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# **Central Bank Independence Revisited: After the financial crisis, what should a model central bank look like?**

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# **Central Bank Independence Revisited:**

**After the financial crisis, what should a  
model central bank look like?**

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## Summary

After the financial crisis, countries around the world significantly expanded the objectives and powers of central banks. As central banks have acquired more powers, the trade-off between independence and accountability has become more complex and as a result, the pre-crisis academic consensus around central bank independence has broken down. Popular discontent towards central banks is growing. A new model of central bank independence is needed.

We first investigate the traditional case for central bank independence. Extending work from the 1980s and 1990s to the present, we show that operational independence of central banks – the ability to choose an instrument to achieve inflation goals – has been associated with significant improvements in price stability. But in advanced economies at least, *political* independence – the absence of the possibility for politicians to influence central bank goals or personnel – has not been correlated with inflationary outcomes. This suggests that central banks in advanced economies can sacrifice some political independence without undermining the operational independence that is important in both their monetary policy and financial stability functions.

In light of this distinction between political and operational independence, we then evaluate the new powers that central banks have taken on over recent years, focusing on advanced economies. We develop a framework which examines how to maximize the benefits of locating new powers inside the central bank, while minimizing potential conflicts with monetary policy and limiting political threats to the legitimacy of central banks' operational independence. Based on this framework, we recommend a set of principles to guide central bank structural reform. First, we recommend the institution of formal monetary-fiscal coordination mechanisms, provided that they are limited to the zero lower bound, triggered by the central bank and protect democratic control over fiscal policy. Second, we recommend that systemic risk oversight and prioritization is carried out by a multi-member body comprising the central bank and financial regulators and chaired by government, but that macro-prudential policy-making is operationally independent from government. Third, we recommend that crisis management efforts are led by government, but that there should be few restrictions on central bank liquidity provision. Finally, we argue that there is a case for and against the central bank as bank supervisor, but that the central bank should not be responsible for policing financial conduct.

Viewed in light of our framework, no single country has yet settled the question about how a modern central bank should be structured. The approach taken by major economies all have strengths and weaknesses: they would benefit from learning from each other.

For example, in the US, the central bank lacks the macro-prudential tools required to fight risks to the country's financial stability. The US should learn from the Bank of England's more expansive macro-prudential toolkit and the mechanism that the Bank's Financial Policy Committee has in place to request new powers from the government. The UK should also look to the US for lessons. After the centralisation of prudential regulation – both of the micro and macro variety – and systemic risk monitoring inside the Bank of England, there is a danger that the UK money-credit constitution is too concentrated in the central bank, leading to the possibility of groupthink, a lack of oversight and ultimately political risks to central bank independence. In Europe, the ECB has made progress building up its macro-prudential toolkit. But it still lacks powers to influence the non-bank financial sector and this macro-prudential policy capacity is fractured across several different institutions without effective

oversight, a concern for political accountability especially in a union representing many different countries and political systems.

In the US, the UK and the Eurozone over recent years, there have been calls to reduce or eradicate central bank independence from both politicians and the public. But we are clear that this is no time to throw the baby out with the bathwater. **We do argue for a more nuanced approach to central bank independence, with political accountability in terms of mandate-setting and appointment of officials, and oversight of wider financial stability powers. Nonetheless, we reiterate that the case for operational independence in both monetary and macro-prudential policy is strong: to retreat on this now would be a serious mistake.**

## 1. Introduction

Prior to the financial crisis, a consensus had developed around the model of an ideal central bank: independent from government, with a focus on price stability through an inflation target<sup>1</sup>, with primary responsibility for moderating macroeconomic fluctuations. This consensus was supported by theoretical and empirical evidence demonstrating that central bank independence was important in reducing inflation without a negative impact on growth or employment. Central banks in advanced and emerging economies converged upon this model of central bank independence, and in many countries, central banks' traditional responsibilities for financial supervision and stability were relocated to separate institutions to enable the central bank to focus on its core monetary policy responsibility.

