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US monetary policy and the decline in the interest rates (1990-2007)¹

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Summary

Interest rates in the US and in other countries have experienced persistent and generalised declines since the 1980s. The main interpretations of this phenomenon ignore the role of monetary factors, such as financial and monetary policy. The essay proposes an alternative interpretation based on the choice of the Federal Reserve (FED) to conduct monetary policy by attributing high priority to financial stability. The interaction between changes in financial regulation, the transformation of "specialized" into "universal" banking, and the concern with financial instability have led the central bank to add to the role of "lender of last resort" that of "lender of first resort", which systematically provides liquidity at a low cost to financial firms. This new conduct of monetary policy has produced the downward trend in interest rates.

Keywords: interest rates, monetary policy, change of financial regulation.

JEL: E43, E44, E52, E11, E12.

1. Introduction

Since the financial crisis of 2007-2008 interest rates have reached historically low levels. Some benchmark rates have been at nominal values close to zero, while real rates have shown negative values for much of the period. This tendency is the recent representation of a process of decline in interest rates that has been observed since the 1980s.

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The long-lasting decline of interest rates has captured attention. Most interpretations consider that interest rates are regulated by real factors, such as agents' preferences and factor productivity. They take on a downward trend in the natural interest rate and deny that monetary factors play any role.

This paper proposes an alternative interpretation based on a monetary theory of the interest rates and suggesting that the monetary policy of the Federal Reserve may be described as *financial-stability targeting*. The paper reviews the annual reports and the minutes of Federal Reserve's governing bodies from 1990 to the financial crisis and finds that since mid-1990s this institution has increasingly been more concerned about the stability of the financial system than about inflation. The interplay between changes in financial regulation, the transformation of the specialized banking system into universal, and the concern about financial instability have led the central bank to add the role of lender of first resort, which systematically provides financial firms with liquidity at a low cost, to that of lender of last resort operating in emergency situations.

This conclusion is in line with the *General Theory* (see Keynes, 1936, pp. 202-204). It ascribes the determination of the interest rates to the action of the central bank and to the credibility that operators attribute to this entity, adding that monetary policy decisions do not depend on the knowledge of the natural rate, but on what the authorities consider convenient under the prevailing historical conditions (see Panico, 1988, pp. 102-140).

Section 2 describes the trends of a set of representative interest rates. Section 3 examines the main interpretations of the declining interest rate phenomenon. Section 4 presents some elements underpinning the monetary theory of the interest rate. Section 5 relates some aspects of monetary policy to the institutional organization of the credit system, like the existence of a specialised or a universal system. Sections 6 and 7 use a narrative approach to discuss the reports and the minutes of the Federal Reserve and to argue that already before the crisis of 2007-2008 monetary policy had been moving towards financial-stability targeting. Section 8 concludes.

2. The drop in interest rates in the US and in other countries.

While the inflation rate began to fall in 1980, nominal interest rates took a decreasing trend towards the end of the monetarist experiment and the real rates started their descending movements during the mid-1980s.

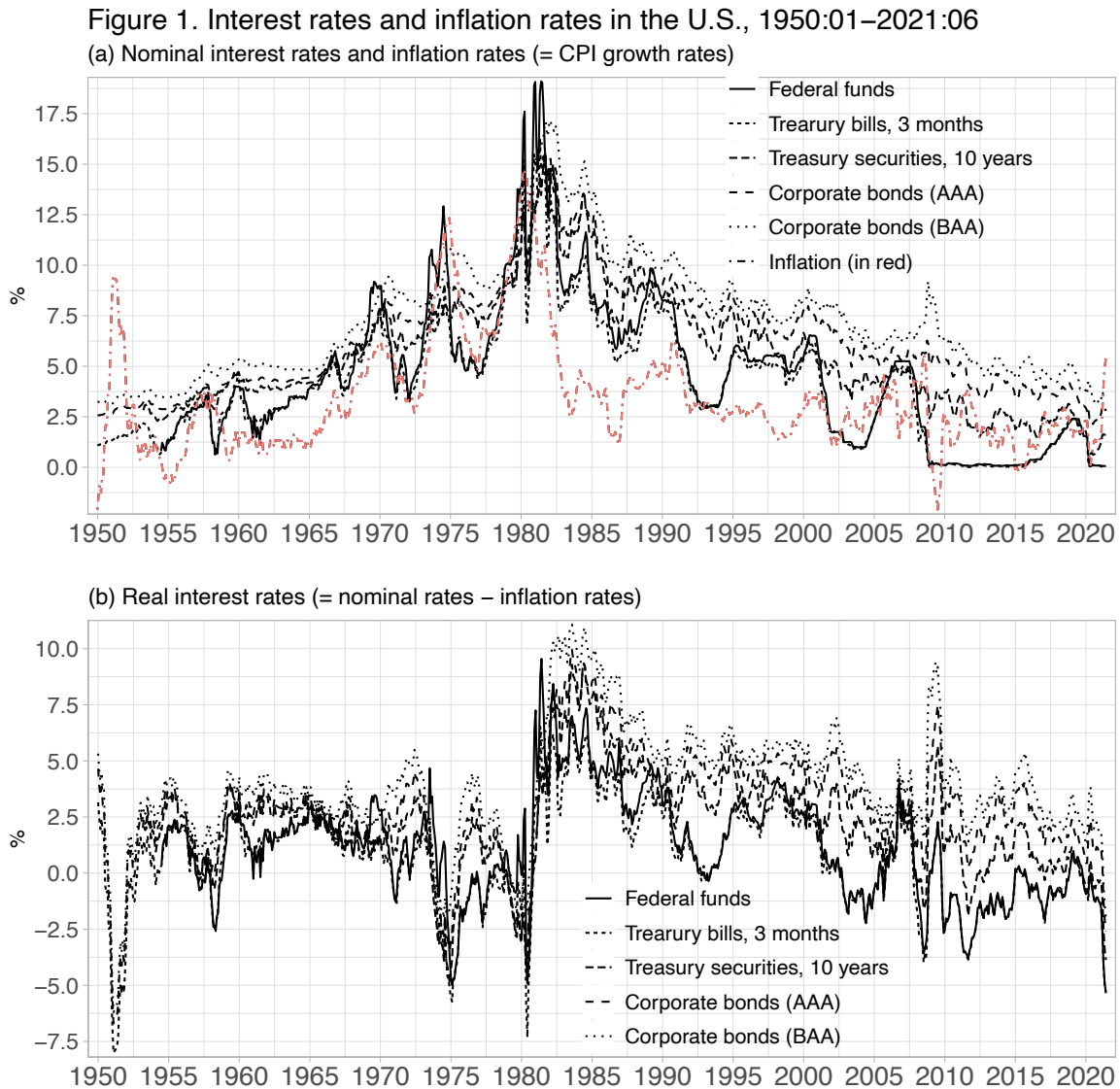


Figure 1.a shows that between August and October 1981, benchmark monetary interest rates reached their post-war high. The federal funds rate (FF) was 19.1%, while 10-year treasury securities (TS10Y) and *Moody's* corporate bond indicators were 15.32%, 15.49% (AAA) and 17.18% (BAA), respectively. Since then, these rates have been experiencing a

downward trend that has led them to reach historically low levels. The FFS have been approaching zero since 2009, while the other rates have continued to decline. The latest episode of rate increases from 2018-2019 ended up quickly returning to virtually zero levels or continuing the downward trends.

