Review of the Research Program of the New Consensus Macroeconomics: An Assessment of the Debate in the Mainstream after the US Financial Crisis

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Abstract: The depth and extent of the 2007-2008 U.S. financial crisis and the Great Recession that followed led many to question the economic policy model that had been implemented in various countries since the 1990s, the theoretical basis of which was rooted in the New Consensus Macroeconomics (NCM). Although the systemic impact of the crisis is comparable to that of the 1929 crisis, the NCM has remained essentially unchanged, despite having been subjected to a review. Based on Lakato's concept of the 'scientific research program', this paper assesses the extensive literature related to the review of the NCM in the United States. The main conclusion is that, despite some flexibility in the 'protective belt', the core of this model (the basic theoretical elements) is upheld and thus remains as the dominant scientific research program.

Key words: Methodology of Scientific Research Program; New Consensus Macroeconomics; Global Financial Crisis; Contemporary History of Macroeconomic Thinking

JEL Classification: B22, B41, E52

1. Introduction

The U.S. financial crisis of 2007-2008 and the Great Recession that followed rekindled an old debate that not coincidentally began after the 1929 crisis with Keynes' criticism of the 'classical view'. At that time, Keynes' theoretical and policy proposals – which were promptly addressed by the neoclassical synthesis in the 1940s – promoted the rise of Keynesian theory at the expense of the pre-crisis outlook. However, in the 1970s, stagflation in the U.S., Europe and Japan dominated the theoretical debate, which was largely informed by the classical view that was developed by the monetarist research approach and expanded by New Classical economics and Real Business Cycle (RBC) theory. In the 1980s, New Keynesian economics emerged; this school developed microfoundations that justified the presence of nominal rigidities and market failures; thus, output fluctuations were viewed as costly, which led to the re-emergence of stabilization policies. The new neoclassical synthesis[1], also known as the New Consensus Macroeconomics (NCM), is a bridge between classical (monetarists, new classical and RBC) and (new) Keynesian economics that emerged in the 1990s within

[1] The term "new classical synthesis" was first coined by Goodfriend and King (1997).

the context of the Great Moderation – a period of low volatility in business cycle fluctuations believed at that time to be permanent.

Among the various approaches to the discussion of the evolution of macroeconomic thought, this paper takes as its starting point the epistemological approach proposed by Lakatos (1978) in building the Methodology of Scientific Research Programs (MSRP). The overtaking of a research program by another research program constitutes a rational process, whereby one scientific research program (SRP) progresses in terms of its explanatory capacity to understand reality, thus providing additional knowledge, while another research program loses its explanatory power and thus recedes, without being completely refuted[2]. Moreover, according to the author, the occurrence of a 'scientific revolution' is a historical process that typically occurs over a long period of time, and advances in knowledge depend on the existence of rival programs.

Thus, the Scientific Theory (which is equivalent to the MSRP) consists of a *hard core*, i.e., a theoretical basis that is conventionally accepted as 'irrefutable' based on the methodological decisions of its proponents. Thus, refutations or anomalies are relegated to the 'protective belt', and the central propositions are preserved. The *protective belt* encompasses theory and auxiliary hypotheses, in addition to empirical techniques, that are subject to debate (and verification). Furthermore, the protective belt is where some connection with the world is made. The positive heuristic is the set of propositions that should be changed in the protective belt, so that the 'hard core' remains unchanged. The program is considered *progressive* when a successive change in the protective belt leads to the ability over time to generate novel facts and hitherto unexpected predictions; and the program is considered *regressive* when its theoretical development lags behind its empirical development and it only offers 'ad hoc' explanations for casual discoveries or facts, seeking merely to accommodate whatever new facts become available. In such a methodological approach, a particular SRP is judged superior to another if it accounts for all the facts predicted by a rival research program and, additionally, makes further predictions, some of which are empirically tested (Lakatos 1978, 116-7). Therefore,

[2] There is some controversy regarding the application of the MSRP in economics, with the methodological difficulties being related to the criterion of empirical progress in the field of economics. However, Caldwell (1991, 98) states that "it seemed that the MSRP fits economics remarkably well. The Lakatosian categories of hard cores, protective belt and positive and negative heuristics made sense to economists, especially neoclassical economists, when they thought about their discipline". For different perspectives on the matter, see Blaug (1975) for a favorable view of the role of the MSRP in economics and Hands (1984) for a criticism of such an approach.

scientific progress can be the result of competition between research programs that fluctuate between progressive and regressive shifts.

A review of the Scientific Research Program of the NCM[3] after the US financial crisis of 2007/2008 and the Great Recession (GR) that followed constitutes the starting point of our analysis, which focuses mainly on economic policy proposals rather than explanations for the financial crisis. Indeed, in the same way that the Great Depression of the 1930s challenged the basic axioms of Classical Economics and the stagflation of the 1970s challenged the viability of the demand management view (Keynesian policies), the post-2008 Great Recession challenged NCM policies. This paper identifies the 'hard core' and 'protective belt' of the NCM before and after the financial crisis and concludes that despite some flexibility in the protective belt, the NCM view can be considered regressive.

As its point of departure, this paper takes the concept of Lakatos' research program, and an extensive literature is analyzed, including the main principles of the NCM (section 2) and its post-crisis reassessment by mainstream economists with respect to the management of US economic policy during both the crisis and the Great Recession; special focus is given to monetary policy, financial policy and fiscal policy (section 3). The main conclusion of the paper (section 4) is that despite some flexibility in the protective belt, the core of the NCM research program is unchanged and remains the dominant scientific research program.

2. New Consensus Macroeconomics

The origin of the NCM research program is rooted in the combination of theoretical, empirical and methodological elements set forth by the monetarist, new-classical, real business cycle and new Keynesian approaches[4]. According to Blanchard (1997), the NCM is a convergence movement involving different schools, similar to the movement promoted by Paul Samuelson in the 1940s, which, by combining elements of the classical and the Keynesian approaches, resulted in the so-called neoclassical synthesis. Central to the NCM are the hypothesis of rational expectations, the use of general

[3] For an analysis of the criticism of the state of economics since the outbreak of the 2007 financial crisis – in particular the more pluralistic setting that has emerged in U.S. academia – see Heise (2014).

