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CENTRAL BANKS AND MACROPRUDENTIAL POLICIES: ECONOMICS AND POLITICS

Donato Masciandaro[♦]

Abstract

The 2007-2008 global financial crisis highlighted the importance of establishing macroprudential architectures to address problems of financial stability. Central banks are always part of macroprudential settings, but their role is far from homogeneous across countries. How can this heterogeneity be explained? The aim of the chapter is twofold. First, it offers a systematic review of the economics of central bank involvement in macroprudential policies, which leads to the conclusion that political motivations are highly relevant drivers. Second, given this insight, it explores the institutional settings in 31 advanced and emerging market economies and sheds light on several key drivers of the central banker's role as a macroprudential supervisor: central bankers who are already in charge of microeconomic supervision and less politically independent are more likely to be granted extended macroprudential powers. The same is true for central bankers who have low levels of monetary policy discretion.

I. INTRODUCTION

The 2007-2008 financial crisis highlighted the need for financial stability. Reforms of financial regulation in numerous countries were motivated by the fact only paying attention to monetary stability and micro supervision (i.e. the stability of individual institutions and markets) was not enough to guarantee the safety and soundness of the financial industry. A broader approach, known as macroprudential policy (i.e. the use of prudential tools to mitigate systemic risk)¹ was deemed necessary for ensuring the resilience of the financial system as a whole. A macroprudential framework addresses the cross-sectional dimensions that characterise any systemic risk distribution. Consequently, different authorities must be involved in macro governance, including central banks. In fact, a country's existing micro supervisory architecture implies the existence at least two different authorities, except in cases where the central bank serves as the only supervisor.

Reforms of financial supervision and the establishment of macroprudential regimes have gone hand in hand with various degrees of involvement on the part of central banks. Invariably, central banks are involved in macroprudential settings, but their role is far from homogeneous across countries. A central bank can be lightly involved if the mandate of ensuring financial stability is shared by multiple agencies. The opposite is true when the central bank is the sole holder of the macroprudential mandate. Intermediate settings in which a central bank acts as a coordinator or as the leading authority among multiple agencies can also occur.

In 2010, the US Congress passed the Dodd-Frank Act. This law created the Financial Stability Oversight Council (FSOC), which includes the Federal Reserve as the authority responsible for identifying

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¹ In line with the International Monetary Fund's definition, the focus is on the concept of systemic risk, i.e. the risk of disruptions to the provision of financial services caused by an impairment of all or parts of the financial system, which can have serious negative consequences for the real economy.

risks and responding to events that threaten financial stability. In the EU, the European Systemic Risk Board (ESRB) was created in the autumn of 2009, at which time it was made responsible for macroprudential policies. The coordinating actor in that case is the European Central Bank (ECB). Individual countries within the European Union have also built up macroprudential architectures. In Germany, policymakers passed the Act on Monitoring Financial Stability in 2013 and set up a new macroprudential authority known as the Financial Stability Committee (FSC), which works closely with the Bundesbank. In the UK, a key factor of the most recent regulatory reform was the creation of a macroprudential agency within the Bank of England, known as the Financial Policy Committee (FPC).

How can the key role played by central banks in new macroprudential architectures be explained? From a theoretical point of view, the extension of central bank influence into macroprudential policies has pros and cons. Therefore, policymakers must address a series of possible trade-offs between the expected benefits and costs of allowing the monetary authority to have more or less influence on macroprudential strategies. The question that naturally arises is genuinely empirical: Is it possible to identify common drivers that explain political choices concerning central bank involvement in macroprudential governance?

The paper proceeds as follows. Section II presents the state of the art. Section III offers a discussion of the relationships among political incentives, central bank design and macroprudential policies, highlighting the drivers that may explain central bank involvement in the macroprudential perimeter. We present our conclusions in Section IV.

II. MACROPRUDENTIAL GOVERNANCE AND CENTRAL BANK INVOLVEMENT: THE STATE OF THE ART

Macroprudential policy and its relationship with central banking are topics that have long been studied² in advanced, emerging³ and developing economies. The same is true for macroprudential policy and its connection to other government agencies responsible for financial stability.⁴ The evolution of the economics and the political economy of monetary policy in the three decades prior to the financial crisis of 2007-2008 is a story of two intertwined tales. On the one hand, we find a tale of ways to govern money and interest rates in the short run. On the other hand, we see a tale about ways to design monetary architectures for the long run. Traditionally, these two tales have been told separately, and academic scholars have preferred to focus on the former while the central bankers and some policymakers have centred on the engineering of the monetary setting. The key innovation in modern monetary policy was the progressive merging of the analysis of the macroeconomic effects of day-to-day public choices in monetary games (i.e. monetary policy) with the study of the structural features that characterise the monetary players (i.e. governments and central bankers) as well as the rules and institutions of the monetary games that shape players' (central bankers and other economic agents) goals and incentives.

² Goodhart and Schoenmaker 1995, Masciandaro 1995 and 2007, Bernanke 2007 and 2011, Herring and Carmassi 2008, Blanchard et al. 2010, Nier 2009, Blinder 2010, Goodhart 2010, Brunnermeier et al. 2010, Borio 2006 and 2011, Nier et al. 2011, Lamfalussy 2010, Bean 2011, Agur and Demertzis 2015, Cerruti et al. 2016, Bianchi and Mendoza 2017, Boar et al. 2017.

³ Kawai and Morgan 2012, Bank for International Settlements 2017.

⁴ Gerlach 2010, Angelini et al. 2012.

Thirty years ago, economic theory did not attribute any importance to the concept of central bank governance. Institutional arrangements only increased in importance when economic theory began to stress their role in determining macroeconomic performance (i.e. during the New Classical Revolution). At that point, the roles of central bank design and governance were confirmed in the New Keynesian analysis of monetary policy.

The theoretical bottom line can be summarised as follows: policymakers tend to adopt a short-term perspective when using monetary tools to smooth out different kind of macroeconomic shocks (i.e. real⁵ and fiscal⁶ imbalances). However, the more a market is efficient, the greater the risk that a short-sighted monetary policy will only produce macroeconomic distortions. In fact, rational private agents fully anticipate the short-term incentives politicians have to implement certain monetary policies. In this framework, the Friedman-Lucas proposition on monetary policy neutrality holds.

Therefore, banning the use of monetary policy for political distortionary purposes becomes the social goal and the importance of the institutional setting increases. The relationships (governance) between the policymaker who designs the overall economic policy and the central bank that is responsible for monetary policy become crucial for avoiding political bias. The more the markets are rational, the more the rules of the game between policymakers and central bankers gain momentum.⁷

Essentially, optimal central bank governance has two key aspects. First, the central banker has to be independent. In other words, her or she must be able to implement non-inflationary monetary policy without any short-sighted external (political) interference. As such, the central banker must have the capacity to veto inflationary monetary policies. Second, the central banker must be conservative, where conservativeness refers to the importance assigned to price stability in relation to other macroeconomic objectives. Conservativeness is necessary to ensure that the central banker does not become a source of inflation bias. In other words, independence and conservativeness are necessary for the implementation of credible non-inflationary monetary policies. The trade-off between conservativeness and independence⁸ can be addressed by using independence as a tool to implement conservative monetary policies. However, private agents will trust the central banker only if effective rules on accountability and transparency hold. In other words, a conservative central banker is credible if he or she works in an institutional setting that guarantees independence and accountability, acts in a transparent way, and implements an effective communication policy.

The relationship between independence and accountability represents the core of central bank governance. In turn, central bank governance becomes the institutional setting for day-to-day monetary policy – given the long-run goal of avoiding the risk of inflation, the modern central banker can also smooth real business cycles⁹ using monetary policy rules.¹⁰ Monetary policy becomes the final outcome of the

⁵ Barro and Gordon, 1983.

⁶ Sargent and Wallace, 1981.