Figure 1.a also shows that the decreasing tendency in interest rates has been characterized by an asymmetric cyclical component, where the upward phases have been regularly followed by downward phases, which have led to reductions exceeding the increases of the upward periods.

The declining tendency is generalized. It concerns the rates of short- and long-term debt instruments issued by public and private institutions. During the period 1981-1992 nominal rates recorded a substantial fall. By December 1987 the FF, TS10Y and AAA were half or a third of their level in 1981, reaching 6.77%, 8.99% and 10.11% respectively. A second period of lows was from 1993 to 2008, when the fall was smaller in magnitude compared to the previous period, on account of the fact that the levels reached by these rates in 1993 were not as high as during the monetarist experiment. In December 2008, that is with the crisis already started, the FF, TS10Y and AAA reached 0.16%, 2.42% and 5.05%. The last stage in the downward trends begins in 2009 and is characterized by the persistence at near-zero levels in the rates of short-term instruments and by the lasting downward trends in the rates of longer-term instruments.

The generalized and persistent downward trend in nominal interest rates was preceded by the opposite phenomenon. Nominal interest rates had been rising for just over 30 years since the post-war period. In September 1979, a month before the start of the monetarist experiment, the FF, TS10Y and AAA rates were 11.43%, 9.22% and 9.44%, respectively. Then, the monetarist experiment caused an extraordinary jump in their levels.

As shown in Figure 1.b, the general and persistent downward trends since the 1980s can be also observed for real interest rates. They were preceded by alternate behaviours of these rates indicating different policy stances. At the beginning of the 1950s real rates had recovered from the negative values of the war and were remaining more or less stable until the mid-1970s. Thereafter, and until the early 1980s, real rates rose, signalling a restrictive phase of monetary policy, which can be related to the monetary authorities' increased

concerns about rising inflation and worker-friendly conditions in the labour market, and a prudent stance when the monetarist experiment was abandoned. Since mid-1980s, there is a downward trend, whose persistence has caused frequent episodes of negative rates to be observed since the 2000s.

3. Interpretations of the decreasing trends of the interest rates

The prevailing interpretations of the phenomenon described in the previous section, based on so-called "real" factors, do not attribute any role to monetary elements. These "real" interpretations are in line with the neoclassical theoretical foundations of economic discipline, which accept – as Keynes pointed out when he introduced the concept of "monetary theory of production" – the neutrality of money in long-period analyses, the dichotomy between the "real" and the "monetary" departments of economic theory, and the role of the natural interest rate as a reference point of monetary policy.

Borio et al. (2017, p. 36) discuss the prevailing real interpretations of the recent fall in interest rates. They focus on the concept of natural interest rate, assuming that it depends on saving and investment decisions and that monetary factors and policies do not affect it.

They first cite some official documents (IMF, 2014; Bean et al., 2015; Council of Economic Advisers, 2015) and then present the major real interpretations. They recall that of Summers (2014; 2015) – known as *secular stagnation* – which gives relevance to the reduction in investment demand due to the kind of technical progress that has been prevailing in recent decades. Subsequently, they mention the interpretation of Bernanke (2005) – known as *saving glut* – which discusses the imbalances in international trade and the consequent increase of saving in some emerging economies, which has been invested in financial assets in the US.

Borio *et al.* (2017) also refer to the interpretation – known as *safe asset shortage* – that focuses on the change in investors' preferences in favour of safe financial assets, such as Treasury securities (see Caballero *et al.*, 2008; 2016).² Finally, they point out that some

² The *safe asset shortage* interpretation suggests that the uncertainty linked to financial instability has changed the slope of the "normal yield curve". Borio *et al.* (2017) present it as a variant of the *saving glut*.

recent “real” interpretations have argued that *demographic changes* have turned labour scarcer than capital, causing a reduction in the marginal product of the latter (see Carvalho et al., 2016; Gagnon et al., 2016; Rachel and Smith, 2017).

According to Borio *et al.* (2017), the value of the real interpretations depends on the validity of the beliefs inscribed in the neoclassical theoretical foundations of the economic discipline, which has also to be scrutinised from an empirical perspective:

A common premise of all the traditional approaches is that real interest rates over long horizons are determined exclusively by real factors. Monetary policy exerts only a transitory influence, which can be entirely ignored (narrative and calibration analysis) or filtered out (filtering analysis). The maintained assumption is that monetary policy is neutral in the long run. For example, Del Negro et al (2017, p 1) describes the natural rate as "... the counterfactual rate that would be observed 'in the absence' of monetary policy". Still, in our view, the notion that in a complex monetary economy it is possible to cleanly delineate a "monetary veil" from the underlying real drivers is an exceedingly strong presumption. This presumption has not been sufficiently scrutinised (Borio *et al.*, 2017, p. 6; see also pp. 21 and 26).

The aim of Borio and his colleagues is to analyse, from an empirical point of view, the validity of the presumption that money is neutral in long-period analysis and to question the view that monetary policy is irrelevant when examining the persistent variations of real interest rates. They defend their work by stating that the natural rate of interest is an abstract concept, not directly observable, whose empirical identification represents a formidable challenge for the literature and central banks (see Borio *et al.*, 2017, pp. 22 and 36).³ Moreover, they highlight that some essays demonstrate, from an empirical point of view, the existence of monetary influences on the persistent changes in interest rates (see Galì,

However, it can also be related to interpretations that indicate the relevance of monetary factors in the fall in interest rates.

³ Borio *et al.* (2017) claim that this exercise has been based on two approaches: ‘One approach assumes that observed real interest rates roughly track, on average and over long periods, natural rates; it then links their observed decline to potential underlying determinants of saving-investment balances, such as demographic factors or the relative price of capital, mainly through informal inspection or calibrated models. Another approach filters out the natural rate from market rates based on critical assumptions, including the hypothesis that inflation responds stably and systematically to domestic economic slack and that the real interest rate is a key factor influencing aggregate demand. In this paper we have argued that the role of maintained hypotheses in this type of evidence is uncomfortably strong’ (Borio *et al.*, 2017, p. 36).