In the wake of the global financial crisis, however, this model of a central bank is being challenged. In the US, Congress only narrowly rejected Senator Rand Paul's "Audit the Fed" plan to curtail the Federal Reserve's independence. President Trump has criticized the Federal Reserve's decisions and its independence, and broke with precedent in not re-appointing Fed Chair Janet Yellen to a second term, replacing her with new Fed Chair Jerome Powell. The opposition Labour Party in the UK launched a review of the Bank of England and its leader Jeremy Corbyn previously called for a "People's QE" to force it to fund public projects. Bank of England Governor Mark Carney has also come under criticism from senior Conservative politicians. The ECB has been criticized by senior Eurozone politicians including most notably the then German Finance Minister Wolfgang Schäuble. It has been alleged that governments in Brazil and India have recently tried to curtail the independence of their central banks.

Challenges to the pre-crisis consensus do not just come from politics. Even mainstream academic voices have begun breaking long-held taboos by calling for monetary financing of governments ("helicopter money"), scrapping inflation targeting, and questioning the value of central bank independence.

This backlash reflects important shortcomings in the traditional model of a central bank. The crisis demonstrated that a focus on price stability alone is too narrow: effective macroeconomic policy cannot ignore the financial sector, and requires coordination between monetary and fiscal policy when at the zero lower bound. New trade-offs have been revealed between stable inflation, full employment and financial stability. For some, central bank independence itself – designed to prevent inflation from becoming too high – may no longer be useful when monetary policy is constrained and the central challenge is inflation being too *low*<sup>2</sup>.

As a result, models of central banking have diverged since the crisis, with countries overhauling their monetary and regulatory architecture in markedly different ways. Central banks have accumulated a much wider range of powers than was common at the time the consensus around central bank independence was built, in areas of unconventional monetary policy, crisis response and financial stability.

Central banks' new financial stability goals and powers challenge the previous academic consensus that their independence is an unalloyed good. Unlike monetary policy, these new powers may require the central bank to coordinate closely with the government and other regulatory institutions, and to venture

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<sup>1</sup> And, in some, cases, the maintenance of full employment. In the case of the Fed, these two goals were equally weighted; the ECB and the Bank of England, among others, had primary weighting on price stability.

<sup>2</sup> See, for example, Kocherlakota (2017)

into politically treacherous areas with first-order distributional consequences such as housing policy. Some fear that central banks have become too independent and insufficiently accountable to the electorate, while others worry that the new reforms will jeopardize central banks' hard-won independence in monetary policy, diluting their focus on inflation targeting.

The following section of this paper explores in greater depth the failure of the pre-crisis conception of central bank independence and the backlash that it has unleashed. A brief overview of the diversity of responses to these problems reveals that the pre-crisis consensus about the structure of a central bank regime has broken down.

The third section investigates what of the pre-crisis conception of central bank independence is worth saving. To do so, it tests the relationship between different types of independence – focusing on the distinction between operational and political independence – and inflation outcomes. It also examines whether these results differ between developed and emerging economies and, given the threat of a prolonged period of “secular stagnation”, what the zero lower bound on nominal interest rates means for the effectiveness of central bank independence.

In light of these conclusions, as well as insights from economics, public choice theory and politics, the fourth section of the paper creates a framework to systematically evaluate whether the different powers and responsibilities that have been thrust on central banks should indeed be housed in that institution. This framework is designed to maximise the effective implementation of these tools, while minimising potential conflicts with monetary policy and limiting threats to central bank independence.

Using this framework, the fifth section draws up an ideal template for the modern central bank. In particular, it evaluates the appropriate institutional structures for coordination between monetary and fiscal policy, systemic risk supervision, macro-prudential policy, financial supervision and conduct, and crisis management.

The final section brings together our recommendations and offers suggestions for further research.

In an annex to the paper (Annex D), we construct an index that measures countries against this template for a modern central bank. Traditional indices of central bank independence such as Grilli, Masciandaro, & Tabellini (1991) and Cukierman, Neyapti & Webb (1992) are designed to rate a central bank's ability to meet its price stability mandate. Not only do these indices ignore central banks' increasingly important financial stability mandates, they actually penalise central banks for taking on financial stability objectives and the tools required to meet them. We use our scoring system, which reflects the broader mandate of modern central banks, to evaluate the new functions of the central bank in 10 countries – 7 developed and 3 emerging economies – based on case studies attached in Annex C.