⁷ Barro and Gordon, 1983; Backus and Driffill, 1985; Rogoff, 1985; Lohmann, 1992.

⁸ Eijffinger and Hoeberichts, 1998.

⁹ Bernanke and Gertler, 1995; Clarida, Gali and Gertler, 1999; Woodford, 2003.

¹⁰ Taylor, 1993; Henderson and McKibbin 1993; Walsh, 1995.

complex interactions among three main components: monetary institutions, central banker preferences and policy rules.¹¹

In this respect, the literature on central bank governance followed has been developed in a two-stage process. Initially, scholars involved in the field focused on verifying the theoretical conjectures through comparative, institutional and empirical analyses. After constructing indices of central bank governance,¹² they then attempted to determine whether and how the different indices could be considered as drivers of the most important macroeconomic phenomena: inflation, public debt, interest rates, income and growth.

The first wave of studies on monetary regimes – including those adopting critical views¹³ – took an important step in terms of considering central bank governance as an endogenous (dependent) variable that needed to be explained.¹⁴ The questions in this regard were the following: What drivers can motivate one or more countries to maintain or reform a monetary regime? Why and how are policymakers forced to implement monetary reforms that reduce their powers to design and implement distortionary monetary policies, thereby changing the rules that govern the central bank setting?

Thus far, various interpretative hypotheses have been advanced to explain the genesis of the political process that leads a monetary regime to assume given characteristics. Developments in endogenizing central bank governance and, thereby, its effectiveness have been the subject of analyses in both economics and political science. All of the hypotheses stress the importance of the preferences of citizens and politicians in determining the central bank's governance features. Furthermore, the different views can be intertwined when studying the economic, institutional and cultural conditions under which reforms of the central bank governance do or do not take place.

These studies acquire greater importance in certain periods, such as the period after the 2007-2008 financial crisis. At such times, there is a tendency to change or at least question the design of central bank governance. This recent debate reawakened political and academic interest in macroprudential policies¹⁵ and the corresponding institutional settings.¹⁶ The crucial point is that the scientific literature offers two main and contradictory results, which can be summarised as opposite answers to the following question: Given two policies – monetary policy and macro supervision policy – with two different macro goals, what is the optimal degree of involvement for the monetary agent (i.e. the central bank) in supervisory responsibilities¹⁷?

The integration view suggests that the more the central bank gains information advantages, the more its leading role in the definition and implementation of macro supervision is supported. This position is based on the fact that the central banker is the country's liquidity manager, and that he or she obtains information on the health of the banking and financial system by carrying out that role. In fact, the central bank is the unique monetary agent – the agent designated by society to manage liquidity in order to pursue monetary policy goals. As sources of liquidity, central banks naturally serve as leaders in preventing and managing

¹¹ Persson and Tabellini, 1993; Svensson, 1995.

¹² Grilli, Masciandaro and Tabellini, 1991; Cukierman, Webb and Neyapti, 1992; Alesina and Summers, 1993.

¹³ McCallum, 1995.

¹⁴ Posen, 1995.

¹⁵ N'Diaye, 2009, Kannan, Rabanal and Scott 2009, Lambertini et al. 2011, Beau et al. 2012 and Angelini et al. 2012.

¹⁶ Kohn 2015, Correa et al. 2016, Kenc 2016.

¹⁷ Masciandaro 1995.

systemic banking crises in advanced, emerging¹⁸ and developing countries. Moreover, other government agencies entrusted with responsibility for financial stability¹⁹ serve as the central bank's *de jure* or *de facto* subordinates. The central bank's leading role in macro supervision is also supported by arguments related to the skill advantages and economies of scale that derive from bringing all functions together under the same umbrella.²⁰ In other words, having the central bank as the leading actor in both policies increases the likelihood that Tinbergen's principle (i.e. consistency between different goals and different tools) is respected.²¹

The separation view claims that the opposite could be true. In other words, if the central bank is the leading macro supervisor, there is a risk that the instruments of one policy can be assigned to the wrong objectives.²² At the same time, when the central bank is the main actor responsible for maintaining financial stability, the risk of financial dominance – the likelihood that financial stability concerns will undermine the central bank's credibility and effectiveness as the monetary authority²³ – can increase.

Furthermore, shortcomings can occur if the central bank is not the micro supervisor. In this case, the central bank's policy as macro supervisor is more likely to produce negative, albeit unintended, consequences. The intuition in this regard is simple: the less the central bank is involved as the micro supervisor, the less it is likely to be its information set on the health of individual banking firms and, consequently, the higher will be the likelihood of mistakes as macro supervisor. At the same time, risks may arise if the central banker is also the micro supervisor. In fact, if the central bank is also a micro supervisor, there is a risk of capture by banks.²⁴ Therefore, the overall effect of the role of the central bank as a micro supervisor is theoretically ambiguous and must be analysed empirically.

Finally, the literature has thus far failed to consider the potential role of political drivers that can shape policymakers' decisions. If we adopt a political economy perspective when analysing the build-up of new regulatory institutions, it is possible to assume that the policymakers' choices related to macroprudential governance are conditional on the economic and institutional environment at a given time. This, in turn, determines the political weights placed on the pros and cons of central bank involvement.

Recently, this assumption has been tested in different studies that endogenized the shape of the financial supervision setting, taking the political cost and benefit analysis into account.²⁵ These studies followed the intuition found in the central bank governance literature focused on the drivers of the monetary setting that political incentives can be a crucial factor in explaining different degrees of central bank independence.²⁶

¹⁸ Kawai and Morgan (2012).

¹⁹ De Graeve et al. (2008), Gerlach (2010), Angelini et al. (2012). For a survey, see Oosterloo and de Haan (2004).

²⁰ See, among others, Bernanke (2011), Herrings and Carmassi (2008), Klomp and de Haan (2009), Blanchard et al. (2010), Blinder (2010), Lamfalussy (2010), and Papademos (2010).

²¹ In the debate on the relationships between monetary and supervisory tasks, the importance of consistency with respect to the Tinbergen's principle is highlighted in Smets (2014). On the economics of macroprudential policy, see also Dehmej and Gambacorta 2015, Horvath 2016, Mendoza 2016, Tressel and Zhang 2016, and Svensson 2016 and 2017.

²² The literature confirms the following well-known rule: given different objectives, different policy instruments are needed (e.g. price stability and interest rates (monetary policy) versus loan-to-output ratio stability and capital buffers (macroprudential policy)). A deep analysis of the tools and goals of macroprudential policy is beyond the scope of this paper. For a comprehensive survey, see Brockmeijer et al. (2011). See also Alessandri and Panetta 2015, Nier and Kang 2016, Lane 2016, Silvo 2016, and Beyer 2017.

²³ See Smetz (2014). Financial dominance can also have redistributive effects (see Buiter 2014). On central banking, financial stability and redistributive effects, see Masciandaro and Passarelli (2013). On the redistributive effects of financial regulation, see Korinek and Kreamer (2014).

²⁴ See Boyer and Ponce (2012). On the relationships between financial stability and the central bank's role in micro supervision, see Koetter et al. (2014).

²⁵ Masciandaro (2006, 2007 and 2009), Masciandaro and Quintyn (2008), Masciandaro and Volpicella (2014).

²⁶ See Cukierman and Webb (1995), Moser (1999), and Keefer and Stasavage (2003).

