. The reasoning is that if secondary markets are to grow as a way of generating liquidity and solvency

problems, then the protection of the position makers depends on their access to guaranteed refinancing. The central bank is the only institution that can guaranty this protection. Nevertheless, central bank's credibility to maintain orderly conditions in some market relies on its working relations with market participants. Thus, it is crucial for the central bank to be a regular liquidity supplier to the secondary markets it targets to stabilize. Consequently, an effective central bank reflects upon the portion of the total reserve base of banks that is due to discounting in a wide variety of asset markets. Discounting counteracts liquidity pressures, operates as a credible source of reserves and stabilizes asset prices and the solvency of liability structures.

Furthermore, by setting standards for eligibility to assets to be used as collateral at the discount window, central banks increase their capacity to promote and control specific assets that they desire to see used and the investment plans they prefer to see financed. Furthermore, discount window central banking allows central banks to evade commercial banks and financial institutions and directly finance business activity. Minsky thinks about central banks to create reserves by discounting against banks' commercial lending cofinancing business to encourage and sustain hedge financing (Minsky, 1986). Therefore, discount window central banking creates possibilities for central banks to provide liquidity directly to the markets to protect desired assets, as well as to economic activities they prefer to promote influencing the allocation of liquidity in the economy; and keeping the financing techniques from fueling speculation, over-leverage and inflation.¹³

In contrast with open market operations central banking that tends to focus emphasis on the quantity of liquidity and hence the quantity of money, the

¹³ In open market operations central banks deals only in government debt and affect the functioning of the economy only through the changes in the reserve base of commercial banks.

discount window central banking focuses emphasis on the quality of bank financing and the terms upon which liquidity is available to the units of the economy. In this vein, Kregel (2013) suggests that we should replace the quantitative with qualitative monetary policy. The thrust of Kregel's argument is that financial stability requires the formulation of a new Qualitative monetary policy, which 'reverse the concept of the lending the funds of depositors and recognise the importance of creating liabilities through the extensions of credit and the acquisition of assets' and examines 'bank's balance sheets from assets to liabilities, rather than from liabilities to assets' (Kregel, 2013, p. 9). Therefore, central banking is effective if it can support the value of bank liabilities taming the endogenous fragility and instability, and making lender-of-last-resort interventions less necessary. Nevertheless, the use of discount policy as a stabilizer of the monetary and the financial systems requires a wide range of assets eligible for discount. This could be a major target of central bank's policy discretion.

Minsky also perceives high interest rates as catastrophic for the reason that they increase the cash payment commitments as positions are refinanced. The higher cost of the refinanced inherited debt may create solvency and liquidity problems that may affect negatively capital development and the macroeconomic stability. The available cash flows may fall short of expectations because of the increased cost of the refinanced inherited debt and hence units will need to be financed by emitting new liabilities or by selling assets. This might reduce the quality of the resultant balance sheet as cash flow commitments would be larger than the target envisaged when the positions was undertaken. Consequently, in Minsky's system, tight money can cause financial and macroeconomic instability because it changes the monetary and financial environment in which decisions were made. In addition, asset holders might be forced to make more risky portfolio decisions to counterbalance the lower cash flows expected in times of greater ease.

Therefore, higher interest rates, which measures tight money, induce substitutions in portfolios that make possible financial instability and hence central bank's interventions on grounds of lender of last resort in order to maintain orderly market conditions.

Concluding, central banking has the power to prevent financial and macroeconomic instability if it can create the monetary and financial conditions for higher investment in real assets and higher employment, which generate cash flows and income-based lending. Liquidity allocation that promotes asset creation and bubbles at the expense of investment and employment does not generate sustainable cash flows and motivates asset based lending which increases financial fragility and instability. In the discount window central banking, central banks can buy and sell private debt instruments and can protect and support particular types of assets and liabilities that create employment improving the domain of stability of the system. Open market operations have an indirect impact on asset prices and are effective to control un-borrowed reserves and the liquidity of the balance sheet. Minsky proposes an extended use of central bank's discount mechanism that provide liquidity to support asset prices in conjunction with supervision of a reserve-creation 'relationship' between the banks and the central bank (Kregel, 1992). The reasoning is that financial fragility arises not only from the financial connections and interrelations between non-financial units and banks, but also from lending relationships between the banking system and the central bank.