While the first sections of our paper explore empirical relationships, the latter sections are more normative. As a result, there will inevitably be disagreements about our template. But given the lack of consensus in academic and practitioner discussions, and highly divergent reforms in the real world, we hope that our proposals can move forward the debate on how, post financial crisis, a modern central bank should look and operate.

## 2. The problem

Prior to the global financial crisis, a consensus had formed around the structure of a central bank and the institutions that supervise and regulate the financial system, what Paul Tucker terms a country's "money-credit constitution" (Tucker, 2014). Broadly speaking, this pre-crisis consensus had four components.

- i. First, an independent central bank should focus on meeting a price stability objective, usually defined by an explicit inflation target, by varying its policy rates. By "divine coincidence", the central bank's focus on low and stable inflation implied that it was also seeking to keep output at its efficient level<sup>3</sup> (Blanchard & Gali, 2007). In this view, the central bank had primary responsibility for stabilising the business cycle. Indeed, monetary and fiscal policy could operate in isolation because the former could offset much of the latter's macro-economic impact. Meanwhile, financial stability was left within the purview of supervisors and regulators, rather than that of monetary policy-makers.
- ii. Second, the supervision and regulation of financial institutions was, by and large, a micro-prudential undertaking. Regulators examined leverage, liquidity and conduct risks within individual institutions, rather than those at the *systemic* level. These risks were typically monitored by an institution outside of the central bank such as the UK's Financial Services Authority or national regulators in the euro-zone. There were, of course, exceptions to this, particularly in emerging markets such as Malaysia.
- iii. Third, the central bank would provide liquidity re-insurance to the financial system as the lender of last resort. Most central banks internalised Bagehot's famous dictum to lend freely at a penalty rate against good collateral. Typically, only banks had access to central bank liquidity. And central banks generally provided this liquidity through fully-collateralised repo markets. By leaving banks to lend unsecured to one another, central banks expected lenders to monitor the health of their peers (Goodfriend & King, 1988).
- iv. Fourth, the crisis-fighting frameworks of many countries operated under the assumption that the central bank's lender of last resort function could stem systemic crises. This would protect solvent financial institutions from contagion as failed firms were resolved.

It is important to note, too, that much of the academic literature on this pre-crisis consensus rested explicitly or implicitly on the belief that central bank independence was an unalloyed good. The more independent a central bank, the more effectively it could pursue its core price stability mandate<sup>4</sup>.

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<sup>3</sup> While this result held perfectly in the standard new Keynesian framework, the degree to which "divine coincidence" would hold in practice depended on factors such as the nature of price- and wage-setting, the extent to which fiscal policy was optimally set and the presence of real-wage rigidities in the face of supply shocks (Blanchard 2006). While this was acknowledged in practice by many central banks, the primary target remained inflation in the majority of cases (Blanchard, Dell'Ariccia and Mauro 2010).

<sup>4</sup> See for example (Dincer & Eichengreen, 2014; Cukierman, 2008)

The global financial crisis revealed significant weaknesses in each component of this framework.