The perspective provided by political economics is based on the hypothesis that the gains and losses of a given macroprudential regime, including the role assigned to the central bank, are variables computed by the incumbent policymaker, who maintains or reforms any institutional setting in line with his or her own preferences.²⁷ In this case, an additional driver of the actual role of the central bank in macro supervisory governance is the political role of the central bank as an independent authority. If the central bank plays a leading role as a macro supervisor, its overall powers are likely to increase. Consequently, politicians may fear creation of an overly powerful independent bureaucracy, especially given that implementation of effective macro supervision action is often believed to require constrained discretion.²⁸

In summary, the literature suggests that when selecting the optimal level of central bank involvement in macro supervision, policymakers face a trade-off. On the one hand, there are potential net information gains, which increase if the central bank is also deeply involved in micro supervision. On the other hand, risks of capture, policy tool misallocation and an overly powerful bureaucracy arise. Notably, economic and econometric analyses of the relative merits of assigning the central bank a leading role in macroprudential governance are rare.²⁹

III. POLITICIANS, CENTRAL BANKS AND MACROPRUDENTIAL POLICIES

Given the above, we arrive at an empirical question: Is it possible to identify common drivers that explain political decisions concerning central bank involvement in macroprudential governance? Time-series analyses, although interesting, would be difficult to use to answer this question because most of the variables, such as involvement in macro and micro supervision and monetary goals, are relatively constant or slow changing.

A recent econometric cross-sectional analysis of the determinants of central bank involvement in macroprudential governance (Masciandaro and Volpicella 2016) shed light on this issue by testing different assumptions made in the theoretical and institutional literature. Masciandaro and Volpicella's (2016) empirical results indicate that: a) central banks acting as micro supervisors of the banking industry are more likely to be given more macroprudential powers, b) higher central bank political independence is associated with lower involvement in macro supervision and c) central banks pursuing specific price-stability objectives are more likely to be endowed with macro supervisory responsibilities. We interpret these results using a political economy perspective.

Our perspective differs from the extant literature in two main respects. First, while the interaction between macroprudential policies and monetary policies has been studied (e.g. Schoenmaker 2014, Smets 2014), to the best of our knowledge, no research has examined the drivers of governance arrangements. In other words, insights into the factors that can concretely affect the extent to which central banks are given macroprudential powers are lacking. Here it is going to be commented the results of an econometric model that has been specifically designed to test whether common factors drive central bank involvement in macroprudential oversight.

²⁷ Alesina and Tabellini (2004).

²⁸ See Tucker (2014).

²⁹ See Borio and Shim (2007) and Lim et al. (2013).

At the same time, our study enriches research focusing on the effects of statutory central bank independence (CBI). Since its onset in the '90 (Bade and Parkin 1977, Grilli et al. 1991, Cukierman et al. 2002), CBI has been considered a major determinant of macroeconomic performance (Cukierman 2008, De Haan et al. 2008, Carlstrom and Fuerst 2009, Alpanda and Honig 2010, Alesina and Stella 2010, Klompt and De Haan 2010). Recently, the economic literature has re-examined the relationship between CBI and monetary policy (Down 2008, Maslowska 2009, Alpanda and Honig 2009); the effect of CBI on financial stability (Čihák 2007, Klompt and De Haan 2009), inflation (Arnone and Romelli 2012), and government deficits (Bodea 2011); central banks' micro involvement (Dalla Pellegrina et al. 2013); and the political, institutional and cultural factors influencing the effectiveness of CBI (Keefer and Stasavage 2002 and 2003, Eijffinger and Stadhouders 2003, Acemoglu et al. 2008, Gollwitzer and Quintyn 2010, Hielscher and Markwardt 2011, Berggren et al. 2012). This broader picture can be enriched by exploring the relationship between CBI and an important institutional feature – macro supervision. The results thereafter commented suggest that CBI is relevant not only owing to its beneficial effects on macroeconomic variables, but also because it influences policymakers' decisions. In the last two decades, policymakers have increasingly realised the importance of central bank design and the role of the central bankers. In fact, at times they have used central bankers as scapegoats (Alesina and Stella 2010).

Our empirical analysis is based on data collected for 31 countries that are heterogeneous in terms of institutional framework and stage of economic development. In order to shed light on the drivers that have recently influenced the build-up of macroprudential settings, qualitative information must first be transformed into quantitative variables. Two main indicators can be used to measure the key features of the central bank's role in financial supervision. The central bank's involvement in macro supervision is our dependent variable in the econometric tests, while the central bank's role as a micro supervisor serves as a proxy for the role of the central bank as the leading authority in micro supervision, as discussed above.

The macroprudential index³⁰ (MAPP) (Figure 1) has been used to measure the central bank's involvement in macro supervision. MAPP indicates the role of the central bank in the existing macroprudential framework on a country-by-country basis, and the index increases with the involvement of central bank in macroprudential policy. To the best of our knowledge, there are no other reliable indicators of the role of the central bank in macro supervision. The CBBA index³¹ (Figure 2) is applied to measure the central bank's involvement in the micro supervision of the banking industry. This index is a dummy variable that takes a value of one if the central bank is the main banking supervisory authority, and zero otherwise.

In addition, we can use an index of involvement for the central bank's micro supervision of the financial system as a whole (i.e. banking, securities and insurance). To do so, we adopt use a two-step procedure that starts from the Financial Supervision Herfindahl Hirschman (FSHH) Index. The FSHH measures the extent to which supervisory powers are consolidated by the classical index proposed by Herfindahl and Hirschman.³² The same methodology as for MAPP applies to the index of central bank involvement in micro

³⁰ Lim et al. (2013). We normalize the index to facilitate its use.

³¹ Authors' calculations from "How Countries Supervise their Banks, Insurers and Securities Markets" (Central Banking Publications 2009).

³² Hirschman (1964). See also Masciandaro and Quintyn (2011). A detailed description of the methodology can be found in the Appendix.

supervision: the Central Bank Supervisor Share (CBSS) Index. The intuition here is relatively simple: central bank involvement in supervision is likely to be at its maximum when the central bank is the supervisor in charge, while its involvement is likely to be low if the number of sectors in which the central bank has supervisory responsibilities is low. In other words, the key assumption is that the role and responsibilities of the central banker as micro supervisor will be greater when the number of sectors he or she knows and monitors on a daily basis is high. To construct the CBSS index, one can use the central bank supervisory power in each country as calculated for the FSHH index. This figure can range from 0 to 1.³³ Figure 2 presents the distribution of central banks' involvement as micro supervisors.

As a result, we have two alternative indexes that measure the impact of the central bank's role as micro supervisor. The expected sign of both variables is undetermined: higher levels of either the CBBA or the CBSS index are likely to be associated with higher levels of the MAPP variable if the information-gain effect prevails. The opposite is true if the capture-risk effect dominates.

Given the discussion in the previous section, it is necessary to measure two potential shortcomings associated with deep central bank involvement in macro supervision: too much bureaucratic independence in the institutional setting and excessive discretion in defining monetary policy. In other words, an institutional indicator is needed that serves as a proxy for central bank independence. A policy indicator that summarises the degree of discretion in the conduct of monetary policy is also necessary.

A proxy for central bank independence can be found in the extant literature. Acknowledging that *de facto* independence can sometimes lead to a different framework than *de jure* independence – particularly in emerging and developing countries³⁴ – our analysis focuses on the legal features of independence. This choice is justified by the fact that central bank independence cannot be ensured without proper legal provisions,³⁵ although the measurement of institutional characteristics is inevitably associated with some degree of subjectivity. In terms of determining the most relevant index among those proposed in the literature³⁶ for capturing either the political or operational dimensions of CBI, this study uses the GMT Index,³⁷ mainly owing to its empirical robustness.³⁸ Figure 3 shows the distribution of central bank independence.

As the GMT Index has eight political independence criteria and seven operational independence criteria, different aspects of central bank independence may have varying and contradictory effects on macroprudential involvement. Therefore, we divide the GMT index into political and operational subparts (*GMT_p* and *GMT_o*, respectively). Notably, the GMT index refers only to monetary policy. In other words, it measures the autonomy of goals and tools in implementing monetary policy, while it does not relate to independence in other tasks. This index can be very useful in analysing the evolution of central bank governance over time, including the central bank's involvement in supervision (Figure 4).

Figure 4 highlights several important trends. In the 1990s and early 2000s, we observe a clear trend towards an increase in both political and economic CBI. The most striking feature is evident in the early 1990s, when we see a significant rise in the level of CBI together with a spike in the average inflation rate.

