Financialisation and Central Banks in the Global Crisis: the US and European experiences

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Abstract: In the context of increasing financialisation of which the freedom of capital flows is constituent, the processes of liquidity and public debt management by central banks have become more complex, mainly as a consequence of the global financial crisis that started in 2007. Based on the Marxist theory of money and finance, this paper discusses the specific form by which the European and US central banks have operated the monetary policy during the global financial crisis as an attempt to respond to their conjunctural and structural impacts. Section 1 discusses some features of Financialisation and put forward a Marxist political economy approach to central banks by arguing that monetary authorities are necessary products of the development of the credit system, under the logic of the process of capital accumulation. In section 2 discusses the main institutional characteristics in the monetary policy implementation in the USA and Eurozone. Section 3 shows that the differences on the institutional arrangements of the US and Eurozone experiences were taken into account in order to analyse the response of their central banks during the global crisis. In spite of these differences, the paper claims a similarity in the central bank's aims during their interventions. It is shown that when was crucial to address the huge banks liquidity problem, the Fed and ECB employed instruments of liquidity management, performing essentially the role of bank of banks, independently of their institutional constrains.

Resumo: No contexto de crescente Financeirização do qual a liberdade de fluxos de capitais é constitutiva, os processos de gestão da liquidez e de dívida pública gerenciados por bancos centrais têm se tornado mais complexos, principalmente como consequência da crise global financeira iniciada em 2007. Com base na teoria Marxista do dinheiro e das finanças, este artigo discute a forma específica pelo qual os bancos centrais norte-americano e europeu implementaram a política monetária durante a crise global como uma tentativa de responder aos impactos conjunturais e estruturais da crise. Seção 1 discute algumas características do processo de financeirização e coloca os principais princípios de uma interpretação marxista da economia política dos bancos centrais, mostrando que as autoridades monetárias são produtos necessários do desenvolvimento do sistema de crédito sob a lógica do processo de acumulação capitalista. Seção 2 discute as principais características institucionais na implementação da política monetária nos EUA e Eurozona. Seção 3 mostra que as diferenças nos arranjos institucionais nessas regiões foram levadas em consideração para analisar as intervenções dos respectivos bancos centrais durante a crise global. O artigo sustenta que a despeito das diferenças institucionais, os objetivos finais da intervenção dos bancos centrais europeu e norte-americano foram similares. O artigo mostra que quando foi crucial enfrentar fundamentais problemas de liquidez no sistema bancário, Fed e o BCE empregaram instrumentos de gestão de liquidez e, independentemente das respectivas condições institucionais, desempenharam essencialmente o papel de banco dos bancos.

Sessão Ordinária:

Area 5 – Dinheiro, Finanças Internacionais e Crescimento

5.2 - Economia e Finanças Internacionais

1- Introduction: some notes on Financialisation and the Political Economy of Central Banks

The phenomenon of a higher proportion of financial operations in relation to the trade activities and also the rising share of companies' profits coming from financial operations[1] rather than from productive activities is relatively well known (Mckinsey, 2008). In addition, in the major developed countries, the rise in the level of indebtedness among economic sectors, mainly in households, is a well established fact (Palley, 2007; Foster, 2006 and 2008; Lapavitsas, 2009; Langley, 2008; Stockhammer, 2010). Changes in the role of financial system, banks in particular, have happened in the last decades in terms of its relation to non-financial companies and households, and of its own main activities. In broad sense, it is possible to argue that finance has become even more important to the trajectory of capital accumulation.

Financialisation represents a profound transformation in capitalist economies based on changes in real accumulation since the early 1970s (Lapavitsas, 2009). Through this transformation, financial institutions have acquired a prominent role in the path of economic development (Epstein, 2005). Financial activities have spread into several new economic sectors and areas of daily life – housing, pensions, consumption, and so on. Growth of finance has provided fresh scope for the monetary relations (form of value[2]) to expand, mainly in developed capitalist countries. Important elements of this process have been the privatisation of activities and capital assets that were previously under state control, as well as the deregulation of financial markets and institutions. Moreover, deregulation of labour markets has contributed to foster "financial discipline" among workers. Therefore, financialisation is a key issue in the recent relationship between finance and development, as financial operations have become crucial for the pace of capital accumulation and there has been an enlargement of the financial sphere in the economy and in daily life.

Central banks have been fundamental to support this enlargement in developed countries through their liquidity operations in interbank (money) markets. In the financialisation era, these operations can be considered more important than other historical periods of capitalist accumulation. This paper argues that to understand the characteristics of

[1] For relevant data see Lapavitsas (2009).

[2] According to Marx (1973: chapters 1 and 3), money is the universal measure of value, and therefore their functions in a capitalist economy, such as means of payment, means of circulation, hoarding, resulting this to be the general representative of the value (form of value or value form). The Marx money's theory, therefore, is based on his labour-value theory.

those operations is necessary, primarily, to explain the nature of central banks in capital accumulation, namely the political economy of central banks (Painceira, 2011). The importance of understanding the nature of central banks and their institutional characteristics is to discuss the role of central banks on the liquidity and debt management, mainly during the global crisis started in August 2007, taking the US and Eurozone experiences. Then, this paper argues that despite their different institutional structures and objectives, the American and the European central banks have acted in the same manner to prompt interbank markets to work, properly.

This section shows that the role performed by central banks in money markets is fundamental to the development of the banking system, and consequently to the financial system. Furthermore, the organic connection with money markets is part of the key reasons for central banks to exist in capitalism. In this sense, this section also demonstrates that central banks have a dual nature in the capitalist economy, a public one related to its connection to the state, by being bank of state, and a private one due to its organic link with money markets, as bank of banks. This dual nature is important to understand the unfolding of the major central banks interventions (Fed and ECB) during the global financial crisis.

Historically, in developed countries, central banks emerged firstly as private banks which had acquired considerable power and a key position in the money market through the centralisation of banking reserves in their hands. Following Marx's theory on the characteristics and development of the capitalist mode of production, the discussion of this emergence in developed countries can offer insights into the nature of central banks in general.

As discussed below, the large private banks in developed countries were the pivot of banking reserves markets in terms of their functioning and to support their activities in crisis time. From the Marxist point of view, this role of bank of banks was developed through government actions on them by transforming those private banks in governmental banks by giving them special rights and by using them to fund state activities (war included) such as the Bank of England[3]. According to Harvey (1982: 248), central banks are "set apart from other banks by the granting of certain monopoly privileges." The state needs to fund its activities and it "can borrow directly from the banks; it can also seek recourse to the money market or to the capital market, thus creating the national debt. (…) The bank best able to marshal the available credit in the money market and place it at the disposal of the state (as

[3] Goodhart (1988) and Bagehot (1873).

well as lend on its own account) is the bank that possesses the main reserve of the banking system" (Itoh and Lapavitsas, 1999: 158). Therefore, central banks emerged as bank of banks and bank of state.