[4] According to Duarte (2011, 3-4), "macroeconomics has not only several competing schools and from time to time is in a state of disarray, but it also has moments of consensus when knowledge seems to progress at a faster rate".

equilibrium models with microfoundations, the relevance of aggregate demand to the dynamics of economic activity in the short term due to the presence of price and wage stickiness, and the importance placed on market imperfections to explain the trajectory of the economy in the short run. In a similar vein, Taylor (1998, 12) argues:

> "(…), in my view, there is a set of key principles, a core of macroeconomics, about which there is wide agreement. This core is the outgrowth of the many recent debates about Keynesianism, monetarism, neoclassical growth theory, real-business-cycle theory, and rational expectations. The core is practical in the sense that it is having a beneficial effect on macroeconomic policy, especially monetary policy, and has resulted in improvements in policy over the past fifteen years".

While Friedman (1956, 1968) established monetarism based on the concept of the natural rate of unemployment and the accelerationist Phillips curve as well as a re-statement of the (new) quantity theory of money, Lucas (1972) laid the foundations of the theory of rational expectations, according to which agents use all available information as well as their understanding of how the economy works when they form expectations[5]. This approach had a strong theoretical impact and informed the disinflationary policies of the US in the 1980s as a result of its proposal that monetary policy can control inflation without the need for other instruments. The revolution of rational expectations implied that agents' expectations regarding monetary policy behavior have a relevant impact on output.

In another seminal article, Lucas (1976) questioned the validity of the macroeconomic forecasting models given the absence of expectational variables, which implied a change in the correlation between macroeconomic variables – that is, the variables used by the (old) Keynesians in their econometric forecasting models – when changes occur in monetary policy[6]. On the other hand, microfoundations were an appropriate component of structural macroeconomic models because changes in economic policy do not change the microeconomic structure. As a result, the need to incorporate endogenous expectations into structural models became an important

[5] According to Hoover (1988, 13-14), there are three tenets to the new classical doctrine: "First, agents' real economic decisions – for example, about savings, consumption or investment – are based solely on real, not nominal or monetary, factors. Second, agents are, to the limits of their information, consistent and successful optimizers, i.e., they are continuously in equilibrium. Third, agents make no systematic errors in evaluating the economic environment, i.e., they hold rational expectations."

[6] The Lucas critique supports the idea that it can be misleading to try to predict the effects of a change in economic policy on the basis of relationships observed in historical data, in particular in the case of highly aggregated historical data. Consequently, the decision rules of Keynesian models – such as the consumption function – cannot be considered structural in the sense of being invariant with respect to changes in government policy variables.

variable in the assessment of the impacts of monetary policy on the economy (Woodford 2008).

In the late 1970s, the analysis performed by Kydland and Prescott (1977) in relation to rules versus discretion in economic policy and the problem of the time inconsistency of monetary policy was seminal. The authors argued that economic outcomes may improve if the commitment to economic policies are viewed as credible, while monetary policy conducted on a discretionary basis is subject to the time inconsistency problem. However, these authors did not discuss *how* Central Banks (CBs) should achieve credibility. At this point, Rogoff (1985) developed an analytical proposition under which a Chairman of a CB has a degree of aversion to inflation higher than that of the average member of the public; however, this may not be sufficient given that political and societal pressures can influence monetary policy, thus requiring the perception of CB independence by the economic agents. In this connection, Barro and Gordon (1983) analyzed the importance of the CB's reputation as a central element for building credibility.

In the 1980s, Kydland and Prescott (1982) developed the model of Real Business Cycles (RBC), emphasizing the role of real variables, particularly technological shocks, in explaining economic fluctuations. This model and later versions dominated the macroeconomic research until the early 1990s despite the use of controversial assumptions such as instantaneous price adjustments (markets are continuously self-adjusting). The microfoundations of such models are based on representative agents and are characterized by the absence of money (McCallum 1999). They differ from New Classical models in their focus on the real sources of fluctuations instead of monetary shocks and the non-existence of imperfect information (at least in the first generation of models).

In the same period, developments in the New Keynesian approach that took advantage of dynamic models based on microfoundations of wages and price stickiness as well as staggered contracts resulted in the resurgence of the approach, which had been shaken by the New Classical criticism of the 1970s[7]. The incorporation of the RBC model into New Keynesian economics was undertaken by relaxing the assumptions of perfect competition and flexible prices, which were replaced by monopolistic

[7] New Keynesians share with New Classical and RBC theory the following methodological and theoretical grounds: the rational expectations hypothesis, general equilibrium models with microfoundations and representative and optimizer agents as benchmarks in an environment characterized by complete markets and complete information.

competition and wage and price stickiness. According to Goodfriend (2007), the initial purpose of the RBC models was to study output fluctuations, and the role of money and monetary policy was neglected. The incorporation of price rigidity made it possible to use such models to analyze optimal monetary policy taking into account growing empirical evidence that monetary policy affects real output in the short run.

In the 1990s, the RBC models were tailored to solving dynamic optimization problems as well as to analyzing competitive interactions in market structures with monopolistic competition and the presence of some elements of nominal stickiness of prices and wages; they combined theoretical discipline with greater empirical adherence to reality. These models, referred to by authors such as McCallum (1999, 5) as "quasi RBC", are structural and therefore immune to the 'Lucas critique' of econometric models (Goodfriend 2005).

Moreover, empirical analysis has become an important tool for the validation of structural models and quantitative analysis of modern economic policy. In this context, the econometric methods and stochastic simulations of structural models are an important part of the macroeconomic tools. Unlike first generation RBC models, the purpose of Dynamic Stochastic General Equilibrium (DSGE) models[8] is more than simply to understand the basic mechanisms of an economy; they therefore require quantitative realism. In this new approach, fiscal and monetary policy influence economic fluctuations as well as technological shocks (Woodford 2008).

It must be emphasized that real disturbances[9] continued to play a central role in explaining output fluctuations while the effects of monetary policy were incorporated, although their impact has been minimized. Moreover, 'quasi-DSGE[10]' models show that the effect of monetary policy on real variables depends on the feedback policy of the CB (rules versus discretion). Working as a nominal anchor, monetary policy based on rules becomes an efficient means of controlling inflation because the behavior of agents

[8] The DSGE methodology seeks to explain aggregate economic phenomena, such as economic growth, business cycles, and the effects of monetary and fiscal policy, on the basis of macroeconomic models derived from microeconomic principles. They are based on the hypothesis that markets clear through adjustment of prices and quantities and rely on random fluctuations in technology, preferences and other exogenous sources as the primary impulse for the movement of economic variables over time (Woodford and Walsh 2003, 11-2).