³³ The index in Masciandaro and Quintyn (2011) is similar to the one suggested in Lim et al. (2013).

³⁴ Cukierman (2008).

³⁵ Bini Smaghi (2008).

³⁶ For a survey, see Ahsan et al. (2006).

³⁷ Grilli et al. (1991) set up the index, which was updated by Arnone et al. (2009).

³⁸ Maslowska (2008).

This period coincides with the break-up of the Soviet Union, which resulted in the inclusion in the sample of several economies experiencing high inflation. These East European countries implemented significant reforms of their monetary policy institutions between 1989 and 1995. This period also coincided with the European Union's integration process and the creation of the ECB, which required members to implement legislative reforms aimed at assigning their banks a level of independence similar to that of the Bundesbank, which was the most independent at the time. Furthermore, the establishment of an independent central bank became an external prerequisite for maintaining or gaining access to the financial markets during this period. In other words, the political gains associated with changing CBI increased. Notably, a clear reversal in the level of independence is evident following the 2007-2008 financial crisis. This trend is captured by the degree of economic independence (GMT Economic in Figure 4), as this index reflects the evolution of central bank involvement in banking supervision, which was the area in which most of the changes in central bank design took place.

Given this overall setting, we can frame the specific results regarding the drivers of central bank involvement in macro supervision. We find that: a) central banks acting as micro supervisors of the banking industry are more likely to be given more extensive macroprudential powers, b) higher central bank political independence is associated with lower involvement in macro supervision and c) central banks pursuing specific price-stability objectives are more likely to be endowed with macro supervisory responsibilities.

It is worth acknowledging that the econometric specification used to obtain these results may give rise to issues of causality among the three key institutional variables (i.e. the dependent variable and the two main independent variables). The crucial assumption is that the observed central bank involvement in macro supervision is arranged based on a given institutional setup in terms of central bank involvement in supervision and central bank independence. In other words, the possibility that policymakers simultaneously make decisions regarding central bank independence, central bank involvement in macro supervision and central bank involvement in micro supervision has been excluded.

To support this assumption, we performed a country-by-country in-depth analysis to compare the dates on which macro supervisory settings, the central bank's micro supervisory powers and the central bank's independence were defined by national policymakers. This systematic descriptive analysis confirmed our crucial assumption: across the sample, macro supervisory settings were formally established in all countries but Indonesia (2011) after the latest reform of the central bank's involvement in micro supervision and the latest change in central bank independence. This means that almost all policymakers selected the governance settings of macro supervision after considering the features of their central banks in terms of micro supervisory powers and independence. This serves to minimise reverse causality risks.³⁹ At the same time, we cannot completely exclude all reverse causality risk *a priori*, as a policymaker can review the existing micro supervisory setting and that review might produce a comprehensive overhaul of prudential policy, including the introduction of macro supervisory architectures.

³⁹ We use appropriate time lags for the other covariates, including monetary policy goals. For more details, see Table A1 in the Appendix.

IV. CONCLUSIONS

In this chapter, we discussed the economic and political drivers of policymakers' decisions to assign macro supervisory powers to central banks. The empirical analysis shows that the central bank's role as a micro supervisor of the banking industry is a significant driver of its macroprudential involvement. The bottom line is that micro supervisor powers serve as a proxy for the information advantages available to the central bank. Furthermore, greater central bank political independence, which increases the risk of an overly powerful monetary authority, seems to imply fewer macro supervisory powers. Finally, rule-based monetary policy focused on inflation targeting, which reduces monetary policy discretion, weakly increases the odds of a central bank being involved in macro supervision. Politicians seem wary of placing too much power in the hands of independent and/or discretionary central banks, although it is worth noting that the first feature – independence – seems to be more relevant.

The stability and generalizability of these results regarding the incentives of politicians in this context should be checked in future research. To do so, researchers will need to examine additional country cases and/or central banking reforms introduced in the countries analysed here.

At the same time, other assumptions regarding what drives politicians to modify supervisory architectures over time need to be tested in the field of macro supervision. For example, Masciandaro and Romelli (2017) suggest the existence of two main drivers of reforms. First, systemic banking crises significantly increase the probability that a country will change its supervisory structure. This is specific to financial-sector turmoil and not to other types of crises, such as currency crises or economic recessions. Second, an equally important “bandwagon” effect seems to matter: countries are more likely to change their supervisory architectures when the share of countries undertaking reforms around the world or on the same continent is high. Such findings deserve attention in future research.

V. REFERENCES

- Acemoglu D., Johnson S., Querubin P. and Robinson J. A. (2008), When Does Policy Reform Work? The Case of Central Bank Independence, *NBER Working Paper Series*, National Bureau of Economic Research, n.14033.
- Agur I., Demertzis, M. (2015), *Will Macroprudential Policy Counteract Monetary Policy's Effects on Financial Stability?*, IMF Working Papers, n.283, 2015.
- Alesina, A. and L.H. Summers (1993), Central Bank Independence and Macroeconomic Performances: Some Comparative Evidence', *Journal of Money, Credit and Banking*, 25, 151-62
- Alesina, A. and Tabellini, G. (2004), Bureaucrats or Politicians, *NBER Working Paper*, 10141, Cambridge, Massachusetts.
- Alesina, A. and Stella, A. (2010) The Politics of Monetary Policy, in: B. M. Friedman and M. Woodford (ed.), *Handbook of Monetary Economics*, edition 1, vol. 3, chapter 18, Elsevier, pp. 1001-1054.
- Alessandri P., Panetta F. (2015), *Prudential Policy at Times of Stagnation: A View from the Trenches*, Banca d'Italia, Occasional Papers, n.300, 2015.
- Angelini, P., Neri, S. and Panetta, F. (2012), Monetary and macroprudential policies, *European Central Bank Working Paper*, 1449.
- Ahsan A., Skully, M. and Wickramanayake J. (2006), Central Bank Independence and Governance. Definitions and Modelling, *Journal of Administration and Governance*, 1, 46-67.
- Alpanda S. and Honig, A. (2009), The Impact of Central Bank Independence on Political Monetary Cycles in Advanced and Developing Countries, *Journal of Money, Credit and Banking*, vol. 41, n.7, pp. 1365-1389.
- Alpanda S. and Honig, A. (2010), Political Monetary Cycles and a de facto ranking of central bank independence, *Journal of International Money and Finance*, Vol. 29(6), pp. 1003-1023.
- Arnove M., Laurens B.J., Segalotto J.F. and Sommer M. (2009), Central Bank Autonomy: Lessons from Global Trends, *IMF Staff Papers*, vol. 56(2), Palgrave Macmillan, pp.263-296.
- Arnove M. and Romelli, D. (2012), Dynamic Central Bank Independence Indices and Inflation Rate: A New Empirical Exploration, *Paolo Baffi Centre Research Paper Series*, Bocconi University, n.118.
- Backus D. and Driffill, J. (1985), Inflation and Reputation, *American Economic Review*, 75, 530-538.
- Bade R. and Parkin M. (1977), Central Bank Laws and Monetary Policy: A Preliminary Investigation, *University of Western Ontario*, Ontario.
- Bank for International Settlements, (2017), *Macroprudential Frameworks, Implementation and Relationship with Other Policies*, December.
- Barro R. and Gordon D.B. (1983) Rules, Discretion and Reputation in a Model of Monetary Policy, *Journal of Monetary Economics*, 12, 101-121.
- Bean C. (2011), Central Banking Then and Now, Sir Leslie Melville Lecture, Australian National University, Canberra, mimeo.
- Beau, L., Clerc, L. and Mojon, B. (2012), Macroprudential policy and the conduct of monetary policy, *Banque de France Working Paper*, 390.