- i. In order to meet their inflation targets, central banks needed to dramatically expand their toolkits beyond their policy rates. In some cases the convenient divine coincidence appeared to break down – central bankers might now need to choose between inflation at target and the economy at full capacity. Particularly at the zero lower bound, monetary policy alone could not guarantee price stability or return the economy to full employment and so fiscal policy once again had a key role to play in demand management, suggesting the need for coordination between the government and the central bank<sup>5</sup>. What's more, new “unconventional” monetary policy tools such as quantitative easing had fiscal implications, involving new risks for the state's consolidated balance sheet and affecting the management of government debt (Greenwood, Hansen, Rudolph, & Summers, 2014). The crisis demonstrated that financial conditions matter greatly for the transmission of monetary policy, spurring central banks' deeper involvement in financial policy.
- ii. What's more, the crisis demonstrated that the modern complex financial system is vulnerable to *systemic* risks that can be – and were – missed by micro-prudential regulators focused on specific institutions. Such risks might build up over time: for example herding behaviour can lead to pro-cyclical investment strategies. Systemic risks might also be cross-sectional as firms develop complex exposures to risks that micro-prudential supervisors, looking only at individual firms, might miss. Supervisors lacked adequate *macro*-prudential tools – system-wide changes to capital and liquidity requirements, market structures and permissible terms of lending – to respond to such risks.
- iii. The increasing size and complexity of the financial sector forced central banks to expand dramatically their lender of last resort facilities. Contrary to Bagehot, they lent at subsidised rates, on the basis of hard-to-value collateral and to a wide range of counterparties. In fact, some central banks even acted as market-makers-of-last-resort.
- iv. The crisis demonstrated that the central bank's traditional lender of last resort function alone could not stem a crisis. Governments have pumped large amounts of fiscal resources into re-capitalising failed institutions in order to prevent financial contagion. Many jurisdictions have also set up new resolution mechanisms for large inter-connected financial institutions and new bodies that are responsible for fighting risks to financial stability at the system-level or that, in a crisis, could coordinate the central bank, different regulators and the government.

Meanwhile, financial and monetary policies have become increasingly international, involving trade-offs between domestic and foreign interests. The response to cross-border financial crises requires the close cooperation of multiple jurisdictions. Monetary policy has become increasingly inter-dependent across countries. Hélène Rey, for example, has argued that unless a country imposes restrictions on its capital account, it cannot pursue a monetary policy fully independent of the global financial cycle (Rey, 2013). Some emerging market central bankers, such as Raghuram Rajan during his tenure as Governor of the Reserve Bank of India, have advocated for advanced economies to take greater consideration of

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<sup>5</sup> An idea coming from the original Keynesian models, and developed more recently by Krugman (1998), Feldstein (2002), Blanchard, Dell'Ariccia and Mauro (2010) and Correia, Farhi, Nicolini, & Teles (2011) among others.



international financial implications when setting monetary conditions (Misra & Rajan, 2016); while Blanchard (2016) has argued that the scope for international monetary coordination is limited. Finally, with weak financial systems and over-leveraged private sectors undermining transmission of monetary policy to the real economy, some allege that central banks have become increasingly reliant on “beggar thy neighbour” devaluations to stimulate their economies. As a result of all this, it has become increasingly important for central banks to coordinate with their peers abroad.

In response to these institutional shortcomings revealed by the crisis, countries around the world overhauled their regulatory frameworks. Governments extended central bank mandates to include explicit financial stability goals and equipped central banks with varying degrees of macro-prudential tools to achieve them, ranging from counter-cyclical capital buffers to loan-to-value ratios.

While the powers of almost all central banks have increased, they have done so in very different ways. As Table 1 shows, there has been a substantial divergence in central banks’ goals, tools and institutional structures. For example, the Bank of England is now explicitly responsible for financial stability and has been equipped with an extensive macro-prudential toolkit to achieve this mandate. But in Sweden, the financial regulator, which sits outside of the Riksbank, controls the macro-prudential levers. In the US, the Treasury Secretary can veto recommendations by the Financial Stability Oversight Council that monitors systemic risks. But national governments have no representation on the equivalent euro-zone body, the European Systemic Risk Board. And in perhaps the biggest challenge to the pre-crisis conception of central bank independence, the Bank of England worked with the government to coordinate monetary policy and debt management, as well as using fiscal resources to boost lending to the real economy through its Funding for Lending Scheme.

**Table 1. Financial stability powers of ten central banks**

Y = Yes, ~ = Somewhat, N = No

	CB has financial stability mandate?	CB has formal macro-prudential powers?	Systemic risk monitoring body?	Monetary policy/debt management coordination?	Bank supervision in CB?
Australia	Y	~	Y	~	N
Canada	~	N	~	N	N
China	~	N	Y	N	N
ECB	N	~	~	N	Y
India	~	Y	Y	Y	Y
Japan	~	N	~	N	N
Malaysia	Y	Y	Y	N	Y
Sweden	N	N	Y	N	N
UK	Y	Y	Y	~	Y
US	~	N	Y	N	~

(Table based on individual country case studies attached in the Annex.)