[9] According to the RBC model, a major source of real disturbances is technological shocks, although the DSGE models consider changes in the preferences of agents and economic policies.

[10] The 'quasi-DSGE' models correspond to real business cycle models but with the added flexibility of certain hypotheses, such as flexible prices and perfect competition.

(households and firms) determines relative prices, while monetary policy affects only the inflation rate.

As a result, as monetary policy fails to have an effect on monetary aggregates, the CB commits itself to an inflation target. At this point, it should be noted that these models ignore the balancing effects of the money market, leaving out the formalization of an LM-type equation (Woodford 2008). The shift from an equation for equilibrium in the money market to a rule for interest rates was due to the work of Taylor (1993), which was essential in giving many CBs a tool (known as Taylor rule) to react to changes in the inflation rate and GDP (McCallum 1999; Goodfriend 2005).

In the late 1990s, Bernanke and Gertler (2000, 2001) performed studies about fluctuations in asset prices under the inflation targeting regime and found that the equilibrium interest rate is very sensitive to variations in the inflation rate. The evidence showed that there was no additional gain or loss to price stability when a CB decides to respond to changes in asset prices except when forecasted inflation is affected. They also argue that because of the inflation targeting regime, CBs in practice act on bubbles: Growth in asset prices causes inflationary pressure due to the wealth effect and greater demand for credit, which requires an increase in the short-term interest rate. These studies are important as they show that the primary role of the CB is to control inflation, the role of monitoring the price of assets in specific markets having been delegated to regulatory agencies (microprudential regulation).

One last point regarding the NCM before the 2007 financial crisis is related to the consequences of interest rates being close to the zero lower bound. According to Eggertsson and Woodford (2003), a CB with credibility could continue to influence future short-term interest rates, except in situations of strong financial disruption. This argument assumes that the output gap and the inflation rate gap in New Keynesian models are determined by long-term interest rates and that forward guidance policy can influence expectations related to forward short-term interest rates, which in turn influences the behavior of long-term interest rates.

Figure 1 presents a summary of the scientific research program of the NCM, highlighting its 'hard core', its 'protective belt', and an agenda for economic policy[11].

[11] In a literal transposition of the Methodology of the Scientific Research Program (MSRP) of Lakatos (1978) for the field of economics, the only possible element for the 'hard core' would be the Dynamic Stochastic General Equilibrium (DSGE) model, as it is not testable and provides logical consistency. However, the border between the hard core and protective belt is occasionally tenuous, so that one component can be part of the hard core or protective belt, depending on what is accepted by the scientific

We consider, as Weintraub (1985, 36) does, that "it must be the case that the hard core is not so fixed as a traditional Laktosian appraisal may seem to suggest". The 'hard core' of this program includes the main theories or hypotheses that in principle have not been subjected to discussion: the natural rate of unemployment, the hypothesis of rational expectations, dynamic stochastic general equilibrium (DSGE) – typically with a representative agent – and classical dichotomy (nominal and real variables must be analyzed separately). The core assumptions of DSGE theory – as an amalgamation of New Classical economics and New Keynesian economics – include the stability and optimality of market-based coordination mechanisms (Walras's law). Duarte (2011, 24) states that the central point of convergence in the new synthesis is methodological: "the use of dynamic stochastic general equilibrium (DSGE) models that explain not only the evolution of the potential output over time as mostly a supply-side phenomenon, but also short-run and inefficient deviations of the actual output from its 'natural' level (the level achieved if prices were flexible) that arise as consequence of wages and prices rigidity". The widespread belief that economic theory must fit into the General Equilibrium mold in order to qualify as rigorous science is responsible for the purely abstract and eventually nonempirical character of so much of modern economic reasoning (Blaug 1992, 169)[12].

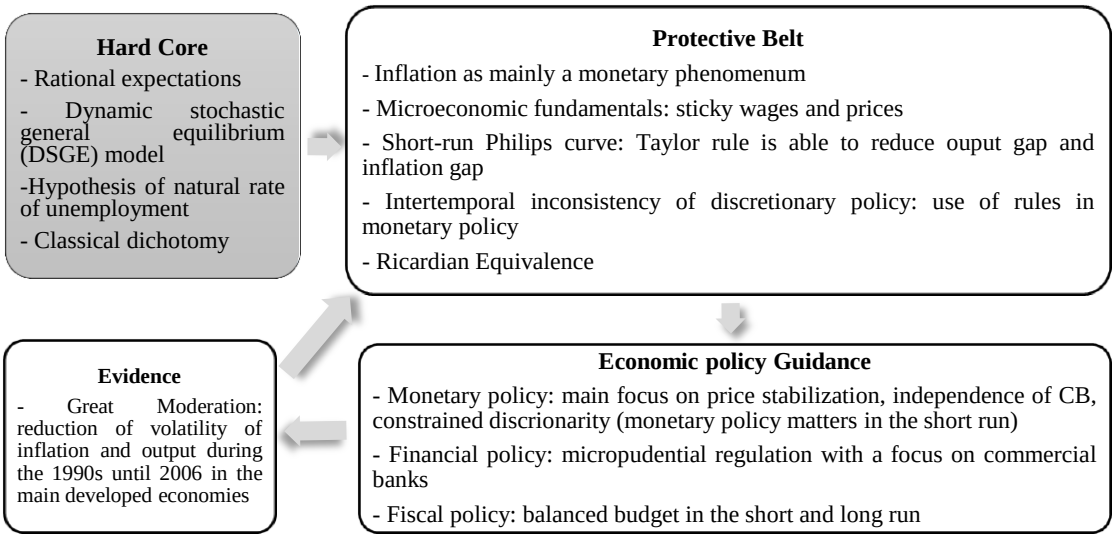
The 'protective belt' includes some theories and complementary hypotheses that are subject to debate: inflation as mainly a monetary phenomenon, the existence of a short-run Phillips Curve, intertemporal inconsistency of discretionary policy, and Ricardian equivalence (rational agents are forward looking and so internalize the government's budget constraint when making spending decisions). In terms of the modus operandi of economic policy, the following points can be included: a focus on price stabilization and the independence of the central bank as well as the micro-prudential regulation of banks and a balanced fiscal budget in both the short and long

community. Therefore, in this paper, we assume a more flexible view of the MSRP, so the hypothesis of rational expectations, the hypothesis of the natural rate of unemployment and the classic dichotomy were added to the hard core of the NCM research program, as they have been the foundation of mainstream economics since the 'New Classical revolution' and are frequently considered irrefutable and insulated from criticism.