1992; King and Watson, 1997; Rapach, 2003; Rapach and Wohar, 2005; Caporale and Grier, 2005; Neely and Rapach, 2008).

To confirm the relevance of monetary factors, Borio *et al.* (2017) examine the statistical information of nineteen countries since 1870 and show that persistent variations in real interest rates have gone hand in hand with the predominance of different monetary regimes, which these authors define as "gold or metal standard" (1870-1913), "between wars" (1920-1938), "Bretton Woods" (1945-1971), "prior to Volcker's tightening"(1950-1979), "after Volcker's tightening" (1980-2016), "inflation targeting" (1991-2016). They recall that monetary factors have influenced the level of economic variables in previous historical epochs. During the "gold or metal standard" regime (1870-1913), the internal and external convertibility of money – i.e. financial stability – was given the highest priority among monetary policy objectives.⁴

The analysis we present in this paper indicates that since mid-1990s the Federal Reserve has been bound to attribute to financial stability the highest priority among its objectives. This choice, that is, predates the crisis of 2007-2008.

4. Theoretical elements for a monetary interpretation of the decline in the interest rate

The real interpretations of the decreasing trend in the interest rates follow the neoclassical tradition that these rates depend on the demand for and the supply of the productive factor "capital".⁵ In the economic literature, however, alternative theories have been proposed. In them the interest rate also depends on monetary factors linked to the institutional organization of financial markets and to the conduct of monetary policy.

⁴ Borio *et al.* (2017, p. 24) state: 'The gold standard regime provides prima facie evidence that the role of monetary factors may well have been underestimated. During this regime, central banks did not target inflation or output directly; rather, they targeted convertibility – internal and external'.

⁵ Traditionally, central banks have acted on a short-term monetary interest rate. However, the interest rate that is relevant for decisions on fixed capital investment is the long-term one. For this reason, the natural rate must be considered long-term. This implies that central banks can count on the existence of a positive relationship between short-term and long-term rates. Doubting the validity of this relationship during periods of crisis, Keynes proposed that the open market operations of central banks should act on both short and long term assets (see Panico, 2008). Recent unconventional monetary policies have operated on the entire structure of interest rates with the aim of having a greater influence on fixed capital investment (see Friedman B.M., 2014).

The best-known development of a monetary theory of the interest rate can be found in Keynes' *General Theory*, which rejects the theoretical contents of the *Treatise on Money* published in 1930. Denying the validity of the neutrality of money in long-period analyses, the dichotomy between the real and monetary departments of economic theory, and the use of the natural rate as a guide in the conduct of monetary policy, the *General Theory* attempted to modify the theoretical foundations of the economic discipline by introducing a monetary theory production. It argued that the "average" or "durable" interest rate, that is, the one that tends to prevail and around which the market interest rate fluctuates, depends on central bank's decisions regarding the interest rate that is convenient to stabilize under the prevailing historical circumstances.⁶

In the *Treatise on Money* Keynes had argued, in line with the neoclassical tradition, that central banks tend to stabilize the natural rate of interest, determined by the real department of economic theory as the marginal product of the last unit of capital available in the economy and employed in the productive process. In the *General Theory* and in its preparatory writings Keynes rejected the use of the natural rate, considering it an abstract concept – not directly observable – that inhibits the correct interpretation of the behaviour of the economy and the application of effective policy solutions.

In his alternative proposal of the theoretical foundations of the discipline, the primary elements for interpreting trend movements in interest rates are the decisions of the central bank and the reputation that operators attribute to this institution. The decisions of the central bank on the interest rate to be stabilized, according to the *General Theory*, are the result of the evaluation of what this institution considers most convenient. To take these decisions, the monetary authorities consider various elements, such as:

1. the state of the economy,
2. the prevailing inflation and unemployment rates,
3. the current account of the balance of payments,
4. the refinancing needs of the national financial industry, the country's other industries and the public sector,

⁶ Keynes (1936, p. 203) states: 'Any level of interest which is accepted with sufficient conviction as *likely* to be durable, *will be durable*; subject, of course, in a changing society, to fluctuations for all kinds of reasons round the expected norm'.

5. the level of systemic risk that the existing institutional organization of financial markets tends to generate,
6. the relationships between the national and international financial systems and the likelihood of capital outflows and of alarming changes in the exchange rate.

The list indicates that monetary policy decisions do not only depend on inflation, production, employment and the state of the current account of the balance of payments. They also depend on the assessment of the degree of systemic risk in which the financial sector operates and on the possibility that the financial and capital accounts of the balance of payments suffer from mechanisms of instability. The presence of the latter elements reflects the authorities' concern about financial stability. It may induce a tendency to stabilize interest rates at diminishing levels over time. This tendency may be the outcome of choices that the authorities take to respond to problems that they face moment-by-moment, rather than the result of decisions that are consciously directed to establish it.

5. Change in financial regulation and the role of lender of first resort.

The contrast between the stability that characterized the behaviour of the economy during the Bretton Woods era and what has happened in the following years has drawn the attention of some economists studying the evolution of financial regulation after the crisis of 1929 and WW2.

White (2009) focuses on the change that has characterized this aspect of monetary policy (see also Panico *et al.*, 2016). He contrasts two approaches to financial regulation, one focusing on the discretionary power of authorities over the managers of financial firms and another focusing on the use of pre-established rules, like capital requirements. The former dominated from the 1930s to the early 1970s, a period in which the economy enjoyed a high degree of financial stability.⁷ The latter dominated during what White calls the "contemporary era" (1991-2008) which, according to him, began after a transition period,

⁷ Commenting on the graphs describing the number of bank crises during this period, which he called "New Deal or Bretton Woods era", White (2009, p. 39) states that they had disappeared from the radar.

which he calls "post-New Deal era" (1971-1990), during which changes were made that allowed a gradual shift from one approach to another.

One of the main consequences of this change in financial regulation in the US has been the transformation of the specialized banking system of the New Deal or Bretton Woods era into the universal system we have had since the 1990s.

The specialized system was first developed in the United Kingdom in the XIX century. There were commercial banks, discount houses, building societies, etc. Each type of financial institution was required to operate a limited set of assets and liabilities, selected so that the maturity of the former was not different from the maturity of the latter. Thus, commercial banks and discount houses could only hold short-term liabilities and make short-term loans, while merchant banks could only take out medium- and long-term liabilities and make loans with the same type of maturity. These restrictions allowed lending firms to have a balanced asset and liability structure. In this situation the role of lender of last resort, which the Bank of England gradually assumed over several systemic crises and which was fully adopted after that of 1866 and the publication of Bagehot's *Lombard Street* (1873), was sufficient to avoid further bank runs and financial crises. Throughout the XIX century the Bank of England had maintained a discount window for lending firms. The window had operated based on discretionary decisions of the Bank, linked to the evaluation of the profitability of the credit granted. Definitively assuming since the 1870s the function of lender of last resort, the Bank undertook to grant credit to banks, without delay, even when there was no positive evaluation of the profitability of the credit granted. Despite being a private entity, the Bank of England formally assumed a public function, ensuring the refinancing of banks in emergency situations, that is, when the credit system was on the verge of a systemic crisis and it was not convenient for a private bank to grant credit.