The private nature of central banks can be understood through the historical development of the major monetary authorities, such as in England and the USA. In relation to this private nature, this paper stresses the origins of some key central banks as private banks and, mainly, their intrinsic connections with the banking system through money markets. In this sense, central banks are a very special type of bank as they are involved in lending and borrowing operations. However, they operate in a very different way than any other banking institution as they do not have profits as an objective and their losses in asset positions are not backed by their own capital, because central bank is a bank of state. The official nature of central banks is important as "absolved from the necessity to compete, the central bank can dedicate itself to its sole task: to defend the quality of national money" Harvey (1982: 248). This quality is intrinsically linked to developments on money capital (credit money) created by banks.

Therefore, in spite of the connection between the emergence of central banks and governmental interest, the role of central banks performed in money markets was fundamental to the development of the banking system and consequently of the financial system. This would involve an apparent contradiction between state and private interests as far as the development (and role) of central banks is concerned[4]. Moreover, this role in money markets can be considered as the main reason for central banks to exist in the capitalist economy. It is important to establish that this role is also connected to and further reinforced by the development of domestic public debt markets[5]. In the section 3, the US and European public debt are discussed having in mind the implementation of the monetary policy in those areas, focusing on the period of the global financial crisis.

In the same vein, Goodhart argues that centralisation of banking reserves was fundamental to the emergence of central banks as "the development of such centralization, often through the correspondent system, on the one hand, and the provision of prudential insurance services by the major bank(s) at the center, on the other, was, however, severely restricted by conflicts of interest, so long as the major bank(s) at the center remained competitive, commercial banks. It was the large step to a non-competitive, non-profit-

[4] As discussed in Painceira (2011), this apparent contradiction is present in the mainstream tradition but not present in a Marxist approach as the process of capitalist development includes market and "non-market" forces.
[5] Focusing on the gold standard period, the organic link of central banks to developments on the credit system is fully analysed by Harvey (1982: chapter 9).

maximizing role that was crucial for the emergence of true Central Banks" (Goodhart, 1988:11). This author argues that financial crises were also one of the main reasons why the central banking system emerged[6].

Nonetheless, in spite of arguing for the importance of money markets, Goodhart's main arguments for the existence of central banks are related to the need to monitor banks and to keep the security of the payment system. More concretely, central banks are necessary as there are some important non-marked banking assets (basically loans), making it necessary to have fixed banking liabilities (such as checkable deposits), which are in turn better for their costumers, who are unable to monitor financial intermediaries. Therefore, for Goodhart (1998), the need for a monetary authority would be derived from banks, companies and banking costumers' needs and their interconnection. It should exist, because private regulation cannot properly address enforcement and incentive problems present in a free banking system. The lack of information on borrowers and lenders is the basis for the existence of central banks. Thus, the monetary authority has a coordination function.

However, this paper claims a Marxist perspective, in which centralisation of banking reserves is also fundamental to the emergence of central banks, but for distinct causes, as

> "money market banks can increase their efficiency and flexibility in both handling credit transactions and settling payments among themselves, by depositing a part of their reserves with a single bank and then using its banknotes for payments. The economies and elasticities arising from this practice are analogous to those that emerge when individual industrial and commercial capitals hold their reserves with a local bank." (Itoh and Lapavitsas, 1999: 99)

This centralization of banking reserves in one institution is also fundamental to the turnover of capital as whole as

> "the total fragmentation and decentralization of the financial system is, on the other hand, also detrimental. The quality of paper money is best guaranteed by a central bank with monopoly powers. Failure to centralize money power also acts as a barrier to the conversion of money into capital as well as to subsequent accumulation in so far as the latter depends upon the centralization of capital." Harvey (1982: 318)

Therefore, central bank is at the top of the pyramid of the credit system and has a fundamental role in capital accumulation. This process happened through the development of credit markets, in which commercial and industrial credits are involved. In a Marxist

[6] For more details, see Goodhart (1994).

perspective, the role of central banks is based on their relations with the credit system through the banking system. This structure takes the form of a pyramid (from the top downwards) which consists of money market and banking credit for any economic unit, including lending operations to enterprises. At the base, spontaneously emerging, we find the inter-company commercial credit, in which trade credit relations among companies are found. The pyramid itself rests upon capital accumulation, and central banking operations are at the top in direct contact with money markets[7].

As discussed above, this development generated money markets. Thus, the existence of central banks as proper banks is linked to the historical development of the banking system, even if we take into account the necessary state intervention in its creation through the establishment of the monopoly of legal tender. This action in turn obviously reinforced the central bank's role as bank of banks. There is a connection between the monopoly of legal tender and taxation, in the sense that this monopoly power is backed by the taxation system. In a Marxist perspective, taxes are part of surplus value and variable capital, and then this system is in the circulation sphere of capital[8]. Consequently, the taxation system is directly connected to credit system and with other forms of revenues as "the buying and selling of titles to future revenues of any sort integrates other aspects of distribution (the appropriation of rents, taxes and profit of enterprise) into the general system of circulation of money capital." Harvey (1982: 285)

There are two dimensions to the role of bank of banks which are linked. Firstly, it is connected to the centralisation of banking reserves, which is the fundamental base for the development of money markets. The second one is the function of lender of last resort. This function is normally necessary when money markets are not working adequately in a situation of crisis. Therefore, the organic connection of central banking to money markets through the concentration and centralisation of banking reserves in one institution can be differentiated in relation to their causes or needs between the neoclassical approach (represented by Goodhart's views) and the Marxist political economy analysis. For the former, central banks are mainly related to advantages in reducing asymmetric information and transaction costs in the financial markets; for the latter, this process can be found in the central role of money in capitalist development.

[7] This theoretical framework is developed by Itoh and Lapavitsas (1999) based on Marx' analysis in the *Capital* and Lapavitsas (2003).
[8] On this discussion, see Marx (1956: chapter XVII) and Harvey (1982: chapter 5).

In the Marxist view, central banks can be seen as a result of the dialectical development of capitalism, in which market processes (expansion of value form) are negated by other non-market or market forces (in this case the state). The "solution" to this contradiction is a new phenomenon, which carries those previous characteristics further and, more important, which reinforces the process of capital accumulation. The modern credit systems "typically exhibit a high degree of integration between private and state activities, while a whole branch of the state apparatus is now given over to the direct or indirect management of the credit system." Harvey (1982: 281) On the credit money management, the central bank is the most important entity in the financial markets. For Harvey (1982) the central bank is not only the pivot of the credit system, but it is the most important institution in the state apparatus of control. This importance is further reinforced in the contemporaneous capitalism characterized by financialisation.