The lender of last resort function is 'complementary' to the discount window central bank technique to stabilize the monetary and financial systems. Minsky argues that a lender of last resort function is an economic rather than a technical banking function of the central bank. The lender of last resort function comes into play when a financial system is fragile because a

speculative burst of investment and financing of positions in capital assets have taken place. The central bank as a specialized agency should protect certain classes of bank liability holders against significant losses. This may be done if the central bank stands ready to acquire certain classes of assets from commercial banks or other financial institutions. Because of this attribute the lender of last resort function does involve a support to particular financing practices. Thus, lender of last resort interventions are necessary to target directly the purchase of assets of questionable value or the lending to creditors with high probability of default in order to prevent defaults that might lead to a snowball of other failures.

However, lender of last resort functions must not be restricted to financial institutions but rather the central bank has to be a lender of last resort to the entire economy (Kregel, 2013). Doubtless, lender of last resort interventions are likely to increase moral hazard effects and to change the expectations of economic agents triggering financial innovation and increasing the possibility of financial instability and crisis. To prevent these effects, Minsky proposes the lender of last resort interventions to accompany with regulation and supervision of private balance sheets (Minsky, 1992).

The central bank has the power to protect or to penalize particular financial practices and institutions. This power enables a central bank to affect the terms on which particular activities are financed that is to affect relative prices. Such qualitative power can be used to affect the overall behavior of the economy as well as the allocation of liquidity to different sectors. A central bank has, thus, the capacity to affect the direction that the financial system takes, especially when the financial system is robust. In addition, a central bank can affect the profitability of some financial practices, and hence can guide the activities of financial institutions by controlling usages, supervising and regulating financial institutions, legitimating some financial instruments

and disapproving others via its refinancing policy (Minsky and Campbell, 1988; Kregel, 2014).

4.2. Targeting Ponzi finance

Tymoigne (2009) and Tymoigne and Wray (2014) bring forward that central banking would be effective to stabilize the monetary and financial systems if it get down to target Ponzi finance so to minimize the possibility of financial fragility. Following Minsky's cash-flows examination procedure, Tymoigne and Wray (2014) argue that central banks and regulators should pay attention to the cash flows that indebted economic units use to repay debts rather than to their ability to repay *per se*. The reasoning behind this distinction is that the ability to pay financial commitments does not necessarily imply low credit risk, high margins of safety and financial robustness.

Low credit risk might also be associated with available refinancing sources because of increasing asset prices and higher value of collaterals. However, in this case, low credit risk might indicate a fragile financial system, especially in the institutional context of an open market operations central banking that assets are not protected directly by the central bank. On the other hand, high credit risk due to limited ability to fulfill debt commitments might not be a warning of financial fragility, if this inability is associated with available income, cash reserves and jobs instead of available sources of refinancing and asset bubbles that induce unsustainable values of collateral. Thus, as it was argued in the previous sections, credit risk and financial fragility are highly related with the reliance of a unit on position-making operations in order to have open refinancing sources. If a unit is unable to make new positions, the possibility that it will face liquidity and solvency problems considerably increases.

In this respect, Tymoigne and Wray (2014) notice that despite the fact that capital and liquidity buffers on banks, deposit insurance mechanisms and lender of last resort interventions are important elements of banking regulation and supervision, they might not be effective to deal with a unit's risk of position-making operations. Therefore, central bankers and regulators should take a more proactive and flexible approach to detect risky position-making operations that are correlated with financial innovations, the changes in refinancing sources and channels and in loan and security underwriting methods used by the banking system. Furthermore, the more complex financial interdependence is, especially in periods of new waves of financial innovations that induce position-making procedures, the more fragile the financial system is and the most crucial is the impact of a shock, such as default, decline in income, rising interest rates, fraud, on the financial system and the macroeconomic system.

Nevertheless, the fragility of the financial system depends on the relative weight of hedge, speculative and Ponzi units in an economy. Hedge units involve income-based lending and their creditworthiness is associated with income from normal operations. Collateral may still be required to determine the margins of safety of a loan but its role is to decrease the credit risk of a bank instead of being a major source for a unit to service its debt commitments. Alternatively, Ponzi units involve asset-based lending and their creditworthiness change as a result of variations in asset prices. Thus, asset-based Ponzi units must sell assets at a high price in order to have positive net worth to meet their financial payments.