In the second half of the XIX century, another type of credit system was developed in Germany for the first time in history. It focused on mixed banking – a prototype of what is today called universal – and not on specialized banking. German credit companies could hold assets and liabilities with different maturities. They were able to raise short-term

resources and provide short- and long-term loans, which made the maturity structure of their financial assets and liabilities unbalanced.

The decision to have a mixed system, and not to operate with the specialized banking born in the United Kingdom, was taken by the German political authorities after the unification of the country in 1871 and was not the result of a spontaneous development of market forces. With respect to the United Kingdom, Germany was experiencing a late economic development and to make up for it, the authorities took the decision to involve credit companies directly in the country's industrialization policy. To make effective the channelling of financial resources to the productive sectors selected by the industrial policy, banks were involved in the formation and expansion of the industrial companies. They had to grant them long-term loans and favour the placement of their shares through direct interventions in the process of issuance and qualification.⁸

The unbalanced structure of assets and liabilities made the participation of credit firms in industrial policy risky. To reduce the risks, the *Reichsbank*, the equivalent of the Bank of England in Germany, took on the task of intervening by systematically refinancing the mixed banks that were complying with government policy directions. With these systematic interventions the *Reichsbank* assumed the role of lender of first resort in addition to that of the lender of last resort. It provided means of payment at low cost to the banks on a daily basis to avoid that they could be in situations of illiquidity, instead of providing them in emergency situations, as the Bank of England did.⁹

The transformation of the US specialized system into universal, caused by the change of approach to financial regulation after the transition period (1971-1990), can be considered the element that has imposed a change in the conduct of monetary policy towards the objective of defending the stability of the financial system. As it had occurred in Germany with the introduction of the mixed system, it has forced the central bank to play the role of

⁸ The German mixed banks were thus involved in activities favouring industrial development rather than in the financial speculation that mainly characterises the business of modern universal banks.

⁹ An analysis of the differences between the specialized credit system of the United Kingdom and the mixed system of Germany can be found in the manuscript of the course on "Continental Banking" that Sraffa taught in Cambridge from 1929 to 1931. De Cecco (1999; 2005) and Panico (2021) describe the content of this manuscript, which highlights the need to have a central bank that plays the role of lender of first and last resort in a mixed or universal credit systems.

lender of first resource, in addition to that of lender of last resort (see de Cecco, 1999). To reduce the likelihood of increased systemic risk and financial crises, the Federal Reserve has had to systematically provide low-cost liquidity to universal banks.

In a context of low and stable inflation, due to the limited capacity of workers to appropriate the rises in productivity, the Federal Reserve has gradually shifted the focus of its attention towards the control of systemic risk since mid-1990s. The tendency of universal banks to generate rising risks and instability (see Wilmarth, 2020), the increasing number of financial crises all over the world (see Laeven and Valencia, 2008; 2018), the ascending international role of the dollar, and the effects of the crises on the exchange rate have induced the Federal Reserve to change the conduct of monetary policy. Although it has continued to react to the variations in inflation, production and employment, concerns about the high levels of systemic risk have been increasingly expressed in the reports and the minutes of its governing bodies. These concerns have induced the central bank to cut interest rates with great intensity during recessionary times and when there were signs of financial instability. The crisis of 2007-2008 strengthened this trend, inducing the introduction of unconventional monetary policies that have brought interest rates close to historically low levels.

6. Analysis of the reports and the minutes of the Federal Reserve (1990-1994)

This section and the following highlight the role of monetary and financial factors in the persistent variations of the interest rates from mid-1990s to the financial crisis of 2007-2008 by focussing on the Federal Reserve's growing concern about financial instability. This has been caused by the change in the dominant approach to financial regulation and the consequent transformation of specialized into universal banking.¹⁰

The analysis of the reports and the minutes of the Federal Reserve presented before the crisis of 2007-2008 can support the view that since mid-1990s the main concern of the authorities has been changing toward the control of financial stability. In the first half of the 1990s, however, the Federal Reserve was still primarily committed to low inflation and

¹⁰ For a similar view on the causes of financial instability, see Wilmarth (2020).

adequate production and employment. There is on this point a striking contrast between the content of the reports and of the minutes published during these years and that of the documents published afterwards.

The documents of 1990-1993 extensively deal with the behaviour of inflation, production and employment. The assessment of these elements guided the authorities' decisions. It pointed out that inflation was keeping moderate even when growth was prominent, owing to the fact that the industrial sector was expelling labour force to improve its productivity. This process was causing persistent unemployment, reduced labour force participation, job insecurity and low wage rises.

The reports and the minutes of those years do not mention the existence of aggressive lending behaviour of financial firms and of rising systemic risk. On the contrary, the documents of 1990 and 1991 comment on credit restrictions imposed on business (FED, 1990, pp. 3-4, 5, 24 and 25; 1991, pp. 3, 4, 7, 19, 23 and 24), while those of 1993 cite a cautious attitude of the lenders (FED, 1993, pp. 3 and 122). The documents also state that innovation was reducing the collection of deposits by commercial banks and was thus generating an uncertain behaviour of the velocity of circulation. This was making it difficult to predict the variations of monetary aggregates (FED, 1990, p. 37; 1991, p. 26; 1993, pp. 120 and 152), but was not causing concern about financial stability.

The reports and the minutes of 1990-1993 state that innovation was favouring the growth of the economy by easing the access to consumers' credit and mortgage loans (see FED, 1990, pp. 8 and 25; 1993, pp. 24-25, 178 and 189). During the meeting of the 21st of December 1993 members of the Federal Open Market Committee (FOMC) expressed some first concern about this phenomenon. They pointed out that variations in consumer expenditure had been exceeding the gains in incomes for an extended period of time, causing a reduction of the saving rate. The members of the FOMC were preoccupied with the future consequences of an already low saving rate (FED, 1993, p. 192).

The report and the minutes of 1994 still show that the behaviour of inflation, production and employment was guiding the decisions of the authorities. They point out that the Federal Reserve began to tighten money market conditions in February 1994 arguing that growth 'had gathered momentum, and maintenance of the prevailing stance of policy

would eventually have led to rising inflation that, in turn, would have jeopardized economic and financial stability' (FED, 1994, p. 3). During the year, additional tightening was introduced 'as economic growth remained unexpectedly strong, eroding remaining margins of unused resources and intensifying price increases' (FED, 1994, p. 3). Part of the effects of the rise in interest rates on effective demand and the level of production was however absorbed by the lending behaviour of financial firms, which eased loan qualification and used a widening variety of instruments to sustain business loans and consumer and mortgage credit (FED, 1994, pp. 4, 7, 8, 10, 11, 30, 133, 156, 177-178, 193, 195, 206 and 207).