- Beck, T., Demirgüç-Kunt, A. and Levine, R. (2000), A New Database on Financial Development and Structure, *World Bank Economic Review*, Vol. 14, pp. 597-605.
- Beck, T., Demirgüç-Kunt, A. and Levine, R. (2001), Legal Theories of Financial Development, *Oxford Review of Economic Policy*, Oxford University Press, vol. 17(4), pp. 483-501.
- Berggren, N., Daunfeldt, S.O. and Hellström, J. (2012), Social Trust and Central-Bank Independence, *Working Paper Series*, Research Institute of Industrial Economics.
- Bernanke B. (2007), Central Banking and Banking Supervision in the United States, Allied Social Sciences Association, Annual Meeting, Chicago, mimeo.
- Bernanke, B. (2011), The Effect of the Great Recession on Central Bank Doctrine and Practice, Board of Governors of the Federal Reserve System, mimeo.
- Bernanke B. and M. Gertler (1995), Inside the Black Box: The Credit Channel of Monetary Policy Transmission, *Journal of Economic Perspectives*, 9, 27-48.
- Beyer, A. (2017), The Transmission Channel of Monetary, Macro and Micro Prudential Policies and Their Interactions, ECB Occasional Paper Series, n. 191.
- Bianchi J., Mendoza E.J. (2017), Optimal Time Consistent Macroprudential Policy, *Journal of Political Economy*, December.
- Bini Smaghi L. (2008), Central Bank Independence in the EU: From Theory to Practice, *European Law Journal*, Vol. 14(4), pp. 446-460.
- Blanchard O., Dell'Ariccia, G. and Mauro, P. (2010), Rethinking Macroeconomic Policy, *Journal of Money, Credit and Banking*, Vol. 42(s1), Blackwell Publishing, pp. 199-215.
- Blinder, A. (2010), How Central Should the Central Bank Be, *Journal of Economic Literature*, 48, 123–133.
- Boar C., Gambacorta L., Lombardo G., Pereira da Silva L. (2017), *What Are the Effects of Macroprudential Policies on Macroeconomic Performance?* BIS Quarterly Review, September.
- Bodea, C. (2011), Independent Central Banks, Regime Type and Fiscal Performance: The Case of Post – Communist Countries, *Public Choice*, Springer US, September, pp. 1-27.
- Borio C. (2006), Monetary and Prudential Policies at the Crossroads? New Challenges in the New Century, *BIS Working Papers*, n.216.
- Borio C. (2011), Central Banking Post – Crisis: What Compass for Uncharted Waters?, *BIS Working Papers*, n.353.
- Borio, C. and Shim, I. (2007), What can (macro)prudential policy do to support monetary policy?, *BIS Working Papers*, 242.
- Boyer, P. and Ponce, J. (2012), Regulatory Capture and Banking Supervision Reform, *Journal of Financial Stability*, Vol. 8 (3), pp. 206–17.
- Brockmeijer, J., Moretti, M., Osinski, J., Blancher, N., Gobat, J., Jassaud, N. and Wu, X. (2011). Macro prudential policy: An organizing framework, International Monetary Fund, 14.
- Brunnermeier M., Crockett A., Goodhart C., Hellwig M., Persaud A., Shin H. (2010), The Fundamental Principles of Financial Regulation, *Geneva Reports on the World Economy*, Geneva, n.11.
- Carlstrom C.T. and Fuerst, T.S. (2009), Central Bank Independence and Inflation: A Note, *Economic Inquiry*, 47(1), pp 182-186.

Cerutti E., Correa R., Fiorentino E., Sgalla E. (2016), *Changes in Prudential Policy Instruments: A New Cross-country Database*, FRB International Finance Discussion Paper Series, n. 1168.

Čihák, M. (2007), Central Bank Independence and Financial Stability, IMF, mimeo.

Clarida R., Gali J. and Gertler, M. (1999), The Science of Monetary Policy: A New Keynesian Perspective, *Journal of Economic Literature*, 37, 1661-1707.

Correa R., Edge R.M., Liang N. (2017), *A New Dataset of Macroprudential Policy Governance Structures*, Board of Governors of the Federal Reserve System, mimeo, October.

Crockett A. (2000), Marrying the Micro and Macro Prudential Dimensions of Financial Stability, Eleventh International Conference of Banking Supervisors, BIS, Basle, September.

Crowe, C. and E. E. Meade (2007), The evolution of central bank governance around the world, *Journal of Economic Perspectives*, 21(4), 69–90.

Cukierman A., Miller, G.P. and Neyapti, B. (2002), Central Bank Reform, Liberalization, and Inflation in Transition Economies. An International Perspective. *Journal of Monetary Economics*, Vol. 49(2), Elsevier, pp. 237-264.

Cukierman A. (2008), Central Bank Independence and Monetary Policymaking Institutions: Past, Present and Future, *European Journal of Political Economy*, Vol. 24(4), 722-736.

Cukierman, A. and S. B. Webb (1995). Political influence on the central bank: International evidence. *The World Bank Economic Review* 9(3), 397–423.

Dalla Pellegrina, L., Masciandaro, D. and Pansini, R.V. (2013), The central banker as prudential supervisor: does the independence matter? *Journal of Financial Stability*, vol.9, n.3, pp. 415-427.

De Haan J., Masciandaro, D. and Quintyn, M. (2008), Does Central Bank Independence Still Matter? *European Journal of Political Economy*, Vol. 24(4), pp. 717-721.

Dehmej S., Gambacorta L. (2015), *Macroprudential Policy in a Monetary Union*, November, mimeo.

Down I. (2008), Central Bank Independence, Disinflation and Monetary Policy, *Business and Politics*, Vol. 10(3), pp. 1-29.

Eijffinger, S.C.W. and Hoeberichts, M. (1998), The Trade Off between Central Bank Independence and Conservativeness, *Oxford Economic Papers*, 50, 397-411.

Eijffinger, S. and Stadhouders, P. (2003), Monetary Policy and the Rule of Law, *Discussion Paper Series*, CEPR, n. 3698.

Eijffinger, S. and Masciandaro, D. (2014), (eds.), *Modern Monetary Policy and Central Bank Governance*, Edward Elgar, Cheltenham.

Freytag, A. (2001), Does Central Bank Independence reflect monetary commitment properly? Methodological considerations, *BNL Quarterly Review*, 217, pp.181-208.

Gerlach S. (2010), Are the Golden Years of Central Banking Over? Monetary Policy after the Crisis, 38th Economic Conference, Austrian National Bank, Vienna, mimeo.

Goodhart C. (2010), The Changing Role of Central Banks, *BIS Working Papers*, Bank for International Settlements, n.326.

Goodhart, C. and Schoenmaker D. (1995), Should the functions of monetary policy and banking supervision be separated? *Oxford Economic Papers*, 47, 539–560.