[12] According to Ganen (1996), the theory of general equilibrium, by defending the price mechanism as a coordinating element of economic activity and by establishing the notion of the existence of a natural order that imposes some order on individual chaos and "as a reference model and hard core of neoclassical theory, is the starting point for understanding the upgrade, by the neoclassical program, of the old and precious orthodox project *to demonstrate the superiority of the market as a regulatory element of the economy and a means of maintaining order*." (p.105, italics in original; translated by the authors).

run. The evidence in favor of the efficacy of NCM policies is related to the so-called period of "Great Moderation": a reduction in inflation and output volatility in major developed economies from the mid-1980s to 2006.

Figure 1. Synthesis of the Scientific Research Program of the NCM



Source: Authors' elaboration

3. Review of the New Consensus Macroeconomics since the financial crisis of 2007/2008

The financial crisis of 2007-2008 and the Great Recession called into question the scientific research program of the NCM. During the crisis, interest rates rapidly lost their effectiveness as they approached zero, and the unconventional monetary and fiscal policies that were passed to prevent the recession became a circular process. Consequently, the crisis had a strong impact on fiscal stability, resulting in a sharp increase in public debt (Mishkin 2012; Blanchard et al 2013). According to Blanchard et al. (2010, 3, italics added):

> "It was tempting for macroeconomists and policymakers alike to take much of the credit for the steady decrease in cyclical fluctuations from the early 1980s on and to conclude that we knew how to conduct macroeconomic policy. We did not resist temptation. *The crisis clearly forces us to question our earlier assessment*."

However, some theorists of the NCM have reaffirmed that the crisis and the unconventional measures adopted to contain the panic in financial markets and the strong slowdown of economic activity have not shaken the theoretical framework or prevailing principles of the NCM:

> "1) Inflation is always and everywhere a monetary phenomenon; 2) price stability has important benefits; 3) there is no long-run tradeoff between unemployment and inflation; 4) expectations play a crucial role in the determination of inflation and in the transmission of monetary policy to the macroeconomy; 5) real interest rates need to rise with higher inflation, i.e., the Taylor Principle; 6) monetary policy is subject to the time-inconsistency problem; 7) central bank independence helps improve the efficiency of monetary policy; 8) commitment to a strong nominal anchor is central to producing good monetary policy outcomes (…)." (Mishkin 2011, 3).

This review of the NCM suggests that the essence of the elements of the pre-crisis theoretical convergence should remain, as argued by Mishkin (2011, 32, italics added), stating that:

> "The monetary policy strategy that follows from the eight principles of the new neoclassical synthesis is what I have referred to, for want of a better name, as flexible inflation targeting. Since, as I have argued here, none of these principles is invalidated by the events of the recent financial crisis, this approach to monetary policy strategy is still equally valid. *The arguments supporting central banks' adhering to the principles of the new neoclassical synthesis are still every bit as strong as they were before the crisis*."

However, even if the crisis and unconventional monetary policies have not shaken the core of the theoretical framework of monetary policy, at least in the view of these authors, the economic crisis exposed the vulnerabilities and limits of monetary policy[13]. The convergence among macroeconomists refers to the transience of unconventional policies and the need for monetary stimulus to be removed from the economy after a certain amount of time. However, there is strong divergence among various authors regarding how economic policy should be conducted post-crisis. Disagreements among these authors are related to addictive propositions, such as greater flexibility of the inflation targeting regime, represented by the need for monetary policy to interact with macroprudential policy as well as the redefinition of the role of fiscal policy.

3.1. Monetary policy

The recent American financial crisis and its effects have shown that large shocks are possible, whether from the financial sector or any other sector of the economy, and that a low inflation target (e.g., 2% per year) can adversely affect the effectiveness of countercyclical monetary policy. As a result, some economists support a higher target

[13] As we will see in the sequence, Taylor (2010a) argued contrary to the movement of NCM review, claiming that the monetary policy in the post-crisis should be guided in the same way as before.

inflation rate (around 4% per year) compared to the period prior to the crisis, providing monetary policy with greater scope to set the short-run interest rate (Blanchard et al. 2010).

On the other hand, a higher inflation target requires an evaluation of the costs of distortion caused by such a target, while the benefits suggest that conventional monetary policy is better able to cope with recessions. The main costs are as follows: i) difficulty anchoring expectations at an inflation rate of 4% p.a.; ii) higher inflation volatility due to a tax system that is not neutral with respect to inflation; iii) the impact on the real balance of money; and iv) structural changes in the economy (Blanchard et al. 2010, 8).

Mishkin (2011, 32) argues that an inflation target of up to 3% p.a. tends to increase the inflation rate and that the costs associated with interest rates that are close to the lower limit – as these events occur rarely – would be lower than the benefits of low inflation. According to Mishkin (2011), the expansionary economic policy in the U.S. during the 1960s led to a continuous increase in the inflation rate, generating high inflation in the 1970s and 1980s; consequently, disinflation during the Volcker era had a high cost.

Another critical point noted by Blanchard et al. (2010) is that the choice between the headline inflation index and core inflation is misleading as "the behavior of inflation is much more complex than is assumed in our simple models and (…) we understand the relationship between activity and inflation quite poorly, especially at low rates of inflation" (Blanchard et al. 2010, 7). On the other hand, before the 2007-2008 crisis, although inflation and the output gap were stable, the behavior of some asset prices and credit aggregates were undesirable, triggering large macroeconomic adjustments later on.

Taylor (2010b, 8) questioned both the increase in the inflation target (suggested by the IMF's research department) and its replacement by another index. According to the author, in an environment of increasing public debt and with the expansion of the CB's balance sheet, such measures could significantly reduce the credibility of the inflation target and hence the independence of the CB. Such an action would be even more inappropriate if adopted by emerging countries whose inflation rates are usually higher than those in developed countries.