In this sense, central banks can be seen as a product of financial development in capitalism when the centralisation of banking reserves in one institution, followed by state intervention, is considered. More important, central banks are also related to loanable capital and its impacts on the turnover of capital. Therefore, central bank liabilities are the base of the modern credit system in which there is a relation between central bank's liabilities, money market operations and credit expansion.

By being the bank of banks and the bank of state at the same time, it is possible to argue that central banking monetary liabilities which are money or monetary base (banking reserves at central bank and currency in circulation) can be backed by non-monetary liabilities. The latter liabilities can include bills and bonds issued by central banks and governmental resources. In the last instance, as bank of state, central banks operations are backed by governmental funding. In this sense, central banking operations might have fiscal impact as non-monetary liabilities can be used to equilibrate any unbalance between central bank assets and their monetary liabilities. This is one of the relations between monetary and fiscal policies in which central banks are crucial and may have impacts on capital accumulation.

2- Institutional Structure, Possibilities and Limits to the central banks actions

The central bank's influence on the money and credit supply in any capitalist economy depends on the specific institutional arrangement which shapes in turn the

monetary, banking and financial systems of the domestic economies or/and in regional economic integration area. In this sense, the institutional setting is important to the implementation of monetary policy because it defines what are the monetary policy instruments with higher and lower efficiency and the way by which those instruments can operate. Therefore, an institutional setting establishes the relationship between monetary policy and other instances of economic policy. In particular for this paper, the focus is on the relation between monetary policy and domestic public debt management. The discussion of the institutional setting is based on official central bank documents, Federal Reserve and European Central Bank.

2.1- A traditional or text-book central bank: the US experience

The Federal Reserve's institutional arrangement in the US economy illustrates the traditional form by which text books on monetary and financial issues analyse the relationship between central bank and banking system, and their implications to monetary policy and money markets. More specifically, the Federal Reserve (Fed) through the direct or indirect control on monetary aggregates and interest rate tries to reach the traditional objectives of monetary policy, namely price stability and their effects on product, unemployment and income. In this vein, in the US monetary policy, "the Federal Reserve exercises considerable control over the demand for and supply of balances that depository institutions hold at the Reserve Banks. In so doing, it influences the federal fund rates and, ultimately, employment, output, and prices" (Fed, 2005: 27).

In a traditional banking system, central bank is the issuer of currency-money as it has the monopoly of legal tender and banks are the suppliers of credit-money. In this sense, banks´ balance sheets include demand and time deposits, interbank loans on the liabilities side. On the asset side, they have the loans portfolio, banking reserves at the central bank and public debt and private securities. On the other hand, in the liabilities side, central bank has money base (currency in circulation plus banking reserves), Treasury deposits, among other items. On the assets side, monetary authority has foreign exchange reserves, domestic public debt securities and liquidity lines to banking system, for example.

The relation between central bank and banks can be seen, for example, through open market operations. Central bank through changes in its public debt portfolio can increase (or decrease) the banking system liquidity through the rise (or fall) of banking reserves. On the liabilities side, there is the National Treasury account by which the fiscal side can be

expressed in central bank balance sheet. In this vein, fiscal deficits can be financed through the issuance of money base, showing the actual correlation between fiscal and monetary policies.

In this traditional banking system, a key element is the interbank reserves market in which is traded reserves among banks and between banks and central bank. Operations between banks and central bank are settled through the banking reserves account at the central bank. It is through these changes in banking reserves that central bank can affect the money supply, and consequently, the credit supply. In this market is defined the interbank rate through supply and demand for banking reserves. Central bank can also indirectly intervene in this market through changes in reserve requirements and/or through changes in the standing facilities rates such as the discount window. Therefore, central bank through its liquidity management can meet the banks' needs of cash reserves.

In the US experience, the main monetary policy instruments are the traditional instruments of the monetary and banking system as can be seen below:

> "By conducting open market operations, imposing reserve requirements, permitting depository institutions to hold contractual clearing balances, and extending credit through its discount window facility, the Federal Reserve exercises considerable control over the demand for and supply of Federal Reserve balances and the federal fund rates" (Fed, 2005: 27).

The point to highlight is on the Federal Reserve's statement that their control on the supply and demand for money is considerable, in other words, they recognise that central banks does not have a full monetary control which means a certain degree of relative autonomy in the efficacy of the monetary policy.

The structure of demand and supply for Federal Reserve Balances has a traditional composition in the American institutional arrangement. The demand for balances is composed by: (i) required reserve balances; (ii) contractual clearing balances (differently from other cases, pay interest); and (iii) excess reserve balances (these are balances above from the required reserves which did not have paid interest until the global crisis in 2007-8). On the supply of Federal Reserve Balances, there are: (i) securities portfolio (the most important element just because it signals normally the implementation of monetary policy through open market operations); (ii) loans (account for the use of the discount window instrument); and (iii) autonomous factors.

The Fed's actions on the supply and demand for reserve balances can be seen through its balance sheet (figure 1). In figure 1, Federal Reserve notes are currency in circulation and

Balances (of all depositary institutions) are the banking reserves account. The National Treasury account, on the liabilities side, allows the understanding of the relation between fiscal and monetary policies and also this account, together with the securities portfolio one (in the US case, this account is constituted only by public debt securities)9, shed light on the Fed´s role in the US public debt management.

Table 1: Consolidated balance sheet of the Federal Reserve Banks

Assets	**Liabilities**
Securities	Federal Reserve Notes
Repurchase agreements	Reverse repurchase agreements
Loans	Balance, U.S. Treasury account
Float	Other Liabilities and capital
All other assets	Balances, all depository institutions

Source: Fed (2005)

This Fed's balance sheet can perfectly show how this monetary authority can manage the provision of reserves balances in function of the demand in the interbank market (Balances account, all depositary institutions). This account reflects directly changes in the assets accounts (Securities, Repurchase agreements, Loans, Float, and others) and inversely changes in other elements of the liabilities side (Federal Reserve Notes, Reverse repurchase agreements, Balance of U. S. Treasury, and others). Autonomous changes in the reserves, which are those not related to the Fed´s actions, indicate changes in the demand for reserves. If this demand is not matched by Fed´s actions, they can result in changes in the interbank rate.