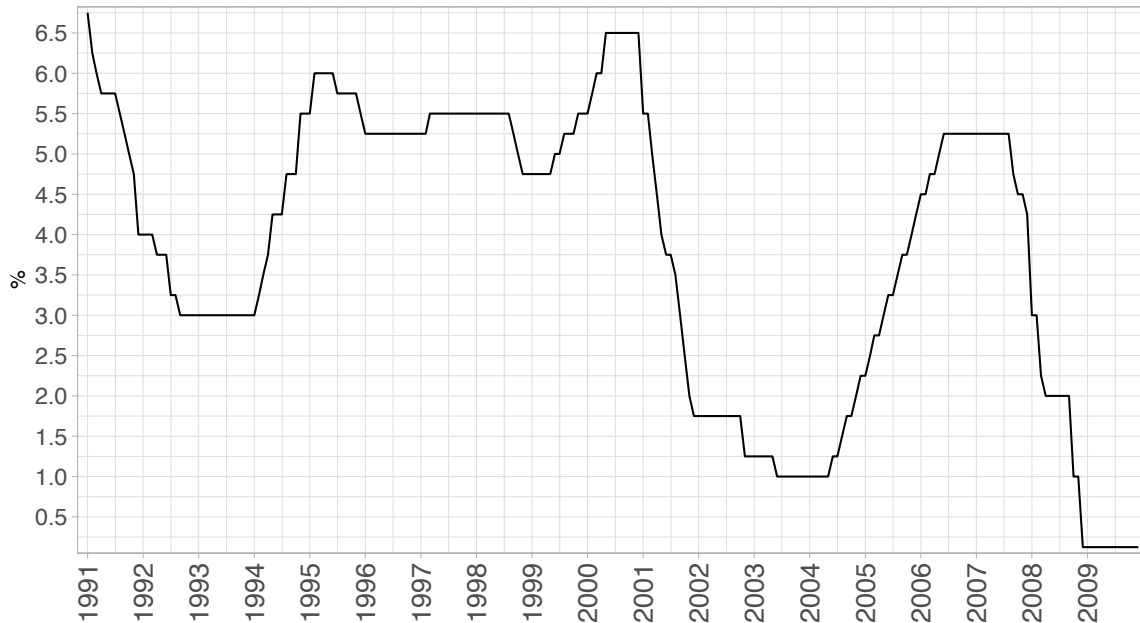
The documents refer for the first time to the aggressive lending attitude of financial firms (FED, 1994, pp. 156, 158, 177-178, 186 and 206). Nonetheless, this behaviour was not seen as causing rising systemic risks. On the contrary, there are indications that the documents consider financial markets as resilient in spite of the volatility that had been increasing since February 1994 and of the financial problems experienced by the Orange County in December 1994 (FED, 1994, pp. 25, 29, 133, 144, 158, 177-178, and 205). The FOMC minutes of the end of the years also contain indications that some members preferred avoiding further increases in interest rates arguing that the volatility of the markets had generated losses that were obliging financial firms to make costly adjustments in their balance sheets (FED, 1994, pp. 25, 29, 144, 147, 158 and 209).

7. Analysis of the reports and the minutes of the Federal Reserve since mid-1990s: can one describe its policy "financial-stability targeting"?

Unlike the reports and the minutes of the first part of the 1990s, those of the subsequent years devote a large number of pages to the instability of the financial system. The concern about inflation, output and employment is still present. Yet, the focus of the documents is shifting from these elements to financial risks.

Figure 2 describes the changes of the intended Federal Funds rate (FF) since 1991. It can help the reader to follow the movements of the policy rates presented in this section.

Figure 2. Federal Open Market Committee's target federal funds rate
 Monthly averages. 1991:01–2009:12



In the first quarter of 1995 the FOMC raised the intended FF ½ percentage point, driving it up to 6 per cent. The aim was ‘to reduce the risk that inflation might mount, with the attendant threat to continued economic expansion’ (FED, 1995, p. 3). The data released in spring, however, showed that inflationary pressures were receding. Monetary policy consequently eased in the second half of the year, contributing to the decline in short-term interest rates, which by year-end were about 1 to 2 percentage points down from the peaks reached earlier in 1995.

The report and the minutes of that year highlight that inflation and inflation expectations were more subdued than had been anticipated (FED, 1995, p. 22). A large part of those documents examines the stability of the financial system. It comments on the failure of an Orange County’s investment fund and the subsequent bankruptcy of the county itself (FED, 1995, p. 59), the failure of Barings PLC, and the serious losses at the U.S. offices of Daiwa Bank (FED, 1995, p. 231). The documents also highlight the aggressive lending attitude of financial intermediaries (FED, 1995, pp. 36, 85) and the increased use of “securisation” and other innovative procedures, which favoured the household and business sectors’ access to credit (FED, 1995, pp. 23-24, 43 and 84). Finally, the documents recall that some indicators, like the average household debt service burden and the delinquency rates on

credit card debt held by banks and on auto loans booked at captive finance companies, already provided evidence that some households were beginning to experience increased pressures (FED, 1995, pp. 23-24). The Office of the Comptroller of the Currency and the Federal Reserve, while acknowledging that the situation did not require stricter measures, took actions to induce banks to have a more prudent approach (FED, 1995, pp. 86 and 231).

Similar elements can be found in the reports and the minutes of 1996. Despite high GDP growth (FED, 1996, p. 3), core inflation remained constant, or even declining, on account of the weak wage rises due to workers' concerns about job security (FED, 1996, pp. 3-4).

The reports and the minutes again devote many pages to financial stability. The main concern is the strong appetite of financial institutions for expanding their business without paying attention to the associated risks (FED, 1996, pp. 4-5). The documents mentions that finance companies and banks briskly moved into the subprime equity loan market, lending either to higher-risk customers or on terms entailing unusually high loan-to-value ratios, or both (FED, 1996, pp. 3, 19 and 23-24).

Consumer credit was securitised at a brisk pace. According to the Federal Reserve, 'the credit-scoring models most banks use to evaluate consumer lending decisions have tended to be too optimistic' (FED, 1996, pp. 23, 76 and 118). The documents finally highlight that debt problems of the household sector arose with increasing frequency (FED, 1996, pp. 14, 17, 23, 76, 118). The minutes of the Monetary Policy Committee even show that these difficulties induced two members to ask for more accommodative policy conditions (FED, 1996, p. 118).