- Gollwitzer S. and Quintyn, M. (2010), The Effectiveness of Macroeconomic Commitment in Weak(er) Institutional Environment, *IMF Working Paper Series*, International Monetary Fund, WP 10/193.
- Grilli V., Masciandaro, D. and Tabellini, G. (1991), Political and Monetary Institutions and Public Financial Policies in the Industrial Countries, *Economic Policy*, Vol.6(13), pp. 341–92.
- Henderson D.W. and McKibbin W. (1993), A Comparison of Some Basis Monetary Policy Regimes for Open Economies: Implications of Different Degrees of Instrument Adjustment and Wage Persistence, *Carnegie – Rochester Series on Public Policy*, 39, 221-317.
- Herring R.J and Carmassi, J. (2008), The Structure of Cross – Sector Financial Supervision, *Financial Markets, Institutions and Instruments*, Vol.17(1), pp.51-76.
- Hielscher K. and Markwardt G. (2011), The Role of Political Institutions for the Effectiveness of Central Bank Independence, *CESifo Working Paper Series*, CESifo Group Munich, n.3396.
- Hirschman, A.O., 1964. The Paternity of an Index, *American Economic Review*, 54 (5), 761-762.
- Horvath B., Wagner W. (2016), *Macroprudential Policies and the Lucas Critique*, BIS Working Paper Series, n. 86f.
- Central Banking Publications (2009), How Countries Supervise their Banks, Insurers and Securities Markets 2009
- Kannan, P., Rabanal, P. and Scott, A. (2009), Monetary and macroprudential policy rules in a model with house price booms, *IMF Working Paper*, 09/251.
- Kaufmann, D. (2004), Corruption, Governance and Security: Challenges for the Rich Countries and the World, World Bank Institute, Washington, DC.
- Kaufmann, D., Kraay, A. and Mastruzzi, M. (2003), Governance matters III: governance indicators 1996–2002, *Policy Research Working Paper Series*, No. 3106, World Bank, Washington, DC.
- Kawai M. and Morgan, P.J. (2012), Central Banking for Financial Stability in Asia, *ADB Working Paper Series*, Asian Development Bank Institute, No. 377.
- Keefer P. and Stasavage, D. (2002), Checks and Balances, Private Information and the Credibility of Monetary Commitments, *International Organization*, Vol. 56(4), 751-774.
- Keefer P. and Stasavage, D. (2003), The Limits of Delegation: Veto Players, Central Bank Independence, and the Credibility of Monetary Policy, *American Political Science Review*, Vol. 97(3), pp. 407-423.
- Kenc T. (2016), *Macroprudential Regulation: History, Theory and Policy*, BIS Working Paper Series, n. 86c, 2016.
- Klomp J. and De Haan, J. (2009), Central Bank Independence and Financial Stability, *Journal of Financial Stability*, Vol. 5 (4), pp. 321-338.
- Klomp J. and De Haan, J. (2010), Central Bank Independence and Inflation Revisited, *Public Choice*, Vol. 144(3), 445-357.
- Koetter, K., Roszbach, K. and Spagnolo, G. (2014), Financial Stability and Central Bank Governance, *International Journal of Central Banking*, vol.10 (4), pp.31-67.
- Kohn D. (2015), *Implementing Macroprudential and Monetary Policies: The Case for Two Committees*, Speech, Federal Reserve Bank Boston, October, 2015.

- Korinek, A. and Kreamer, J. (2014), The Redistributive Effects of Financial Deregulation, *Journal of Monetary Economics*, Vol. 68, pp. 55-67.
- International Monetary Fund (2013), Key Aspects of Macroprudential Policy, January, mimeo.
- Lambertini, L., Mendicino, C. and Punzi, M. (2011), Leaning against boom-bust cycles in credit and housing prices, *Banco de Portugal Working Paper*, 8.
- Lamfalussy A. (2010), The Future of Central Banking under Post – Crisis Mandates, *BIS Papers*, Bank for International Settlements, n.55.
- Lane T. (2016), *Monetary Policy and Financial Stability – Looking for the Right Tools*, Bank of Canada, mimeo, February.
- Lim C.H., Columba, A. Costa, P. Kongsamut P, Otani A., Saiyid M, Wezel T. and Wu X. (2013), Macroprudential Policy: What Instruments and How to Use Them? *IMF Working Paper Series*, International Monetary Fund, n. 238.
- Lim C.H., Krzar I., Lipinsky F., Otani A. and Wu X. (2013), The Macroprudential Framework: Policy Responsiveness and Institutional Arrangements, *IMF Working Paper Series*, International Monetary Fund, n. 166.
- Lohmann, S. (1992), Optimal Commitment in Monetary Policy: Credibility versus Flexibility, *American Economic Review*, 82, 273-286.
- Masciandaro D. (1995), Designing a Central bank: Social Player, Monetary Agent or Banking Agent? *Open Economies Review*, 6(4), 399-410.
- Masciandaro, D. (2006), E Pluribus Unum? Authorities Design in Financial Supervision: Trends and Determinants, *Open Economies Review*, 17, 73-102.
- Masciandaro, D. (2007), Divide et Impera: Financial Supervision Unification and the Central Bank Fragmentation Effect, *European Journal of Political Economy*, 23, 285-315.
- Masciandaro, D. (2009), Politicians and Financial Supervision outside the Central Bank: Why Do They Do it? *Journal of Financial Stability*, 5, 124-147.
- Masciandaro, D. and Quintyn, M. (2008), Helping Hand or Grabbing Hand? Politicians, Supervisory Regime, Financial Structure and Market View, *North American Journal of Economics and Finance*, 19, 153-174.
- Masciandaro, D. and Quintyn, M. (2011), The Architecture of Insurance Supervision: Global Trends Before and After the Financial Crisis, in Liedtke, P., Monkiewick, J. (Eds.), *The Fundamentals of Future Insurance Regulation and Supervision. A Global Perspective*, Palgrave Macmillan, London, 109-130.
- Masciandaro, D., Pansini R.V. and Quintyn M. (2013), The Economic Crisis: Did Financial Supervision Matter? *Journal of Financial Stability*, vol. 9(4), pp. 578-596.
- Masciandaro, D. and Passarelli F. (2013), Bank Bailouts and Redistributive Monetary Policy: Voting on Central Bank Independence, Baffi Center Working Paper Series, Bocconi University, n.146.
- Masciandaro, D. and Romelli, D. (2017). Central bankers as supervisors: Do crises matter?. *European Journal of Political Economy*, 52, 120-140.
- Masciandaro, D. and Romelli, D. (2018). Peaks and Troughs: Economics and Political Economy of Central Bank Independence Cycles. In D. Mayes, P.L. Siklos and J.E. Sturm (eds.), *Oxford Handbook of the Economics of Central Banking*, Oxford University Press, New York, forthcoming.

- Masciandaro, D. and Volpicella, A. (2014), Central Banking, Macroprudential Supervision and Insurance, in Malecki, M., Monkiewicz, J. (Eds.), *Macroprudential Supervision in Insurance*, Palgrave Macmillan, London, chapter (forthcoming).
- Masciandaro, D. and Volpicella, A. (2016), Macro Prudential Governance and Central Banks: Facts and Drivers, *Journal of International Money and Finance*, 61, 101-119.
- Maslowska, A. (2008), Quest for the Best: How to Measure Central Bank Independence and Show its Relation with Inflation?, *Discussion Paper Series*, Aboa Centre for Economics, No. 37.
- Maslowska, A. (2009), Using Taylor Rule to Explain Effects of Institutional Changes in Central Bank, *Discussion Paper Series*, Aboa Centre for Economics, No. 46.
- Mendoza E.G. (2016), *Macroprudential Policy: Promise and Challenges*, NBER Working Paper Series, n. 22868.
- McCallum, B.T. (1995), Two Fallacies Concerning Central Bank Independence, *American Economic Review*, 85(2), pp.207-211.
- Miles, J. (2009), Tolerance and variance inflation factor, *Wiley StatsRef: Statistics Reference Online*.
- Moser, P. (1999). Checks and balances, and the supply of central bank independence. *European Economic Review* 43(8), 1569–1593.
- N'Diaye, P. (2009), Countercyclical macro prudential policies in a supporting role to monetary policy, *IMF Working Paper*, 09/257.
- Nier, E.W. (2009), Financial Stability Frameworks and the Role of Central Banks: Lessons from the Crisis, *IMF Working Paper Series*, International Monetary Fund, n.70.
- Nier E.W., Kang H. (2016), *Monetary and Macroprudential Policies – Exploring Interactions*, BIS Working Paper Series, n.86e-
- Nier E.W., Osinski J., Jacome L.I. and Madrid P. (2011), Towards Effective Macro Prudential Policy Frameworks: An Assessment of Stylized Institutional Models, *IMF Working Paper Series*, International Monetary Fund, n.250.
- Oosterloo, S. and de Haan, J. (2004), Central banks and financial stability: a survey, *Journal of Financial Stability*, Vol. 1(2), pp. 257-273.
- Papademos, L., 2010, “Central Bank Mandates and Governance Arrangements,” BIS Papers, No. 55.
- Posen, A. (1995), Declaration are not Enough: Financial Sectors Sources of Central Bank Independence’, In: B. Bernanke and J. Rotemberg (Eds.), *NBER Macroeconomics Annual 1995*, The MIT Press, Cambridge MA.
- Persson, T. and Tabellini, G. (1993), Designing Institutions for Monetary Stability, *Carnegie – Rochester Series on Public Policy*, 39, 53-84.
- Rapaport O., Levi-Faur, D. and Miodownik, D. (2009), The Puzzle of the Diffusion of the Central Bank Independence Reforms: Insights from an Agent – Based Simulation, *Policy Studies Journal*, Vol. 37(4), pp. 695-716.
- Rogoff, K. S. (1985), The Optimal Degree of Commitment to an Intermediate Monetary Target. *Quarterly Journal of Economics*, 100, 1169-90.
- Sargent, T.J. and Wallace, N. (1981), Some Unpleasant Monetarist Arithmetic, *Quarterly Review*, Federal Reserve Bank of Minneapolis, Fall, 1-17.