In this vein, it is possible to affirm that in the US experience the traditional institutional arrangement on the monetary-banking system leads to a more traditional monetary policy instruments and also implementation. It is also applied to the relation between this system, fiscal policy and public debt management. This institutional arrangement can be considered as a text-book case. However, it is necessary to say that there is specificity in relation to the classical case. In the US experience, central bank cannot directly monetize the Treasury fiscal deficit and neither provides credit lines to the US Treasury which is obligated to finance an eventual deficit through financial market. However,

[9] As consequence of the financial crisis, Fed started to buy securities related to mortgages.

the Federal Reserve can buy directly from the banking sector the US Treasury debt which gives a crucial role to the monetary authority in the management of this debt.

2.2- The exceptional case for a central bank without a National Treasury: the new-Keynesian's profile of the European Central Bank

The first institutional specificity of the European Central Bank (ECB) is the lack of a constituted European State backing their decisions and operations in order to control and manage the financial markets denominated in euros. Thus, distinct European states that are part of the monetary union (Euro zone) submit their economies such conditionalities in order to keep (reach) the monetary stability. In last instance, this belief is determined by the ECB's behaviour which through their documents establishes that monetary policy, in the medium and long term, does not have any influence on the real variables (income, output, unemployment, economic growth, etc).

> "The close association between the growth of money and inflation in the economy and the long-run neutrality of monetary policy have been confirmed by a very large number of economic studies, covering various periods and countries [...] Consequently, it is widely acknowledged today that price stability contributes to increasing economic welfare and the growth potential of an economy" (ECB, 2011: 56).

In first place, ECB justifies its position towards the neutrality of money and the monetary policy impossibility in affecting the real variables based on papers and studies which support the revisited money quantitative theory by new classical macroeconomic school[10]. ECB does not mention that those studies are based on a theoretical structure which already accepts this neutrality thesis and, then, they only illustrate this thesis (the role of money in the classical macroeconomic model) and not discuss theoretically it through empirical studies. Moreover, there is no mention to other studies which do not support the neutrality thesis[11].

However, more important for this paper, it is that the ECB has price stability as primary objective because accordingly to its theoretical approach, monetary policy does not have effect on the real variables in the long term. Although price stability is its final

[10] "The Neutrality of money is a widely accepted and empirically validated proposition into the economic profession" (ECB, 2011: 55). In this school, the traditional references are Lucas (1983), Lucas & Sargent (1981), Sargent (1981), Sargent & Wallace (1981). For a good theoretical overview, see Snowdon et. all (1994).
[11] These results are normally obtained through models with Keynesian theoretical bias. For more details, see Snowdon et all (1994).

objective, ECB has a monetary policy strategy with two pillars based on two analytical perspectives (two pillars of the ECB´s monetary policy strategy). The first perspective is the economic analysis which holds in the short-term. This analysis considers the effects of other variables on the price stability, a part from the shocks of the money supply.

These variables include shocks on aggregate supply and demand and on money supply (fiscal policy and changes in the exchange rate), impacts of the world economy and balance of payments, and also changes in the Euro financial markets. However, in the medium and long term, these noises would be adjusted in a way that any change on prices would be regulated exclusively through changes in the money supply. This second analytical perspective constitutes the second pillar from the two pillars of the ECB's monetary policy strategy and is called monetary analysis. In this vein, it is clear the new-Keynesian inspiration in the conduction of the monetary policy by ECB. In this theoretical perspective[12], although the aggregate supply is given in the long term, independently from the price level, in the short-term there are some situations of nominal and/or real rigidities which can disturb the price mechanism in the process of equilibrating the economy towards to the full employment. So the aggregate supply can positively change to price increases in the short-term. The consequence is that short-term shocks which change prices (and economic activity as well) can be originated by fluctuations in the aggregate demand such as in the traditional classical model (monetary analysis) and by fluctuations in the aggregate supply of short-term (economic analysis). Thus, in the monetary analysis holds only the money quantitative theory in which the stability of the monetary supply is the only requirement for price stability. While in the economic analysis aggregate supply variables can also lead to prices fluctuations, but only in the short-term.

In any case, how would ECB do to obtain the price stability? In other words, how is the monetary policy implemented given the acceptance of the money neutrality theory? The ECB is explicit when states that "the strategy determines which level of money market interest rates is required to maintain price stability over the medium term, whereas the operational framework determines how to achieve this interest rate level using the available monetary policy instruments and procedures". ECB (2001: 93) It is nothing else than the

[12] Basically, the new-Keyenesian macroeconomic accepts the microfundamentation of the macroeconomic models, including the rational expectations hypothesis, as claimed by the new classicals, but reject the market clearing hypothesis as rational decisions in some circumstances of real and/or nominal rigidity can lead agents to worse off situation by changing prices, given small changes in the demand. The main references are Gordon (1990), Ball et all (1993), Mankiw (1990), Mankiw (1992) e Snowdon et all (1994).

monetary policy operationalization which is heavily inspired on the Taylor rule[13] as base to the inflation target regime. The new-Keynesian inspiration is based on the fact that changes in the basic nominal interest rate, given the inflation, lead to changes in the real interest rate, but only in the short-term. So it can affect real expenditures. In the long-term (equilibrium in the loanable funds market), however, the real interest rate is exclusively determined by the real conditions in the supply (saving) and demand (investment).

Based on this theoretical approach, ECB manages the interbank market rate and liquidity conditions in this market, signalling the conduction of the monetary policy. The ECB is the only money base supplier which is composed by "currency (banknotes and coins) in circulation, the reserves held by counterparties with the Eurosystem and recourse by credit institutions to the Eurosystem´s deposit facility. These items are liabilities on the Eurosystem´s balance sheet." (ECB, 2011: 93) The euro reserves are kept in the national central banks, and the relationship between these central banks with the ECB is consolidated in the ECB balance sheet. Deposit facilities are yielding interest accounts, financial institutions' position. Besides controlling the monetary base, the ECB can affect money markets through Eurosystem operations. Both are ECB liabilities. These operations are of two types: (i) open market (which include repurchase agreement operations); and (ii) standing facilities (overnight maturity and putting available in demand).

The open market operations have four categories. The first one is the Main Refinancing Operations (MROs) which are important to influence the interest rate and the liquidity management in the short-term. Those operations are executed of a decentralized manner through national central banks. Until March 2004, the MROs were operations with one week maturity and since then, the maturity has been of two weeks. The second category is the Long Term Refinancing Operations (LTROs) which are monthly operations with normally three months maturity to address liquidity management issues in a longer term perspective. However, the financial crisis has dramatically lengthened the maturity of those operations. As will be showed in the next section, this maturity reached three years by the end of 2011. The third category complains the Fine-tuning Operations (FTOs) which are used to address unexpected changes in liquidity demand; consequently they do not present a frequency aspect. Originally, the FTOs are implemented through repo operations, in the same

[13] See Taylor (1993).

way of the discount window operations[14]. Finally, open market operations can be done through Structural Operations[15].