An additional issue that arises with respect to monetary policy was discussed in the 2000s: Should monetary policy be used to control the prices of financial assets? As we have already noted, Bernanke and Gertler (2001) consider interest rates to be

insensitive to changes in asset prices, so that they have little impact on the excessive leverage of financial institutions, increases in market risks or the price valuation of assets. Moreover, before the 2007-2008 financial crisis, the 'Greenspan doctrine' was accepted practice; thus, the FED only acted after the breaking of a bubble (clearing) as opposed to 'leaning against the wind' (acting preventively).

Blanchard et al. (2010, 2013) argue that the crisis revived the old debate regarding whether monetary policy should be used to mitigate bubbles; some argue that it is difficult to correctly assess the significance of price increases in specific markets, which runs the risk of committing a type I error (assuming the existence of a bubble when the increase in prices reflects changes in fundamentals) or type II error (assuming that changes in prices reflect the fundamentals when in fact there is a bubble). The authors also maintain that interest rates are an inappropriate instrument for addressing changes in asset prices, although the use of a lower interest rate implies higher risks because the increase in interest rates that is meant to mitigate the exposure to such risks represents the acceptance of an increase in the output gap, thus hampering output and employment growth. According to the authors, the best answer to financial asset bubbles is macro-prudential policy.

Mishkin (2011, 42) presents several studies that support the relationship between low interest rates and the formation of bubbles. Based on the 'risk taking channel of monetary policy', the author argues that low interest rates can stimulate the search for higher yields, increasing the level of risk exposure as well as promoting an increase in net margins and the financial value of firms, which stimulates firms to take on more leverage and risk. Furthermore, credible monetary policy can reduce uncertainty, leading to the underestimation of market risks and moral hazard within financial institutions. Thus, Mishkin (2011, 37) supports the use of monetary policy to mitigate macroeconomic risk through risk management, whereby the CB must act in a preventive manner to manage financial disruptions, such as by initiating changes to the short-term interest rate and minimizing the risk of a cycle of negative feedback based on agents' perceptions of the future behavior of macroeconomic variables (inflation, output, etc.). This proposal is reaffirmed by Woodford (2012a), which proposes the incorporation of financial stability as one of the goals of the monetary authorities into the inflation targeting regime. From this perspective, monetary policy should keep as its primary objective the commitment to a long-term inflation target, but the short- and medium-term interest rate could eventually be changed to 'lean against the wind'.

Taylor (2010b, 8) disagrees with these authors, both in terms of macro-prudential regulation and risk management. The author argues that while the monetary policy adopted by the FED in the 1990s was rule based (a Taylor-type rule), there was a convergence between the rule and the Federal Fund Rate that contributed to a period of stability in the price level, GDP and financial conditions. However, during the period 2002-2005, short-term interest rates, which were set by the monetary authority, became much lower than the Taylor rule recommended, and they consequently stimulated the expansion of credit to the real estate sector, and their extended duration stimulated greater risk taking. According to the author, risk-taking behavior arises from the undesirable impacts of very low interest rates at odds with the interest rate rule for financial stability, so that the monetary authority should follow a policy rule to mitigate this risk.

One last question refers to signaling policy (management of expectations) as proposed by Eggertsson and Woodford (2003) and questioned by Williams (2011), who argue that forward guidance is time inconsistent because the commitment by the CB to maintaining short-term interest rates lower than future rates allows higher inflation in the future. However, the CB could fail to comply with this commitment and raise interest rates to curb the rise in the inflation rate. As a result, time inconsistency could adversely affect expectations and generate negative impacts on credibility.

Bernanke (2012a) and Yellen (2011) agree with this argument, noting that forward guidance policy, when conducted unconditionally, leads to time inconsistency. However, to avoid this problem, monetary policy should be conditional ('constrained discretion'), and thus, the message of the CB to the public should be that the management of monetary policy in relation to interest rates depends on the economic conditions and that policy can be modified as these conditions change.

However, Clarida (2012) questioned the argument for a conditional policy, claiming that this type of communication could be perceived by the public as discretionary, thus jeopardizing the anchoring of inflation in the future. Alternatively, Woodford (2012a) proposed a nominal GDP target[14], calculated by multiplying the output gap and an inflation target (stipulated by the Central Bank). The proposal sought to build a simpler reference index to facilitate communication between the CB and the public, the purpose of which was to reduce the risk of a loss of credibility.

[14] According to Woodford (2012a), the public would be better able to understand a simpler nominal GDP target than Eggertsson and Woodford's (2003) rule.

Bernanke (2009, 2012a), Yellen (2011) and Williams (2011), in turn, argue that the studies conducted by the FED addressing the first years of the crisis showed the importance and efficiency of the signaling channel as a monetary policy tool. The CB communicates its future intentions regarding short-term interest rates and other measures to the public, and this has an influence on agents' expectations. Such expectations, in turn, influence the forward short-term interest rates that determine long-term interest rates, bringing about changes in aggregate demand and hence in output. However, Williams (2011) identifies certain empirical works related to the financial crisis that have questioned the relevance and superiority of this channel relative to others. Moreover, as discussed by Cecioni et al. (2011), the forward guidance of monetary policy can lead to problems associated with moral hazard and encourage risky behavior, as emphasized by the risk-taking channel.

Finally, it is emphasized that the signaling channel is more efficient under normal market conditions because the operationalization of monetary policy directly involves the determination of short-term interest rates and the CB has a monopoly on the monetary base. On the other hand, when the CB makes use of non-conventional monetary policy, it is only able to influence rather than determine the agents' portfolio changes, which calls into question the effectiveness of these policies, thereby adversely affecting the signaling channel (Borio and Disyatat 2009, 16).

3.2. Financial policy

Since the 1970s, financial deregulation in many developed economies has led to the abandonment of financial regulation and supervision as a macroeconomic tool; deregulation is based on the argument of the theoretical irrelevance of financial intermediation, which is anchored in the hypothesis of the neutrality of asset prices in relation to their macroeconomic consequences (Blanchard et al. 2010, 8). The NCM's assumption that the short-term interest rate is an index of general conditions for other prices in the economy indicates that the asset price channel responds in a stable and predictable way to changes in interest rates.

Furthermore, the dichotomy between monetary policy and financial policy in an inflation targeting regime is attributed to the 'principle of Tinbergen', according to which the achievement of one objective of economic policy is based on a single instrument. Thus, monetary policy was responsible for price stability, while macro

prudential financial policy was replaced by regulation and microprudential supervision – which now operates individually in specific segments of the financial sector (Blanchard et al. 2010, 8; Eichengreen et al. 2011, 4).