Shapiro, S.S. and Wilk, M.B. (1965), An analysis of variance test for normality (complete samples), *Biometrika*, Vol. 52(3,4), pp. 591-611.

Schoenmaker D. (2014) (ed.), *Macroprudentialism*, VoxEu Book, CEPR Press, London.

Silvo A. (2016), *The Interaction of Monetary and Macroprudential Policies in Economic Stabilization*, Bank of Finland Research Discussion Papers, n.1.

Smets F. (2014), Financial Stability and Monetary Policy, *International Journal of Central Banking*, Vol.10, n.2, pp. 264-300.

Svensson, L.E.O. (1995), Optimal Inflation Targets, "Conservative" Central Banks, and Linear Inflation Contracts, *American Economic Review*, 87, 98-114.

Svensson L.E.O. (2016), *Cost – Benefit Analysis of Leaning Against the Wind: Are Costs Larger Also Less Effective Macroprudential Policy?*, NBER Working Paper Series, n.21902.

Svensson L.E.O. (2017), *Leaning Against the Wind: The Role of Different Assumptions about Costs*, NBER Working Paper Series, n.23745.

Taylor, J. B. (1993) Discretion versus Policy Rules in Practice, *Carnegie – Rochester Series on Public Policy*, 39, 195-214.

Taylor J. (2011), Macroeconomic Lessons from the Great Deviation, in: D. Acemoglu and M. Woodford, *NBER Macroeconomics Annual 2010*, Vol.25, National Bureau of Economic Research, pp. 387-395.

Tresselt T., Zhang Y.S. (2016), *Effectiveness and Channels of Macroprudential Instruments: Lessons from the Euro Area*, IMF Working Papers, n.4, 2016.

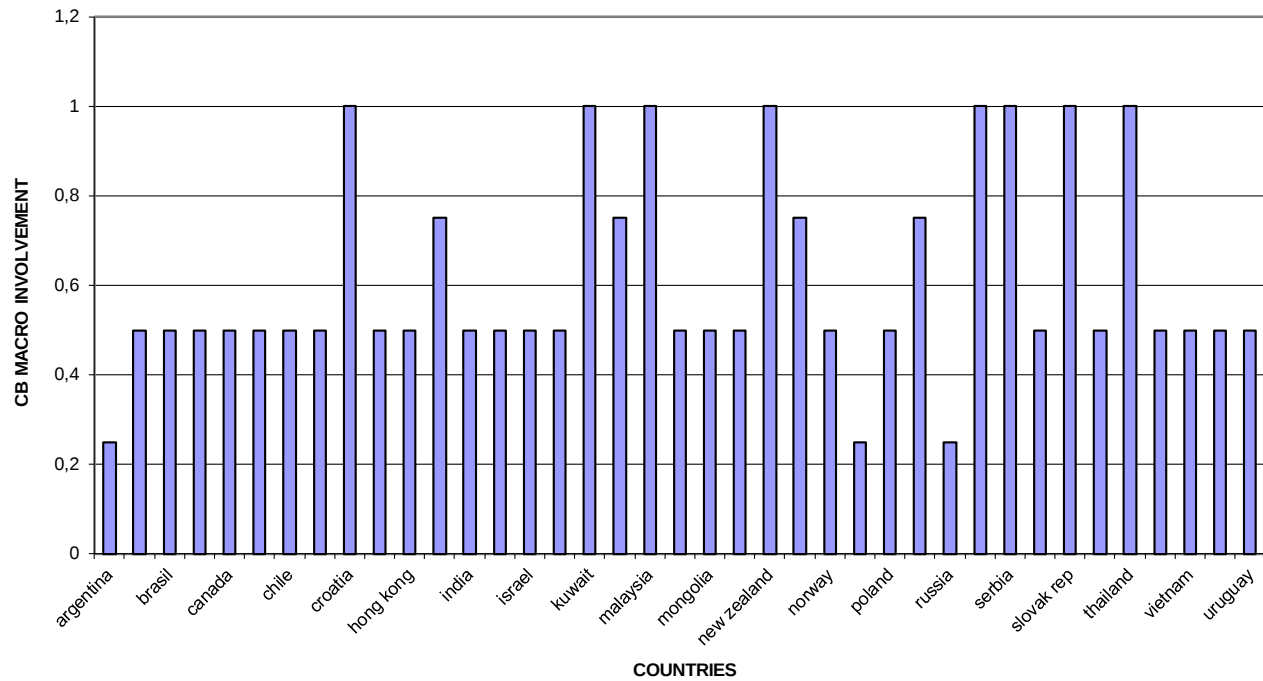
Tucker P. (2014), The political economy of macroprudential regimes, in Schoenmaker D. (2014) (ed.), *Macroprudentialism*, VoxEu Book, CEPR Press, London, pp. 61-72.

Walsh, C. (1995), Optimal Contracts for Central Bankers, *American Economic Review*, 85, 150-176.

Woodford, M. (2003), Optimal Interest Rate Smoothing, *Review of Economic Studies*, 70, 861-886.