On the other hand, the standing facilities have the objective of controlling the short-term (overnight) interest rates in the money markets and, in particular, to contain market volatility. These facilities are executed in two ways. On the ECB's asset side, we have the Marginal lending facilities in which its interest rate is higher than the money market interest rate. On the ECB liability side, we have the deposits facilities which are related to financial institutions deposits in the Eurosystem and the interest rate is lower than the money market rate. In this sense, the money market rate fluctuates in a rates corridor which is defined by a floor (the deposit facilities rate) and a ceiling (the marginal lending facilities rate). More specifically, "there are no limits on access to these facilities (except for the collateral requirements of the marginal lending facility), the rate on the marginal lending facility and the rate on the deposit facility normally provide a ceiling and a floor, respectively, for the overnight rate in the money market" ECB (2011: 99). Therefore, the ECB sets the interest rate into a corridor rates in order to reach its objective of price stability. More important, the importance of the European institutional arrangement and the implementation of the monetary policy can be analysed through the ECB balance sheet.

Table 2: ECB Balance Sheet Structure

Assets	**Liabilities**
1- Refinancing to Credit Institutions (Open Market transactions)	1- Credit institution´s holdings on current account (reserves)
2- Marginal Lending Facilities	2- Deposit facility
3- Net Foreign Assets	3- Banknotes in circulation
	4- Government deposits
	5- Other factors (net)

Source: ECB (2011: 112).

In its balance sheet, on the asset side, ECB has in the item 1 all the categories of the open market operations (MROs, LTROs, FTOs and Structural Operations), one of types of Standing Facilities (marginal lending facilities) in the item 2, while the another type, the

[14] Other types of FTOs are summarized in ECB (2011: 107).

[15] "These operations are executed at the initiative of the ECB to adjust the structural liquidity position of the Eurosystem vis-à-vis the financial sector, i.e. the amount of liquidity in the market over the longer term. These operations can be conducted using reverse transactions, outright operations or the issuance of ECB debt certificates" ECB (2011: 108).

yielding account of the financial institutions (deposit facilities), is in the liability side (item 2). It is necessary to mention that banknotes in circulation – normally the largest item – and the banking reserves kept at the ECB constitute the monetary liability. The Government Deposits reflect the consolidated balance of the National Treasury balances in their respective national central banks. In other words, the implementation of the monetary policy by ECB should deal with the system liquidity demand which is signalled through autonomous changes and by the banking reserves kept at the ECB. The fluctuations being either in supply, or in the demand, imply in changes in the money market rate. These changes define how the price stability will be conducted which is in turn the only long-term objective and an also pre-condition to financial stability[16].

3 – Central Banks interventions and public domestic debt management during Global financial crisis

This section discusses that central banks intervention in Europe and USA during the global crisis shows: (i) those interventions are shaped by the institutional arrangement which is previously discussed in section 2; (ii) when required, the institutional setting can be changed to support central banks operations in dealing with problems in financial markets.

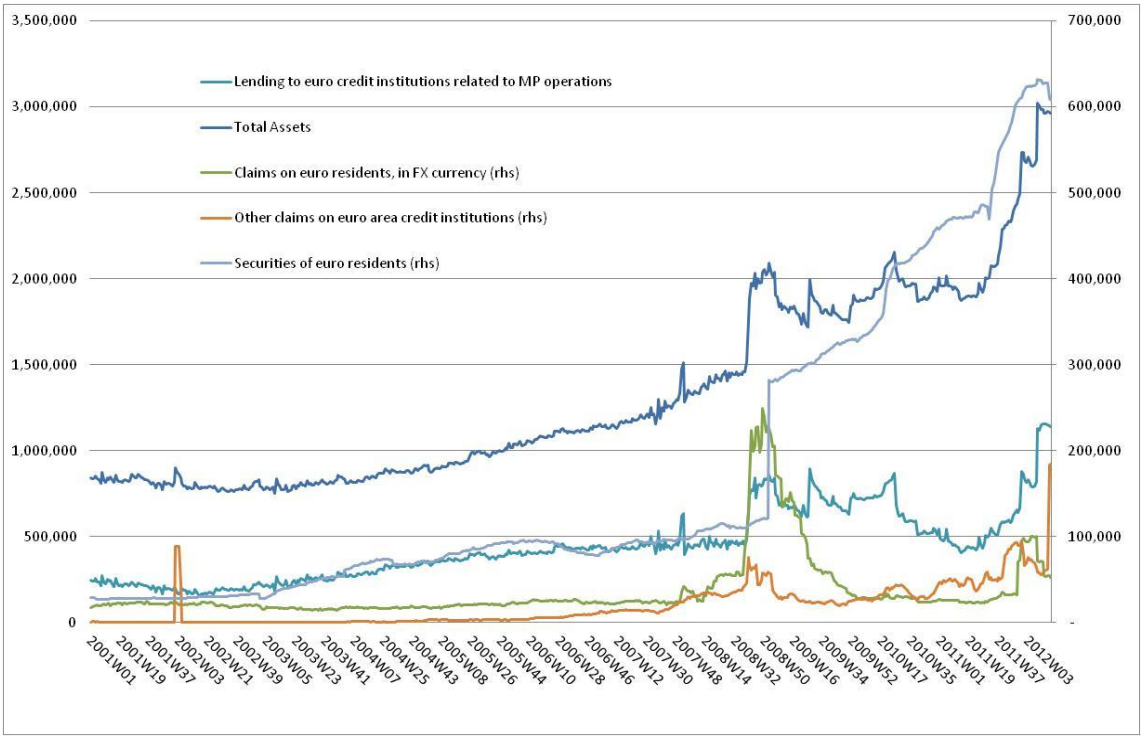
The financial crisis started in August 2007 with problems in the US housing markets and become a global crisis in September 2008 through the Lehman Brothers's bankruptcy[17]. In the US experience, the interventions to contain the financial crisis have been done through Federal Reserve (Fed) since the beginning. For example, when identified a solvency problem in the banking system in the last quarter of 2008, Fed immediately put in place outright operations. In the European experience, the initial measures to contain the effects of the financial crisis were conducted by ECB through their liquidity operations. However, the structural measures to support banking system were done through increase in state's liabilities, causing an expansion of the public debt without affecting the ECB balance sheet. This process was partially interrupted in the middle of 2010 when ECB started to buy sovereign debt in secondary markets through Securities Market program (SMP). Those differences can be seen through the ECB and Fed balance sheets analysis.