The reports and the minutes of 1997 and 1998 confirm that the performance of the US economy was excellent in spite of the waves of financial instability that affected the world economy and the domestic financial system. Growth was vigorous, the unemployment rate declined to its lowest level in nearly a quarter-century, but inflation slowed further due to the flexibility of the labour markets, particularly in the goods-producing industries (FED, 1997, pp. 3-4, 7, 16, 34; 54-55, 106, 110-111 and 120-121; 1998, pp. 3, 5, 9, 39 and 65).

The events that mainly characterised the two years were the waves of financial instability that affected the Asian and Latin American economies and some US financial firms. International markets were dominated by the crisis that begun in Thailand in summer 1997.

Its effects spread to ‘Korea, Indonesia, Malaysia, Singapore, the Philippines, and Hong Kong in late 1997 and the first part of 1998 to Russia in the summer, and to Latin America, particularly Brazil, shortly thereafter’ (FED, 1998, p. 32). Several nonfinancial and financial firms had to cope with the losses generated by the distress and encountered problems servicing their obligations, which, in many cases, were denominated in dollars (FED, 1997, p. 4; 1998, p. 23). The distress affected the value of the dollar and imposed adjustments in the US economy and changes in the interest rate policy (FED, 1997, pp. 5 and 104; 1998, pp. 3-4, 6-7, 9, 26, 40-41, 179, 184, 189 and 200).

The review of the interest rate decisions taken by the Federal Reserve during this period allows one to compare the influence of the inflationary pressures and of financial instability on them. Inflationary pressures induced the FOMC to raise the intended FF from 5 $\frac{1}{4}$ to 5 $\frac{1}{2}$ per cent in March 1997 (FED, 1997, pp. 3-4 and 55). This was the only upward movement over the two years. On the contrary, the preoccupation raised by financial instability led to several downward movements. In September 1998 the FOMC, ‘looking beyond incoming data suggesting that the economy was continuing to expand at a robust pace, lowered the intended level of the federal funds rate $\frac{1}{4}$ percentage point’ (FED, 1998, p. 6). On account of the further deterioration of liquidity conditions in domestic and international financial markets, on October 15, Chairman Greenspan took the initiative to organise an extraordinary conference call with the FOMC members. As a result of this call, the intended FF was trimmed another $\frac{1}{4}$ percentage point reaching 5%. At the same time the Board of Governors approved a $\frac{1}{4}$ percentage point reduction in the discount rate (FED, 1998, pp. 7, 184-189). The persistence of downside risks in financial markets then induced the FOMC to reduce the intended FF a further $\frac{1}{4}$ percentage point at its November meeting. At the same time, the Board of Governors approved a reduction of another $\frac{1}{4}$ percentage point in the discount rate, moving it from 5 per cent to 4 $\frac{3}{4}$ per cent (FED, 1998, pp. 7, 189, 200). Both decisions were taken to prevent the tightening of credit markets (FED, 1998, p. 9).

The analysis of the 1997 and 1998 documents shows that the concern of the Federal Reserve about financial instability was also caused by the crisis of Long-Term Capital Management (FED, 1998, pp. 24-25) – a major national hedge fund having as principal shareholders Merton and Scholes, who won the Nobel Prize in 1997 for their contribution

to the evaluation of the value of derivatives – and by the persistence of risky behaviours of the managers of financial firms. The reports and the minutes confirm the concerns about the appetite of financial institutions for expanding their business (FED, 1997, pp. 10-11, 18, 62, 74 and 109; 1998, pp. 4 and 10-11) and with the persistent tendency towards enlarging the subprime equity loan market (FED, 1997, pp. 8, 12, 35 and 46-47; 1998, p. 12), evaluating these decisions on the basis of credit-scoring models that were too optimistic (FED, 1997, pp. 10-11), and increasing debt repayment problems in the household sector (FED, 1997, pp. 9, 47, 61 and 62; 1998, p. 11).

The analysis of these elements allows one to conclude that financial instability, more than inflationary pressures, guided the decisions of the authorities in 1997 and 1998. They frequently recalled that inflation could be sprung up by robust economic growth and raised the intended FF from $5\frac{1}{4}$ to $5\frac{1}{2}$ per cent in March 1997. However, they had to admit that expectations did not materialise and, owing to their concern about financial instability, they lowered the intended FF several times bringing it to $4\frac{3}{4}$ per cent.

Over the next two years the Federal Reserve's concern about inflation returned to have a primary role in interest rates decisions. The documents of 1999 and 2000 point out that in the final parts of 1998 the financial instability of the previous months faded (FED, 1999, p. 3), while the growth of the economy was again defined 'exceptional' and was accompanied by striking moderate inflation (FED, 1999, p. 3; 2000, p. 3).

The documents signal that the authorities reversed the interest rate policy pursued until autumn 1998, fearing that the risk of pressures on costs and prices could materialise because the labour market was at its tightest in three decades (FED, 1999, pp. 3-4). The FOMC raised the intended FF $\frac{1}{4}$ percentage point in June 1999 and in August it raised this rate a further $\frac{1}{4}$ percentage point, driving it to $5\frac{1}{4}$ per cent. In a related action, the Board of Governor increased the discount rate to $4\frac{3}{4}$ per cent (FED, 1999, p. 4). The persistent perception of a significant risk that inflation would peak up over time led the FOMC to raise the target for FF an additional $\frac{1}{4}$ percentage point in November 1999 and the Board of Governors to approve an increase in the discount rate of $\frac{1}{4}$ percentage point, driving it to 5 per cent.

In February and March 2000 the FOMC again tightened monetary policy, raising the target for the overnight FF $\frac{1}{4}$ percentage point on each occasion. Similarly, the Board of Governors again approved quarter-point increases in the discount rate in both February and March. Moreover, in May the FOMC and the Board of Governor raised the intended FF and the discount rate another $\frac{1}{2}$ percentage point (FED, 2000, p. 3). The former thus reached 6 $\frac{1}{2}$ per cent.

The reports and the minutes also point out that the loans to households and businesses slowed in 1999. The indicators of debt repayments, like personal bankruptcies and the delinquency rates on home mortgages, credit cards auto loans, were also declining (FED, 1999, p. 9). On the contrary, borrowing increased at a brisk pace in 2000 and again lenders did not appear to be significantly concerned about the credit quality of the household sector for most of the year (FED, 2000, p. 9). Consequently, the indicators of the ability of debt repayments worsened again, although moderately. Between October 1999 and April 2000, the authorities decided to provide sound depository institutions with unrestricted access to the discount window, at a penalty rate, in order to relieve the problems of liquidity of the financial institutions (FED, 1999, p. 5).

The economic and financial situation changed again by the end of 2000 (FED, 2000, p. 5; 2001, p. 3). The authorities reacted aggressively, starting with a telephone conference call on January 3, 2001, when the FOMC decided to cut the intended FF $\frac{1}{2}$ percentage point. This decision was followed, a few days after, by the Board of Governors' approval of a $\frac{1}{2}$ percentage point cut in the discount rate.