## Concerns about central bank independence have mounted

Nearly everywhere, central banks have been given far more powers since the crisis. Their new responsibilities and powers have thrust them into politically contentious areas of policy and required them to work closely with other institutions, including the government. At the same time, many of the world's central banks have systematically undershot their inflation targets over extended periods of time because they struggled to reflate their economies.

As a result, there has been a backlash against central banks. Concerns that central banks have become too powerful and unaccountable are reflected in the media and in politics in many countries.

In the US, the Senate only narrowly rejected Senator Rand Paul and Representative Thomas Massie's "Audit the Fed" proposal, which would have significantly curtailed Fed independence by requiring the Fed to set interest rates according to a predefined rule and by making monetary policy decisions subject to Congressional review (Bernanke, 2016). The bill was reintroduced in January 2017 and would allow the GAO to audit the Federal Reserve's "deliberations, decisions or actions on monetary policy matters". Presidential candidates including Marco Rubio and Bernie Sanders voted in favour of the bill, and President Donald Trump expressed support when he was the Republican candidate (La Monica, 2016). President Trump in November 2017 broke with precedent in not re-appointing Fed Chair Janet Yellen to a second term, replacing her with new Fed Chair Jerome Powell.

In the Eurozone, the ECB faced legal challenges over its Outright Monetary Transactions program, only settled in 2015 by a European Court of Justice ruling confirming that monetary policy was indeed the "exclusive competence" of the ECB (ECB, 2015). Senior Eurozone politicians, most notably former German Finance Minister Wolfgang Schäuble, have frequently publicly commented on ECB policy decisions (Reuters, 2017); in April 2016, his comments were construed as implying that the ECB bears some responsibility for the rise of far-right party AfD in Germany (Jones, 2016). In Switzerland, the "Save Our Swiss Gold" movement, started by three Swiss People's Party politicians, triggered (but lost) a referendum to require the Swiss National Bank to hold at least 20% of its reserves in gold (Bosley, 2014).

In the UK, former Foreign Secretary and former Leader of the Conservative Party William Hague wrote in November 2016 that unless central banks change course soon, "they will find their independence increasingly under attack" (Hague, 2016). Michael Howard and Iain Duncan Smith, former Conservative party leaders, and Nigel Lawson and Norman Lamont, two former Chancellors, criticized the Bank of England for its analysis in the run-up to the Brexit referendum, arguing that there had been "a woeful failure on the part of the Bank of England, the Treasury and other official sources to present a fair and balanced analysis" (Smith, Howard, Lamont, & Lawson, 2016). Some have argued that policy proposals for "People's QE" from Jeremy Corbyn, the Leader of the Opposition Labour party in the United Kingdom, would jeopardize the Bank of England's independence (Yates, 2015).

Economic commentators have also begun questioning the value of central bank independence. As some examples: in 2017, Wolfgang Munchau argued in the Financial Times that central bank independence "is losing its lustre" as monetary policy involves inherently political trade-offs (Munchau, 2017); in 2015, Ryan Cooper wrote in The Week that "the independence of central banks is overrated", arguing that independent central banks have not performed well since the crisis (Cooper, 2015); The Telegraph's Ben Wright asked in 2014 "is central bank independence really such a brilliant concept?", raising concerns

about the distributional effects of monetary policy and the extent to which central bank powers have expanded without corresponding accountability and oversight (Wright, 2014); and Chris Giles in the Financial Times wrote in 2012 that “central bank independence was a well-intentioned failure”, arguing that the Bank of England had too little accountability (Giles, 2012).

Within this backlash and increased suspicion of central banks, there are two sets of concerns about central bank independence.

### Concern 1: central banks are too independent

Concerns that central banks are too independent typically focus on either macroeconomic policy effectiveness or the implications for democracy and accountability.