[16] Price stability is a prior condition to financial stability: "some central banks play an important role in promoting financial stability. Price stability is now the primary objective of most central banks in the world, whereas responsibility for financial stability is, in most instances, less formalised or has been assigned to the government sector" ECB (2011: 83).

[17] Lapavitsas (2009), for example, explains the crisis through what he calls financial expropriation.

In the European case, the main movements on the balance sheet were during the global crisis in September 2008 when the size of the ECB's balance sheet jumped from €1.45 trillion to €2.05 trillion as can be seen in figure 1. As the global money markets froze in that time, ECB pumped this market with liquidity. The main refinancing operations (MRO) increased from €176 to €338 billion and the longer-term refinancing operations (LTRO) from €300 to €618 billion[18]. Between the last week of 2008 and beginning of 2009, there was a rise in the securities of euro residents from €121 to €282 billion, caused mainly by covered bonds purchases.

Figure 1- ECB balance sheet: main assets (€million)

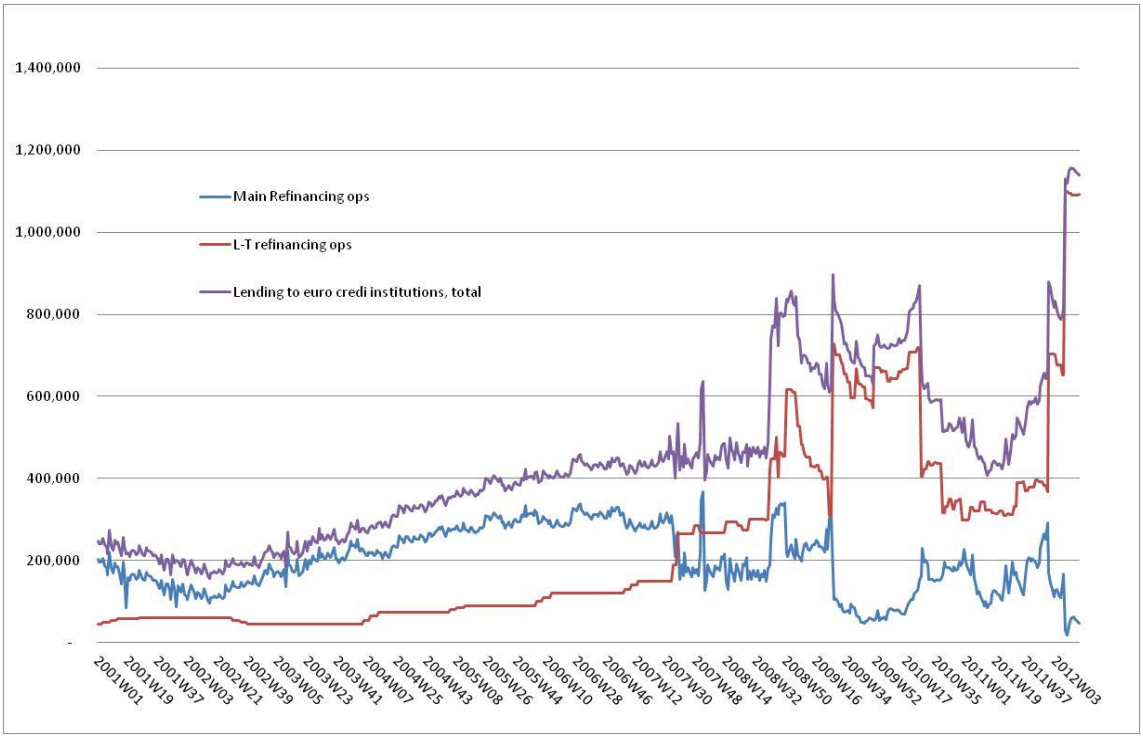


Source: ECB (2012)

Although the ECB's balance sheet presented a stable trend during 2009, the monetary policy operations showed some important changes related to their composition. There was a shift from short-term (MRO) to long-term operations (LTRO), mainly from those with one year maturity as can be seen in figure 2. This composition had started to reveal the nature of the banking problems as more related to solvency issues instead of liquidity one. In this time, there was an increase in the number of counterparties in ECB operations (ECB 2010: 67).

[18] For the ECB's responses in the different stages of the crisis, see ECB (2010: 63-73).

Figure 2 – ECB monetary policy: open market operations (€million)



Source: ECB (2012)

In 2010, there was a substantial change in the monetary policy instruments in ECB. By the European constitution, ECB cannot finance the national states. However, since the middle of 2010, ECB has become a kind of market maker of the sovereign debt market through the Securities market program (SMP)[19]. These operations have allowed the ECB acquires sovereign bonds in financial markets. It have also meant the 'cleaning' of the banks balance sheets as ECB bought sovereign bonds with increasingly losses in their holdings, and then stopping further banking losses. For the first time during the crisis, ECB acted as traditional central bank as bank of state.

Although the predominance of interventions in the sovereign debt market had been important in 2011, mainly in the second half, it is possible to say that there was two distinct moments in the Eurozone crisis. In the first moment, up the middle of the year, there was an increase in the MRO in relation to LTRO which meant a relief in the money market conditions. Since the middle of 2011, there has been a continuous deterioration in the Eurozone crisis which culminated in the launch of the LTRO with three years maturity in the end of the year. The total amount of these operations was €1 trillion, as can be seen in figure 1.