Depository institutions, however, were still subject to microprudential regulation, as they were able to affect economic activity through the credit channel. Thus, the monetary authority could minimize the individual risk of commercial banks using traditional instruments – reserve requirements and rediscount window loans – thus ensuring the CB maintained the role of lender of last resort (Blanchard et al. 2010, 8). On the other hand, the deregulation of financial markets resulting in a process of financial disintermediation based on the efficient markets hypothesis[15] enabled some non-depository institutions to avoid any form of regulation or microprudential supervision[16].

This new regulatory and supervisory framework, whose focus was microprudential and oriented toward the banking sector, was the main vulnerability of economic policy during the pre-crisis period. Indeed, no government entity in most advanced economies had macroprudential authorities that allowed them to adopt preventive measures to reduce systemic risk in the banking system, capital markets or the 'shadow bank system' in particular[17].

[15] Propositions of the *efficient market hypothesis* (EMH) include: "(i) Market prices are good indicators of rationally evaluated economic value. (ii) The development of securitised credit, since based on the creation of new and more liquid markets, has improved both allocative efficiency and financial stability. (iii) The risk characteristics of financial markets can be inferred from mathematical analysis, delivering robust quantitative measures of trading risk. (iv) Market discipline can be used as an effective tool in constraining harmful risk taking. (v) Financial innovation can be assumed to be beneficial since market competition would winnow out any innovations which did not deliver value-added. [However] each of these assumptions is now subject to extensive challenge on both theoretical and empirical grounds, with potential implications for the appropriate design of regulation and for the role of regulatory authorities." (Financial Services Authority 2009, 39). According to Ball (2009, 13), limitations of EMH stem from ignoring the supply side of the information: (i) information is modeled in the EMH as an objective commodity that has the same meaning for all investors, but, in reality, the actions of individual investors are based not only on their own beliefs, but beliefs about the beliefs of others; (ii) information processing is assumed in the EMH to be costless, and hence information is incorporated into prices immediately and exactly, but in practice information processing is costly; (iii) the EMH implicitly assumes continuous trading, and hence ignores liquidity effects; however, there is evidence that illiquidity is a "priced" factor—that is, higher returns compensate for lower liquidity—though how to measure liquidity is unclear. In short, EMH adopts a simplified view of markets.

[16] Microprudential regulation or microprudential supervision refers to firm-level oversight or financial regulation by regulators of financial institutions, while macroprudential regulation characterizes the approach to financial regulation that aims to mitigate the risk of the financial system as a whole (or "systemic risk").

[17] According to Bernanke (2012b), "shadow banking (…) comprises a diverse set of institutions and markets that, collectively, carry out traditional banking functions--but do so outside, or in ways only loosely linked to, the traditional system of regulated depository institutions. Examples of important components of the shadow banking system include securitization vehicles, asset-backed commercial paper (ABCP) conduits, money market mutual funds, markets for repurchase agreements (repos),

This framework of financial policy was prevalent until the mid-2000s, when, according to Eichengreen et al. (2010), the global financial crisis weakened confidence in microprudential tools as the main financial instrument of stability. It should be noted that the NCM identified short-term interest rates as an index of general conditions, underestimating their effects on asset prices and on financial stability and economic activity. As argued by Mishkin (2011), risk management becomes a new instrument to address asset price bubbles but not the most appropriate instrument for situations where there are market failures that boost credit bubbles.

Mishkin (2011) argues that asset price bubbles associated with loans are easier to identify and have a stronger impact on the economy than bubbles related to rational exuberance (capital market). Thus, the author criticizes the 'Greenspan doctrine' – according to which a CB should not try to target asset prices – as the recent financial crisis showed that the CB's operational costs after the bursting of a credit bubble are much higher than the cost of a preventive action. However, the central issue of the debate is identifying which instrument of intervention is more appropriate.

Microprudential regulation that corresponds to standard measures to ensure the soundness of individual financial institutions should remain in effect, although this form of regulation is not the most appropriate tool for market failures where risk taking in the credit markets and the creation of speculative bubbles are enabled (Mishkin 2011). On the other hand, macroprudential policies are appropriate to address the interrelationship between various financial institutions and markets. Although some institutions may be operating individually in a prudent way, they are susceptible to the risks generated by other institutions due to externalities and characteristics inherent in the financial market.

In the presence of market failures, the most appropriate tool – according to Mishkin (2011), Bernanke (2012b) and Woodford (2012b) – is regulation and macroprudential supervision. The NCM review argues for elimination of the dichotomy between monetary policy and financial policy: The two instruments must be operated jointly, performing the functions of price, output and financial stabilization. This enlargement of objectives and instruments is justified because monetary policy is at the heart of the leverage decisions of commercial banks and other financial institutions, as small changes in borrowing costs can have a major impact on the (borrower and lender) risks and financing conditions.

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investment banks, and mortgage companies. Before the crisis, the shadow banking system had come to play a major role in global finance."

The desirable combination of monetary policy and macroeconomic regulation and supervision prompts questions about the coordination between them and whether they should be performed by different institutions or by the same institution. The first question requires that prudential regulation acquire macroeconomic dimensions and that change in monetary policy and financial policy be well coordinated, so that the objectives are convergent in a credible way and communication with the public is able to influence agents' expectations in the same desired direction (Blanchard et al. 2010; Mishkin 2011).

The CB is a natural candidate to assume this coordination as it already carries on the banking supervision role as well as having a set of information to operate monetary policy. Moreover, coordination between the objectives and monetary and financial instruments tends to generate better results when operated by a single institution (Blanchard et al. 2010; Eichengreen et al. 2010; Mishkin 2011).

A restrictive macroprudential policy to curb credit bubbles can reduce the credit supply and aggregate demand, but this can be offset by a monetary policy that minimizes the effects of such a policy on the reduction in aggregate demand. Alternatively, monetary policy based on low interest rates, the purpose of which is to stimulate economic activity, can be offset by tighter macroprudential policy to contain the rise of asset bubbles. The challenge presented by this new approach requires coordination between monetary and prudential instruments (Mishkin 2011; Blanchard et al. 2013).