Some economists have argued that central bank independence is at best irrelevant and at worst damaging in economies where the key macro-economic challenge is *raising* inflation, not lowering it. Central bank independence was designed to reduce inflationary bias, yet no advanced economy in the world has experienced prolonged bouts of high inflation in many years. In fact, most central banks are struggling to bring inflation up to their inflation targets. Fels (2016) notes that “aggressive independent monetary policies across the world haven’t yet delivered inflation” and argues that placing central banks under government oversight, including allowing the central bank to finance the Treasury directly, could be “a much more direct and effective way to overcome a demand deficiency and raise inflation expectations than using QE... or embarking on NIRP (Negative Interest Rate Policy)”.<sup>6</sup>

There are also concerns that it is too difficult to hold central banks democratically accountable for their new powers (Issing, 2011; Braun & Hoffmann-Axthelm, 2017). Shifting power away from the political process to independent institutions is, by its nature, undemocratic. It should only be done both when there are large benefits to removing the decision-making from the political process and when it is relatively easy to hold the independent institution accountable for its decisions. In (conventional) monetary policy, this is the case. In financial policy, however, it is much more difficult to set up effective accountability mechanisms. For instance, “financial stability” is more difficult to define than price stability (“2% inflation”) and the tools to achieve it, such as macro-prudential measures, are less well understood than conventional monetary policy tools such as interest rates. Given regulatory arbitrage in finance, it is also very difficult to delineate ex-ante the necessary toolkit to tackle risks to financial stability.

In addition, social preferences about financial stability are often less clearly defined and first-order distributional effects are likely to be greater than with conventional monetary policy<sup>7</sup>. It is very difficult, for instance, to set up a welfare function that allows the central bank to optimise the trade-off between economic dynamism and financial stability. In the absence of a social consensus on the objectives of financial stability policy, an independent central bank may simply impose its preferences on society,

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<sup>6</sup> This is not yet a mainstream view however: summarizing the conclusions of the 2015 conference on “Rethinking Macroeconomic Policy”, Blanchard noted that there was general consensus “that central banks should retain full independence with respect to traditional monetary policy”.

<sup>7</sup> Either because the distributional effects net out over the economic cycle, or because the redistribution from savers to borrowers or vice versa is outweighed by the benefits to all as a result of improved economic growth and stable inflation (see, e.g. Nakajima 2015). Note that this may be less likely to hold if monetary policy becomes asymmetrical, for example in prolonged periods at the zero lower bound, or under large changes in monetary policy stance (Doepke, Schneider and Selezvna 2015, Nakajima 2015).

without sufficient accountability to the government. For example, the central bank might become more of an “inflation nutter” than society desires even over the long term (King, 1997). Alternatively, many argue that central banks have interpreted their mandate too expansively, wading into wider debates about inequality, fiscal policy and other “political” issues outside of their remit (Buiter, *Central Banks: Powerful, Political and Unaccountable?*, 2014).

### Concern 2: central bank independence is at risk

Conversely, there are worries that broadening central banks’ responsibilities and tools will undermine independence in their core monetary policy function (Grilli, Masciandaro, & Tabellini, 1991; Buiter, 2016). As central bank mandates expand to financial stability, they are forced to operate in more politically contentious areas such as housing policy. Unconventional monetary policy tools such as asset purchases and financial stability levers such as loan-to-value ratios may also have first order distributional issues. All this could lead to a popular backlash against central bank independence. Goodhart and Lastra (2018), for example, argue that political concerns about the effects of unconventional monetary policy on income and wealth distributions, asset prices and the public debt are likely to make central bank independence unsustainable. Issing (2018) and Balls (2017) argue that the biggest threat to central bank independence is actions taken by the central bank which have deliberately distributional effects. Even the distributional effects of conventional monetary policy may threaten central bank independence, as they become more salient in eras of low wage growth (DeBelle, 2017).

There are also concerns that new powers will dilute the institution’s focus on inflation. Overloading the central bank with responsibilities and tools may distract its institutional focus from monetary policy and undermine its effectiveness as a bureaucracy. Greater coordination with fiscal policy at the zero lower bound raises fears of the central bank being pressured into monetary financing.