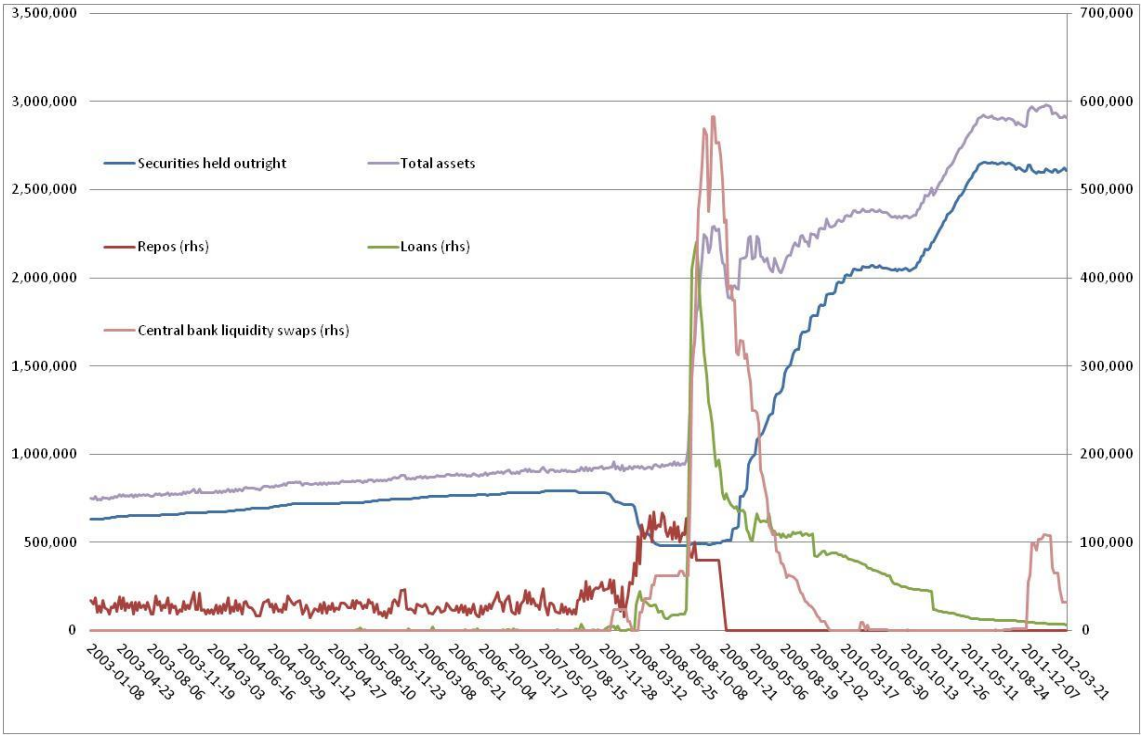
[19] On the analysis of the ECB non-standard measures, see ECB (2011b: 55-69). Specifically for the SMP the ECB purchases have reached the level of €220 billion in April 2012, see Reuters (2012).

As consequence of the global crisis, there was a sharp rise in the Eurozone sovereign debt (Lapavitsas et all: 2010a). Concomitantly to the ECB's interventions, the general government debt as a proportion of the GDP in the Eurozone increased from 66.2% in 2007 to 87.7% in 2011, being the main share of this rise between 2008 (69.9%) and 2009 (79.3%). So between 2007 and 2011 the public debt rose 21.6%. This process has been more acute in Ireland (87%), Greece (51%) and Portugal (33%) which were the countries already rescued by European institutional funds (ESM and EFSF), but it also reached France (21%) and Germany (17.4%). (ECB, 2011b: 15-17) The nature of the Eurozone crisis started as global banking crisis in 2007-8, became a sovereign debt crisis in 2009-10 and since then an intervened banking and sovereign crisis (Lapavitsas et all. 2010b and 2011).

This analysis shows that the more acute banks problems is in the Eurozone, the more sharp are the ECB interventions in order to sustain the financial markets. This characteristic is related to the dual nature of central banks in capitalist economy. Since its foundation, the ECB has acted as bank of banks, manifesting its most private character, but barely as bank of state because it was not allowed to finance the states members of Eurozone. The dual nature manifested only during the crisis through the SMP.

In the US experience, similarly to Eurozone, the central bank interventions can be demonstrated through the Fed's balance sheet. The rise in repos by the end of 2007 and, mainly after March 2008, is related to the first stage of the global financial crisis liquidity when liquidity problems started to appear in the US financial system. As can be shown in figure 3, there was a change in the Fed's balance sheet composition between securities held outright and repos. In order to address banking system's liquidity shortage, Fed operations dropped their securities' portfolio (U.S. Treasuries) and increased their repos operations with the banking system. This composition change was related mainly with the Bear Sterns' bankruptcy in March 2008.

Figure 3 – Federal Reserve balance sheet: main assets (US$ million)

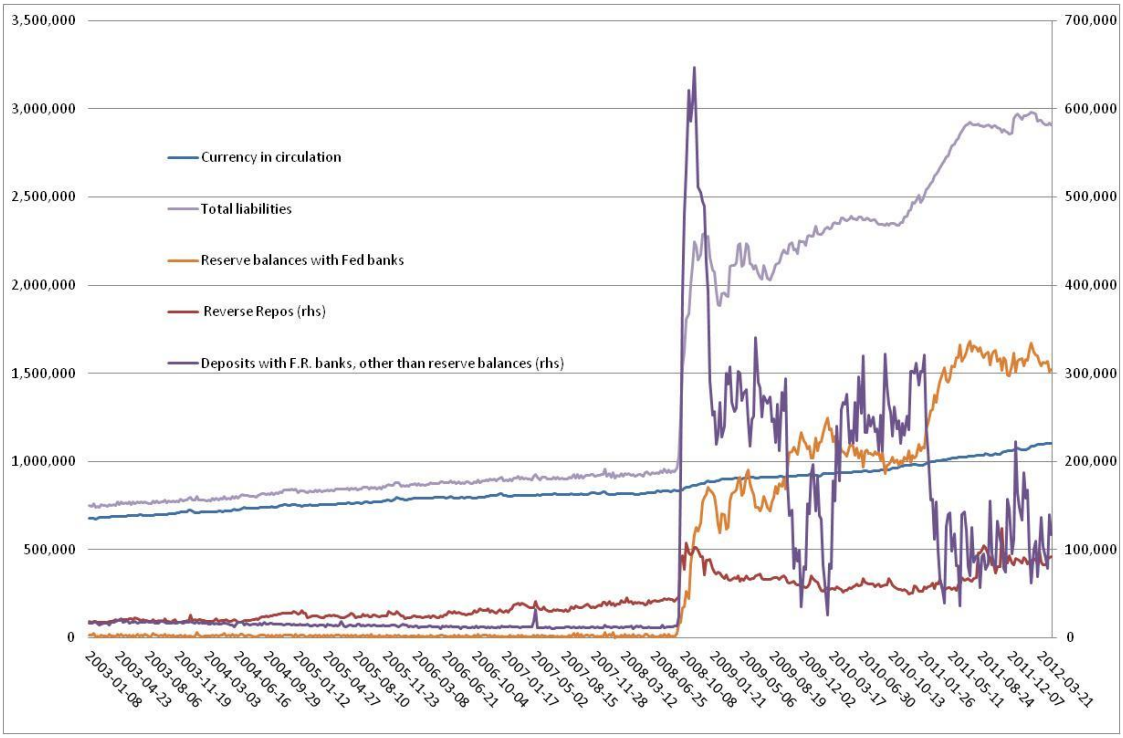


Source: Fed (2012)

In September 2008, the financial crisis which started in the US financial markets became a global crisis by engulfing emerging and developing countries into the crisis. In order to address liquidity and solvency problems in the domestic and international financial markets, Federal Reserve operations fully engaged in both markets. In the international level, the Fed undertook central banking liquidity swap operations with major and key emerging markets central banks around the world. The objective was to dump the US dollar liquidity shortage in global financial markets. In the first quarter of 2009, the liquidity outstanding amount was around US$600 billion.