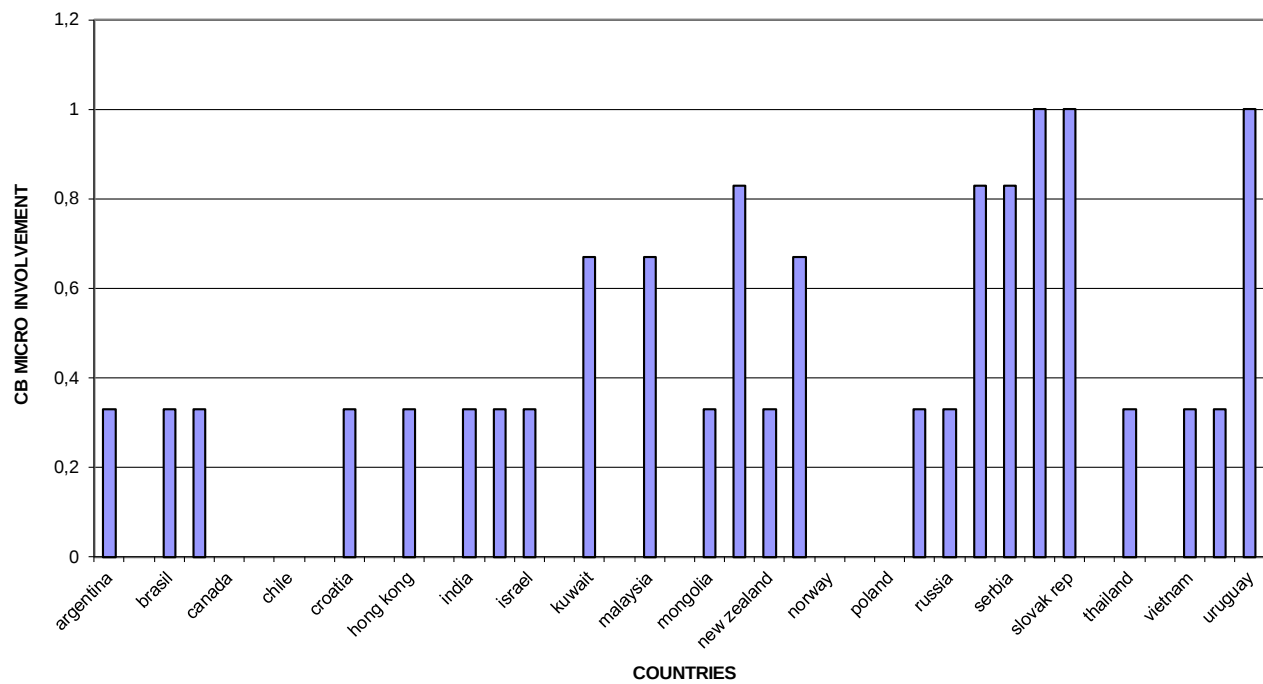
FIGURES

FIGURE 1 CENTRAL BANKS AS MACRO SUPERVISORS



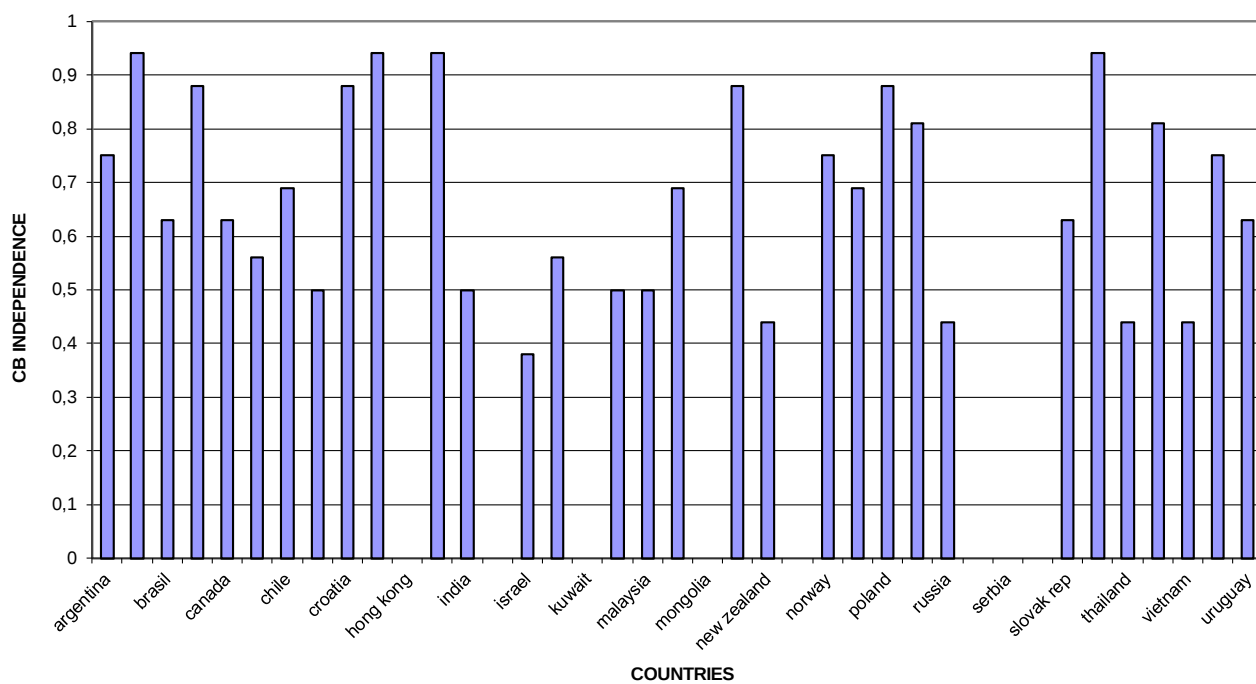
Source: Masciandaro and Volpicella (2016)

FIGURE 2 CENTRAL BANKS AS MICRO SUPERVISORS



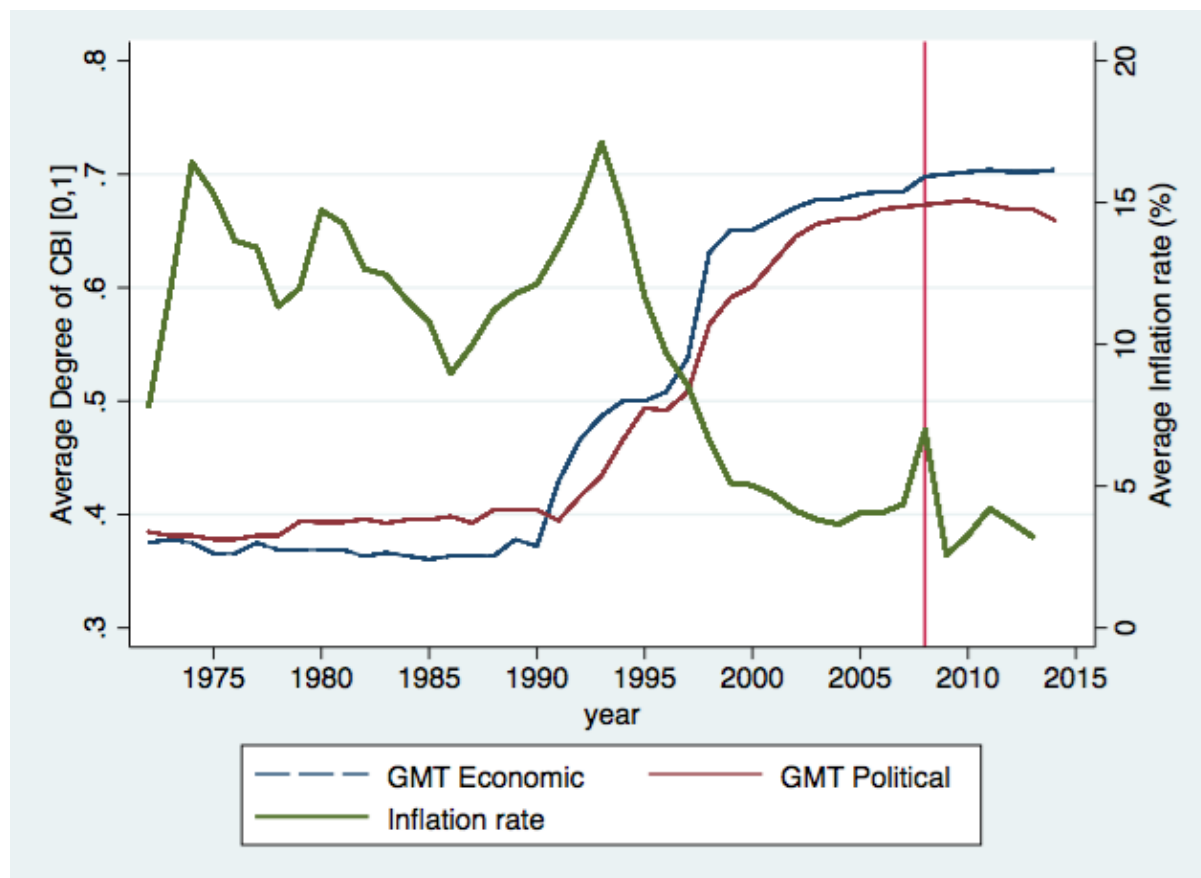
Sources: Masciandaro and Volpicella (2016).

FIGURE 3 CENTRAL BANK INDEPENDENCE



Sources: Masciandaro and Volpicella (2016).

Figure 4: Evolution of the GMT political and economic independence indices (1972-2014)



Notes:

Figure 4 shows the evolution of the average political and economic indices of central bank independence (left vertical axis) and inflation rate (right vertical axis) for the 65 analysed countries from 1972 to 2014. Source: Masciandaro and Romelli 2018.