Other extensive cuts were decided in the first half of 2001 to support consumer spending and the housing sector. In five half-point steps the cumulative reduction in the FF reached 2 $\frac{1}{2}$ percentage points by May. In June and August the FOMC opted for smaller interest rate cuts of $\frac{1}{4}$ point at each meeting. These actions brought the target FF down to 3 $\frac{1}{2}$ per cent. On the other hand, the Board of Governors approved reductions in the discount rate that matched the cuts in the target FF. As a result, the discount rate declined from 6 per cent to 3 per cent over the same period (FED, 2001, pp. 3, 7, 8).

The previous analysis indicates that, already before the events of September 2001, the fall in the intended FF and in the discount rate had been larger than the rise occurred in 1999

and 2000. What happened in September further affected the economy, increasing uncertainty in financial markets. Equity prices fell sharply for several weeks and credit risk spreads widened considerably, leading the Federal Reserve to issue massive amounts of liquidity to limit disruptions in those markets (FED, 2001, p. 3).

On September 17, during a telephone conference call, the FOMC reduced the intended FF $\frac{1}{2}$ percentage point, leading it to 3 per cent (FED, 2001, pp. 8 and 277). In the subsequent weeks, the FOMC was facing the perspective that this measure had been insufficient and in October and November decided to further reduce the intended FF $\frac{1}{2}$ percentage point each time, leading the rate to 2 per cent (FED, 2001, p. 8). In December the FOMC again lowered the intended FF $\frac{1}{4}$ percentage point, leading it to 1 $\frac{3}{4}$ per cent. As had occurred in previous occasions the Board of Governors approved reductions of the discount rate that matched those of the FOMC bringing the discount rate to 1 $\frac{1}{4}$ per cent, the lowest level since 1948 (FED, 2001, p. 9).

The authorities' concern about the instability that had been affecting the US economy in previous years is expressed by two opening sentences of the 2002 report, which highlight the connexion between financial markets' distress, political events and unlawful behaviour of corporations. The first states:

The economy of the United States has suffered a series of blows in the past few years, including the fall in equity market values that began in 2000, cutbacks in capital spending in 2001, the horrific terrorist attacks of September 11, the emergence of disturbing evidence of corporate malfeasance, and an escalation of geopolitical risks. Despite these adversities, the nation's economy emerged from its downturn in 2001 to post moderate economic growth last year (FED, 2002, p. 3).

The second, centred on the negative reactions of skittish financial markets, claims:

In financial markets, investors and lenders had apparently become more risk averse in reaction to the mixed tone of economic data releases, growing geopolitical tensions, further warnings about terrorist attacks, and additional revelations of dubious corporate accounting practices. In concert, these developments pushed down yields on longer-term Treasury securities, while interest rates on lower-quality corporate bonds rose notably, and equity prices dropped sharply. (FED, 2002, p. 6).

The persistence of these conditions led the FOMC in August 2002 to forecast economic

weakness as the most probable outcome and to reduce in November the intended FF 50 basis points, to 1 ¼ per cent, (see FED, 2002, pp. 4 and 6-7).

In 2003 the US economy gathered strength while unit labour costs continued to decline and price inflation remained low (FED, 2003, p. 3). In June, although the FOMC had seen signs of improvement in some sectors of the economy, it considered that there was no concrete evidence of an appreciable overall economic expansion and that the economy excess capacity was likely to keep inflation in check. For this reason, it decided to lower the target for FF ¼ percentage point to 1 per cent to add support to economic expansion and as a form of insurance against a further substantial drop in inflation (FED, 2003, pp. 6, 9 and 25-26).

In the second half of the year, however, real GDP increased at an annual rate of 6 per cent (FED, 2003, p. 9). Growth was accompanied by a marked increase in household debt due in large part to the surge in mortgage borrowing induced by record-low mortgage interest rates (FED, 2003, p. 12). The low interest rates also spurred considerable corporate bond issuance, while equity markets started to rally (FED, 2003, p. 10).

From 2004 to July 2007 the US economy gained strength (FED, 2004, p. 3; 2005, p. 3; 2006, p. 3) while inflation remained low (FED, 2004, p. 3; 2005, p. 3; 2006, pp. 3 and 9; 2007, pp. 3-4).

In June 2004 the FOMC began to reduce the substantial degree of monetary accommodation that was in place. It raised the intended FF to 1 ¼ per cent and conveyed the view that, given the economic outlook, the monetary stimulus would be soon removed so that policy could return toward what it defined “a more neutral stance”.

In August and September it raised it again to 1 ½ and to 1 ¾ per cent (FED, 2004, p. 6). In November and December, judging that the economy was growing at a satisfactory pace and that inflationary pressures would be contained if monetary policy accommodation were gradually withdrawn, the FOMC raised the intended FF to 2 and 2 ¼ per cent (FED, 2004, pp. 6 and 7).

The reports and the minutes of 2004 indicate that the FOMC considered that the support that low rates gave to consumption was the factor that mainly contributed to growth. It also shows that the authorities considered the indicators of debt repayments acceptable,

although they were generally worse than those recorded in previous years.

In 2005 the FOMC continued to remove monetary policy accommodation by raising the intended FF 25 basis points at each of its eight meetings. The rate thus cumulatively rose 2 percentage points, reaching 4 ¼ per cent (FED, 2005, pp. 3-4). The FOMC considered that this level was ‘within the broad range of values that ... might turn to be consistent with output remaining close to its potential’ (FED, 2005, p. 6). Then, in January 2006 it raised the rate another 25 basis point driving it up to 4 ½ per cent. Finally, in each of the January, March, May and June meetings, the FOMC raised the intended FF other 25 basis points, bringing it to 5 ¼ per cent. These actions show that during this period the members of the Committee held some concern about inflationary pressures (FED, 2005, pp. 24-25).

Meanwhile, the stability of the financial system was increasingly at risk. Levine (2010), Barth, Li, Lu, Phumiwasana and Yago (2009), Caprio (2009), Barth, Caprio and Levine (2011) argue that the Federal Reserve was more aware of these problems than it was available to acknowledge in public statements and documents. By using evidence from official documents and archives, these authors contend that the changes in financial regulation, which occurred after the Bretton Woods era, had impaired the governance of this activity and that the central bank was aware that the new approach to financial regulation was producing distortion of the flows of credit towards questionable ends since 2003. Moreover, they claim that the Federal Reserve went so far as to provide the Congress with false information on this matter and conclude that it is necessary to strengthen the independence of the authorities from the pressures of the financial industry in order to correct the governance of regulation.