The key role of central banks in financial crisis management and increasingly in financial supervision may also undermine their independence. Brunnermeier & Gersbach (2012), for example, argue that the ECB’s independence was undermined by the expectation that it would continue to provide cheap funding to financially distressed banks. Masciandaro & Passarelli (2013) model the distributional effects of bank bailout financing by the central bank, and conclude that “the greater the confusion and opaqueness between the [central bank’s] role as monetary authority and its involvement in banking supervision and resolution, the more its independence will be at risk”. Combining financial stability and monetary policy objectives may also introduce dynamic inconsistency problems, leading the central bank to select a higher-than optimal level of inflation (Ueda & Valencia, 2012). Increased interaction between central banks and politicians as a result of central banks’ involvement in financial supervision may blur the boundaries of central bank independence (Goodhart & Lastra, 2018).

In a 2016 survey of over 200 central bank heads and academics, over one third of academics and ten percent of central bankers thought that central bank independence was threatened either “a lot” or “a moderate amount” (Blinder, Ehrmann, Haan, & Jansen, 2017). In another 2016 survey of 70 prominent Europe-based economists, one-third agreed that central bank independence in the UK and Eurozone would decline over the next 48 months (Haan, Ellison, Ilzetzki, McMahon, & Reis, 2017).

The above concerns demonstrate the need for a new conception of central bank independence to take into account central banks' new powers and accountabilities. To create a new framework, we first need to understand: what aspects of central bank independence, if any, are worth protecting?

### 3. Central bank independence: Lessons from the Pre-Crisis Period

#### The pre-crisis consensus

The pre-crisis consensus on central bank independence was developed from a strong theoretical and empirical foundation. Independent central banks, it was argued, would protect the currency from political pressures, avoiding politically-engineered business cycles and pressure to finance deficits (Buchanan & Wagner, 1977; Sargent & Wallace, 1981). In addition Rogoff (1985) and Walsh (1995) argued that independent central banks could help overcome time inconsistency problems<sup>8</sup>, where governments may have an incentive to temporarily stimulate output through unexpected demand shocks, reducing unemployment but inefficiently raising long-term inflation.

Empirical research appeared to bear the theory out: central bank independence was negatively related to inflation in both advanced and emerging economies over the 1970s-1990s (Bade & Parkin, 1982; Alesina, 1988; Grilli, Masciandaro, & Tabellini, 1991). As Alesina and Summers (1993) showed, it even appeared to be a ‘free lunch’ with no costs to output growth or employment<sup>9</sup>.

Complementing central bank independence, inflation targeting became the second pillar of optimal monetary policy. Inflation targeting was considered important to anchor nominal expectations, reduce uncertainty and improve credibility (Bernanke, Laubach, Mishkin, & Posen, 1999), with symmetric targets particularly important in eras of low inflation (Svensson, 2000; Mishkin F. , 2001)<sup>10</sup>. In addition, inflation targeting helped promote transparency and ensure accountability of an independent central bank by enabling the government and the public to evaluate the central bank’s actions in light of their mandate (Dincer & Eichengreen, 2014; Geraats, 2000); and a symmetric target reduced politicians’ concerns about independent central banks’ potential deflationary bias.

From the 1980s to the 2000s, most advanced and emerging economy central banks significantly increased in independence, shown in figures 1 and 2 (Cukierman 2008). At the same time inflation targeting was adopted formally by 26 central banks, and the principles of inflation targeting were adopted by many more including the Federal Reserve, European Central Bank and Bank of Switzerland (Roger, 2010). Central banks with symmetric inflation targets include the Bank of England, Bank of Canada and (more recently) the Federal Reserve<sup>11</sup>.

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<sup>8</sup> As described by Kydland and Prescott (1977) and Barro and Gordon (1983).