Enthusiasm for this proposition is not shared by TAYLOR (2010b, 7), which criticizes the use of discretionary regulatory policy to address credit booms or asset prices and supports conventional regulation that focuses on the risk of each financial institution. The author argues that one of the main causes of the crisis was interest rates that were far below the recommendation of a monetary policy rule; for this reason, an appropriate interest rate (defined by Taylor's rule) is a suitable instrument to prevent crises. Moreover, according to the author, the incorporation of financial policy as a monetary tool tends to promote the loss of CB independence.

3.3. Fiscal policy

Since the 1970s, fiscal policy has been downgraded by the monetarist and new classical schools due to the effects from 'crowding out' and Ricardian equivalence, which called

into question its effectiveness and diminished its role in a balanced budget rule supporting price stability. However, as discussed by Blanchard et al. (2010, 10), the global financial crisis showed that fiscal policy had an important countercyclical role despite causing a sharp increase in the national debt of some countries.

There are some reasons for the reemergence of countercyclical fiscal policy during the Great Recession. First, conventional and unconventional monetary policies reached their limits. Thus, fiscal policy became the only available option to stimulate economic activity. DeLong et al. (2012) states that discretionary fiscal policy can play a major role in a severe downturn in the aftermath of a financial crisis when interest rates have reached the zero nominal lower bond, as the effects of the fiscal multipliers are higher in such conditions. Second, the expectations related to the long duration of the crisis did not challenge conventional criticism related to the lagged effects that are attributed to more active fiscal policy. On the other hand, it was noted that economies with high debt levels had problems fostering fiscal stimulus, while economies with lower budget deficits had greater flexibility to engage in stimulus (Blanchard et al. 2010, 10).

Mishkin (2012, 6) argues that fiscal deficits increased by about 10% in the US, while in some European countries, particularly Greece, the risk of sovereign bond default increased significantly. This situation leads to fiscal dominance, whereby governments may not be able or are not willing to settle excessive government expenditure with future taxes. In this case, the intertemporal budget constraint should be solved by issuing monetary liabilities or by debt default – both situations lead to an increase in inflation.

Debt monetization, through purchases of treasury bonds by the CB, can lead the monetary authority to relinquish control of prices, resulting in an increase in the inflation rate. From this perspective, if the CB opts for no debt monetization and the government succeeds in preventing debt default, allowing the CB to maintain a strong commitment to price stability, fiscal dominance resulting from high public deficits would nevertheless force the monetary authority to monetize public debt sometime in the future (Mishkin 2012, 34). On the other hand, no debt monetization could cause a rise in interest rates and a contraction in economic activity, which in turn would increase the default risk of sovereign bonds, causing a financial disruption and a further reduction in economic activity; in addition, the inflation rate would rise. There is also the risk of fiscal dominance causing a deterioration in market expectations that could in

turn result in higher inflation – even in cases where the CB maintain a strong commitment to price stability.

Thus, the fiscal crisis led Mishkin (2012, 35) to revise the principle that "inflation is always and everywhere a monetary phenomenon". According to his view, the crisis generated a substantial increase in the public deficit and a path to fiscal dominance. As a result, monetary policy at some point will be called upon to monetize the public debt, thus increasing inflation; and in case this approach does not succeed, the likelihood of a debt default will result in a rise in inflation. On the other hand, the author argues that post-crisis fiscal policy should prompt a reduction in debt levels and keep the government budget on a sustainable path.

Blanchard et al. (2013) criticized this proposal, highlighting the importance of having 'fiscal space' for running budget deficits, as was the case in the recent global economic crisis. More specifically, Blanchard et al (2013) support a counter-cyclical fiscal policy, whereby in periods of economic growth, the government should reduce the public debt to GDP ratio, providing sufficient flexibility to raise the level of public spending and incentives during periods of recession. On the other hand, according to Blanchard et al (2010, 14), management of fiscal policy should include budgetary commitments with a long-term balanced fiscal budget, with provisions for flexibility in times of crisis.

4. Concluding Remarks: An assessment of the debate related to the 'New Consensus Macroeconomics review'

The U.S. financial crisis of 2007/2008 and the economic policies that were adopted to address the crisis and the Great Recession that followed have called into question the scientific research program (SRP) of the New Consensus Macroeconomics. The belief that the NCM economic policy that was responsible for the Great Moderation – the period between the mid-1980s and mid-2000 marked by low macroeconomic volatility in developed countries – could be maintained for a long period of time proved to be fallacious. The global financial crisis demonstrated that this macroeconomic policy model was largely responsible for the financial crisis and the pervasive economic recession that was coupled with deflationary risk – a situation that was comparable to the 1929 crisis. Thus, several questions related to the theoretical foundations and implications of economic policy derived from this SRP have been raised by the

mainstream consensus; in this paper, this reaction is referred to as the 'New Consensus Macroeconomics review'.

A comparative analysis of the SRP of the NCM before the financial crisis and a review of this program after the crisis highlights some of the hypotheses and theories that constitute the 'hard core' and 'protective belt' of the NCM review. The consensus before the crisis included hypotheses such as the following: the natural rate of unemployment, ration1al expectations, optimizer and representative agents, and inflation as a monetary phenomenon.