Despite these potential reserves, the reports and the minutes of 2006 indicate that ‘following up on a meeting with the Federal Reserve Bank of New York in the fall of 2005, the largest participants in the fast-growing market for credit derivatives agreed to a series of steps to strengthen that market’s infrastructure’ (FED, 2006, p. 29). They also refer to the rising volatility of the US equity markets, foreign exchange and fixed-income markets in several emerging economies (FED, 2006, p. 28). In addition, they mention the liquidation of some sizable hedge funds, which occurred during the year, adding however that they were not affecting the broad functioning of the system (FED, 2006, p. 28). Finally,

they point out that the rise in interest rates contributed to higher debt service payments, pushing the household financial obligation ratio up to a ‘record high’ and markedly raising the delinquency rate on consumer loans and on most types of mortgages with variable interest rates (FED, 2006, pp. 4 and 13), Nonetheless, the documents highlight that ‘at the beginning of 2007, households’ balance sheets appeared to be in good shape’ (FED, 2006, p. 3).

On the 9th of August 2007, at the opening of the markets in New York, the crisis blew up following the declaration of four European financial firms that they were facing severe problems in the derivative markets. This news produced a sharp rise in the short-term interest rates in the interbank markets, which damaged the working of the transmission mechanism of monetary policy. The reports and the minutes of 2007 claim that the crisis was triggered by a sharp increase in delinquencies and defaults on subprime mortgages, which impaired the functioning of the secondary markets for subprime and non-traditional residential mortgages. They so describe the main elements of the crisis:

After midyear, as losses on subprime mortgages ... continued to mount, investors became increasingly sceptical about the likely credit performance of even highly rated securities backed by such mortgages. The loss of confidence reduced investors’ overall willingness to bear risk ... That reassessment was accompanied by high volatility and diminished liquidity in a number of financial markets here and abroad. The pressures in financial markets were reinforced by banks’ concerns about actual and potential credit losses. In addition, banks recognized that they might need to take a large volume of assets onto their balance sheets—including leveraged loans, some types of mortgages, and assets relating to asset-backed commercial paper programs—given their existing commitments to customers and the increased resistance of investors to purchasing some securitized products. In response to those unexpected strains, banks became more conservative in deploying their liquidity and balance sheet capacity, leading to tighter credit conditions for some businesses and households. The ... reassessment of risk by investors precipitated ... a sizable net decline in equity prices (FED, 2007, pp. 3-4).

The Federal Reserve reacted to these events by conducting unusually large open market operations, adjusting the procedures for discount window borrowing and securities lending, supplying short-term credit to banks against a large variety of collateral, and organising currency swap arrangements with other central banks to increase the availability of term

dollar funds in their jurisdictions (FED, 2007, p. 4). Finally, the FOMC cut the intended FF 50 basis points in September, adding two other cut of 25 basis points in October and December. Owing to the further deterioration of the economic and financial situation, the FOMC cut another 125 basis points in January 2008, of which 75 basis points were cut on January 22 and 50 basis points during the meeting scheduled on January 29-30. These reductions paved the road towards the “zero bound”.

To sum up, the reports and the minutes indicate that the Federal Reserve became increasingly concerned about the stability of the financial system before the crisis of 2007. The central bank did not disregard the appraisal of inflation, output and employment. Yet, since inflationary pressures were contained and the financial system showed increasing signs of volatility, they made the interest rate policy more and more sensible to stability problems. The reductions in policy rates were larger than the increases and the overall result was a tendency toward lower rates, which reached the “zero bound” after the crisis.

7. Conclusions

The recent fall in interest rates can be interpreted by making reference to the real or to the monetary theoretical foundations of economic discipline. The empirical analysis of Borio *et al.* (2017), regarding the period 1870-2013, points out that the real interpretations present problems and the monetary ones should be given a relevant role.

Our essay has tried to identify some theoretical and institutional elements favouring the adoption of a monetary interpretation. Through a narrative description of the reports and the minutes of the Federal Reserve, we have argued that since mid-1990s this institution has been more concerned about growing instability and the need to provide liquidity at low cost to financial firms than about inflation.

One of the main institutional phenomena responsible for this new conduct of monetary policy has been the change of approach to financial regulation and the consequent transformation of the US specialized banking system into universal. As it had occurred in the 1920s, the universal banking system has generated rising risks and instability (see Wilmarth, 2020) and has forced the central bank to play the role of lender of first resource,

in addition to that of lender of last resort. To reduce the likelihood of increased systemic risk and financial crises, the Federal Reserve has systematically provided low-cost liquidity to universal banks, a conduct that has generated the downward trend of the interest rates, which can already be observed before the crisis.

This conclusion raises a pertinent question: did the Federal Reserve lucidly devise to generate this downward trend? As Wilmarth (2020, pp. 75-79) points out by referring to the interest policy imposed by Benjamin Strong during the period 1923-1927, the persistent provision of large amounts of liquidity at low interest rates may cause further financial instability. According to Wilmarth (2020, p. 78), ‘the Fed’s interest rate cuts in 1924 and 1927 “poured fuel on the fire” in domestic markets by promoting speculative investments in the U.S. real estate and corporate bonds and stocks’.

The analysis of the documents of the Federal Reserve presented in this paper suggests that the downward trend may be the unconscious outcome of decisions taken by its governing bodies to respond to problems that they had to face moment-by-moment. The authorities wanted to return to higher levels of the interest rates and tried to implement them when the current situation allowed it. Yet, the occurrence of new events putting at risk financial stability forced them to reduce again the rates with rising intensity.

We emphasise that the answer to this question is not the aim of our investigation. Further work is necessary to clarify the issue and other answers, regarding the relations between financial authorities and the institutions that they have to control and guide, can be suggested. One of them can insinuate that the governing bodies of the Federal Reserve tend to have a protective attitude towards financial firms.

Referring to their experience in the institutions leading the economic policy, Stiglitz and Blinder have mentioned the existence of this problem. According to Stiglitz (1998, p. 217), the financial world is disproportionately represented within the governing bodies of the financial authorities. Many members come from the financial world and are influenced by a cultural background that favours the interest of this section of the economy. Blinder (1997, p. 15; 2004, pp. 67-68 and 94-95), on the other hand, highlights that some members of the governing bodies try to gain the consensus of the financial industry by proposing measures that favour its business. He considers this behaviour the ambiguous result of a suitable

action aiming at creating cooperation between the central bank and the financial system.

Following the research line of other authors previously cited in this paper (see Levine, 2010, Barth, Li, Lu, Phumiwasana and Yago, 2009, Caprio, 2009, Barth, Caprio and Levine, 2011) one can instead consider this behaviour an alteration of the correct functioning of the relationship between the authorities and the institutions that they must guide and control.

It would be advantageous that these aspects of the formation of monetary policy will be further explored in the near future.

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