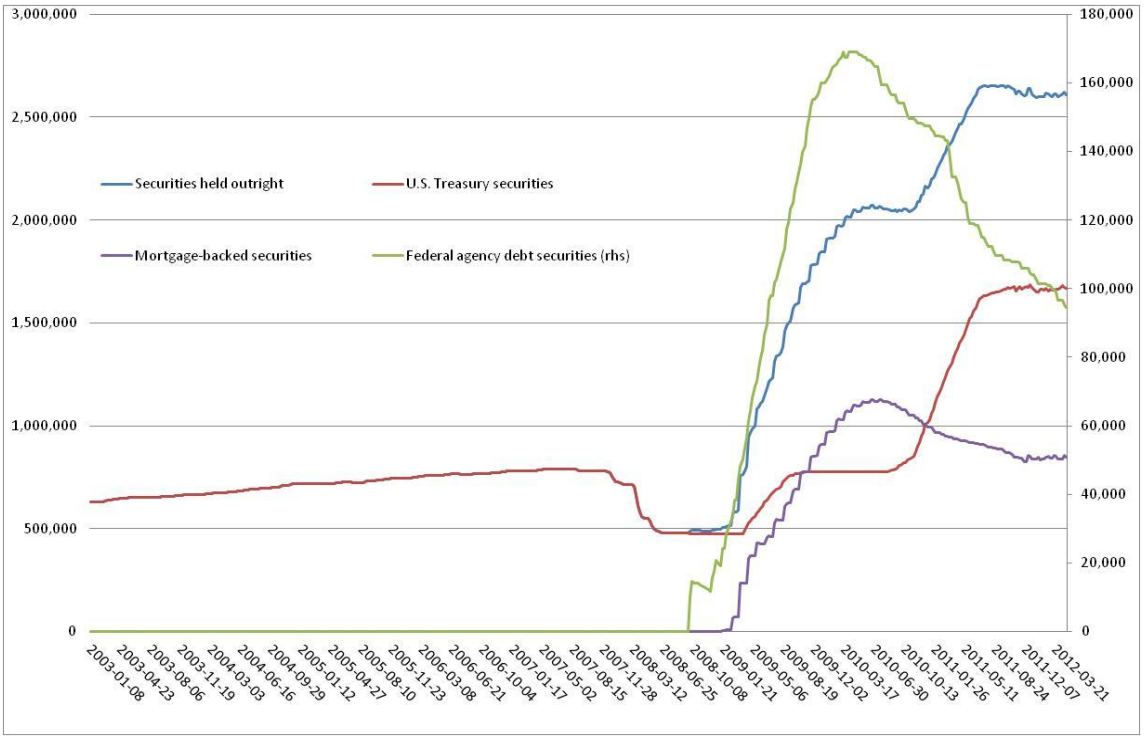
On the domestic level, the U.S. Treasury supplementing financing had decisive role in the central banking asset operations. This reached around US$600 billion in September 2008. It can be shown in the figure 4 through the sharp rise in the deposits with F.R. banks, other than reserve balances. This Treasury funding was important to the Fed balance sheet management which allowed the monetary authority to address structural (solvency) problems in the financial system. In this vein, it permitted the Fed acquisition of damage securities holding by banks. Naturally, the most prominent movement was to deal with problems in the housing securities markets. In figure 5, the mortgage-backed securities increased from $5.6 billion in the end of 2008 to astonishing $1.2 trillion in the middle of 2010.

Figure 4 – Federal Reserve balance sheet: main liabilities (US$million)



Source: Fed (2012)

Figure 5 – Federal Reserve assets: securities portfolio (US$million)



Source: Fed (2012)

However, this Fed intervention was not enough to contain the impacts of the global financial crisis. In specific terms, the 'cleaning' of banks balance sheet did not revive the

financial conditions to increase consumption and investment in the domestic economy. In this context, in the middle of 2010, the Fed reaction was to launch a further monetary stimulus measures, called quantitative easing (QE2). The monetary authority acquired US Treasuries securities from the banks' portfolio in order to boost credit conditions and improve banks performance. In figure 5, the US Treasuries securities in Fed's portfolio increase from $800 billion to $1.67 trillion in the middle of 2011. Once again, the Fed actions were not enough to revive the economy. As consequence, since then, there has been an expectation on further monetary stimulus measures (QE3).

As consequence of the global financial crisis, the US federal government debt jumped from US$9 trillion in 2007 to US$14.8 trillion in 2011, and as proportion of the GDP passed from 64.3% to 98% in this period. As discussed above, the Fed's interventions required the US Treasury extra funding since September 2008. It has implied an increase in the US public debt. In this sense, the increase in the size of the domestic public debt allowed the support of the whole financial system in the US and European experiences which is in line with the characteristics of contemporary capitalism, the financialisation era.

Concluding Remarks

Based on the Marxist theory of money and finance, this paper discussed the specific form by means of which the European and US central banks have operated the monetary policy during the global financial crisis as an attempt to respond to the conjunctural and structural impacts.

The theoretical reference of the political economy of central banks made it possible for us to understand that monetary authorities are necessary products of the development of the credit system, under the logic of the process of capital accumulation. Due to the role played by the State in this process, central banks work not only as institutions of centralisation of bank reserves, but also, based on this, as supporting institutions to the functioning of money markets, by supporting the operation of loanable capital. This turns central banks into bank of banks. On the other hand, as banks of state, their operations can also be founded on state funding, what impacts fiscal policy and the public debt management.

The differences on the institutional arrangements of the US and Eurozone experiences were taken into account in order to analyse the response of their central banks during the global crisis. In spite of these differences, the paper argues that is possible to claim a similarity in the central bank's aims during their interventions. The great impact of the global

financial crisis forced the major central banks to implement a broad range of monetary and financial measures which have been necessary to sustain the financial assets prices. This is decisive as attempt to maintain the process of capital accumulation given the current logic of contemporary capitalism (Financialisation era). It is shown that when was crucial to address the huge banks liquidity problem, the Fed and ECB employed instruments of liquidity management, performing essentially the role of bank of banks, independently of their institutional constrains. In last instance, this paper shows that central banks are bank of banks in money markets and this nature become more explicit in moments of financial crisis.

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