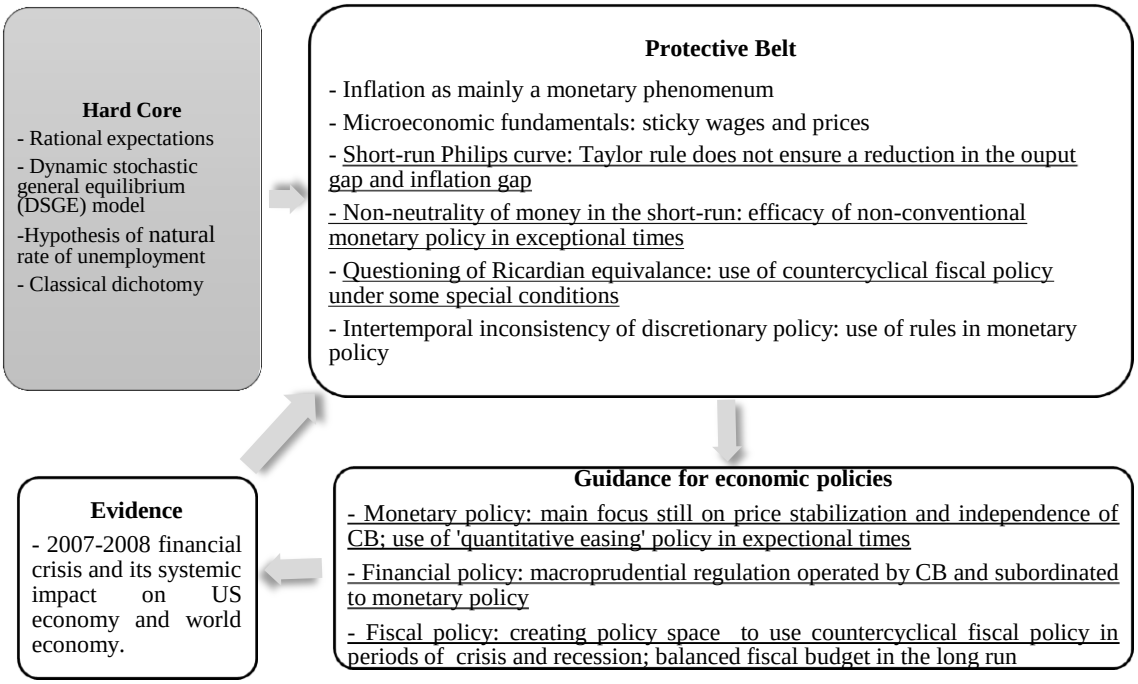
The main changes in the protective belt since the financial crisis are related to the efficient market hypothesis, the use of NCM policies to ensure price stability, non-neutrality of money in the short run, the benefits of monetary policy rules, and certain operational aspects of monetary and fiscal policies. While the commitment to price stability should be maintained as the primary goal of economic policy, the CB should include risk management as a policy tool to address financial stability concerns (for most authors, the use of macroprudential regulation), such that financial policy should be operated by the CB but subordinated to monetary policy; in exceptional situations (when interest rates are near the zero lower bound), the CB should make use of non-conventional monetary policies, including 'quantitative easing'. On the other hand, fiscal policy could be used as a countercyclical tool, mainly in cases where interest rates are near the zero lower bound; however, for this purpose, previous 'policy space' should be created.

Figure 2 summarizes this debate. While the core of the NCM research program is maintained (rational expectations, the general equilibrium model, hypothesis of the natural rate of employment and classical dichotomy), there is a certain relaxation in various elements of the protective belt, although mainly as applied to exceptional times.

In the synthesis of a vast literature, there is notably no homogeneous view among mainstream macroeconomists: They do not view current macroeconomic issues in the same manner, nor do they necessarily agree about which policies to prescribe. On the one hand, there are more conservative authors such as Taylor, who advocates the use of a more rigid monetary policy rule to prevent asset bubbles and to reduce exchange rate volatility in the case of emerging economies, maintaining low inflation targets and employing microprudential regulation to prevent financial risks. On the other hand, there are more flexible positions (relative to orthodoxy); Blanchard and others, for example, favor the use of complementary tools in economic policy, i.e., higher inflation

targets, countercyclical fiscal policy and macro-prudential regulation, thereby introducing new objectives into economic policy (in particular, financial stability). Thus, Taylor's position clearly favors maintaining the hard core and protective belt of the NCM, and Blanchard's position is more favorable to certain changes in the protective belt while maintaining its hard core. Other mainstream authors take intermediate positions, e.g., Woodford and Minskhin.

Figure 2. Synthesis of the Research Program of the NCM Review*



Source: Authors' elaboration. (*) Underlined words highlight proposal changes by the NCM review

Overall, the new economic policy proposals derived from the NCM review represent a certain amount of relaxation of the propositions belonging to the protective belt of the NCM, but there is no evidence of radical change: Inflation remains the main objective of long-term economic policy and is seen as an essentially monetary phenomenon; concepts/hypotheses such as the natural rate of unemployment and rational expectations (although some criticisms have been advanced by behavioral economists in this particular concern) remain valid. Such proposals may be understood as 'regressive' changes in the sense that they are 'ad hoc' adjustments to the protective

belt[18]. Therefore, the NCM review is limited to modifying 'ex post' its auxiliary hypothesis in order to explain new facts. Eventually, changes in the auxiliary hypothesis can produce results that conflict with the NCM hard core; for example, the theoretical consequences of the non-neutrality of money in the long run, the limitations of assuming a representative agent, the use of other types of rationality than rational expectations, such as bounded rationality or rationality under radical uncertainty, questioning the use of non-market clearing models, etc. Whether the 'Review of New Consensus Macroeconomics' is a harbinger of another period of disarray in macroeconomics is an open question.

Indeed, some heterodox economists have argued that the NCM review still adheres to the basic premises of an 'old' model, as it is skeptical about reality-skewing formal deductivism and rejects the postulate of the stability and optimality of market-based coordination mechanisms, which are viewed as inappropriate for understanding the 'real world'. In this sense, the review represents 'Gatoppard Economics', that is, *a change to keep all the same* (Palley 2013); the theoretical models and assumptions that retain the essence of the NCM and therefore the view that the free market is more efficient at resource allocation have been maintained. In this sense, the acceptance of market failures, particularly in financial markets, demanded that the NCM incorporate financial policy and risk management into monetary policy while still subordinating them to the primary objective of price stabilization. Moreover, fiscal policy remains dependent on monetary policy objectives but is raised to the category of a short-term countercyclical instrument. Thus, in the long run, everything remains as before, while in the short run, non-conventional monetary and fiscal policies may be required to halt and reverse the trend of recessive cycles. We suggest that this 'external' criticism of the NCM review could be explored in other works[19].

Finally, there is the question of the most appropriate economic policy for the 'new normal', that is, the post-global crisis period. The vision that seems to prevail in the mainstream is maintaining the core of the NCM, with price stability as the long-term primary goal. In operational terms, this involves the adoption of an independent CB as an institutional means of achieving this goal and incorporating new policy instruments to combine the central objective of economic policy (price stability) with other

[18] However, as Caldwell (1991, 98) states, "crucial tests are rare and instant rationality unavailable, and (…) appraisal of the programme's progressivity is only possible over long periods of time".
[19] For a post-Keynesian criticism of the pre-crisis NCM policies, see Arestis (2009).

intermediate goals (such as financial stability), thus avoiding the simplistic vision of "one target and one tool" that prevailed in many countries during the period of the Great Moderation (Bayoumi et al. 2014).

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