Minsky (1986a) argues that financial fragility emerges out of loans made by bankers and distinguishes between the loans that are based on the value of pledged collateral and the loans that are based on the value of the cash flows that are expected from income earning operations. Therefore, the conditions

that generate financial fragility risk are associated with the degree that the available liquidity to units depends on future changes in incomes and in asset prices. The main difference in the solvency status of organizations is their reliance on refinancing and liquidation on non-monetary assets to meet debt commitments. Hedge units do not need to make new position making operations. Ponzi finance relies on the capacity to refinance loans, and/or to liquidate asset positions in order to meet debt commitments. However, liquidation of non-monetary assets is not a normal source of cash inflows and creates complex and fragile financial links between asset prices and the quality of leverage.

Consequently, central banks should target the worsening in the funding quality used by firms to finance the effective demand and capital development when financial fragility prevails, taking preemptive measures in order to avoid the deterioration in the quality of leverage and the solvency of the liability structure. This is more probable to occur in the institutional structure of a discount-window central banking instead of an open market operations central banking. In addition, central banks and financial regulators must target a measure of leverage that, as Tymoigne and Wray (2014) pinpoint, it accounts for not only the size of the leverage, but also its quality that is defined by the expected reliance on refinancing and liquidation of illiquid assets in order to service debt commitments. When the solvency of the liability structure deteriorates and default rates grow, central banks have limited power to prevent financial instability and crisis, because the quality of the leverage is low. The sustainability of the funding practices and of position-making operations is crucial for preventing financial fragility and instability.

5. Conclusions

In Minsky's system, the financing and funds process of investment and, hence, of the effective demand fluctuates with changes to confidence of the expected business profits and to the expectations of future asset and goods prices. Monetary policy and central banking must recognize that in financial capitalism all capital asset positions are leverage and liability structures, the quality of which relies on the expectations of future cash flows that validate payment commitments. However, future cash flows depend of the state of the effective demand. In this respect, macroeconomic stability requires financial stability, or in other words, financial fragility and instability cause macroeconomic instability.

Leverage, deleverage and financial innovation make financial markets fragile and unstable. The reason for this is that position making operation in real and financial assets cause creative and destructive processes in financial markets. A comprehensive understanding of central banking should recognize the evolutionary nature of cash flows in the complex financial connections of the capitalist economies. Central banking and monetary policy should be conducted as a process of institutional adaptation to the evolution of the financial markets. Furthermore, central banks must develop a cash-flow orientated analysis of systemic risk by paying attention to position-making operations and the type of asset and liabilities that banks and other financial institutions have.

Minsky's approach to central banking provides theoretical foundations to restore the proper role for monetary policy and to change the mandate of modern central banks. This is crucial particularly in the case of the European Central Bank to deal with the current sovereign debt crisis and the banking crisis. Furthermore, Minsky's approach establishes the theoretical rationale

for many of the current “unconventional” practices of central banks. Our analysis pinpoints that powerful central banks, such as the Federal Reserve and the European Central Bank should target full employment by accommodating the financing needs of business and avoiding high interest rates, which tend to offset the expansionary effect of government deficits. In addition, they must function, especially the ECB, as an effective lender of last resort, so as to contain any snowball debt repudiation when a downturn causes profits and asset prices to fall. Besides, modern central banks must monitor financial innovations and the underwriting methods used by banks in order to detect Ponzi finance and to tame financial fragility and instability and the disrupting effects of banking on the macroeconomic system.

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The research programme will integrate diverse levels, methods and disciplinary traditions with the aim of developing a comprehensive policy agenda for changing the role of the financial system to help achieve a future which is sustainable in environmental, social and economic terms. The programme involves an integrated and balanced consortium involving partners from 14 countries that has unsurpassed experience of deploying diverse perspectives both within economics and across disciplines inclusive of economics. The programme is distinctively pluralistic, and aims to forge alliances across the social sciences, so as to understand how finance can better serve economic, social and environmental needs. The central issues addressed are the ways in which the growth and performance of economies in the last 30 years have been dependent on the characteristics of the processes of financialisation; how has financialisation impacted on the achievement of specific economic, social, and environmental objectives?; the nature of the relationship between financialisation and the sustainability of the financial system, economic development and the environment?; the lessons to be drawn from the crisis about the nature and impacts of financialisation? ; what are the requisites of a financial system able to support a process of sustainable development, broadly conceived?

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