<sup>9</sup> For advanced economies, the negative relationship between inflation and central bank was initially documented by Bade and Parkin 1982, Alesina 1988 and Grilli, Masciandaro and Tabellini 1991. While Posen (1995) argued that negative correlation does not imply causation, De Haan and Van T’Haag (1995) and Havrilesky and Granato (1994) find that the relationship holds with a variety of more robust estimation strategies. Alesina and Summers (1993) argued that central bank independence was a “free lunch”. Debelle and Fischer (1994) and DeHaan and Kooi (1997) evaluated the relative effects of goal and instrument independence, which we will discuss later in this paper. Cukierman et al (1992) investigated the relationship in emerging economies, using a CBI index and the central bank governor turnover as an indicator of the political influence over the central bank. Recent work by Arnone et al 2007, Crowe and Meade 2008, and Dincer and Eichengreen (2014) update and expand these efforts.

<sup>10</sup> Svensson (2000) argued that a symmetric target helps to avoid liquidity traps by anchoring inflation expectations more effectively, and Mishkin (2001) argued that a symmetric target enables central banks to act more forcefully in times of crisis without risking de-anchoring inflation expectations.

<sup>11</sup> Note that the simultaneous adoption of central bank independence and inflation targeting makes it difficult to disentangle the effects of one or the other. This is something we hope to pursue further.

Figure 1: Change in central bank independence in advanced economies, 1980s-2003<sup>12</sup>

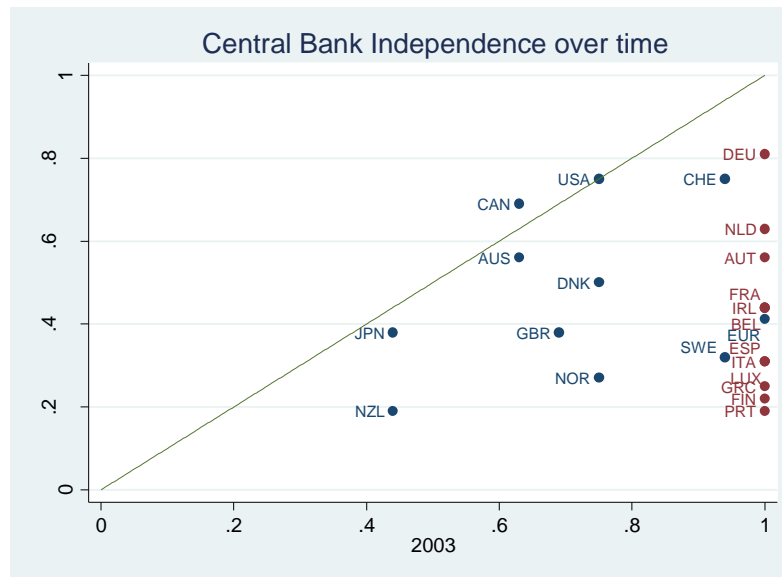
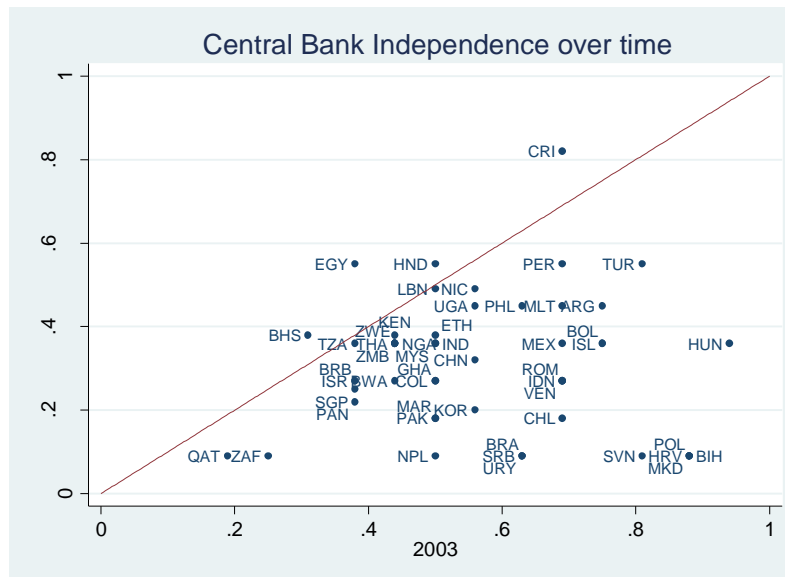


Figure 2: Change in central bank independence in emerging economies, 1980s-2003



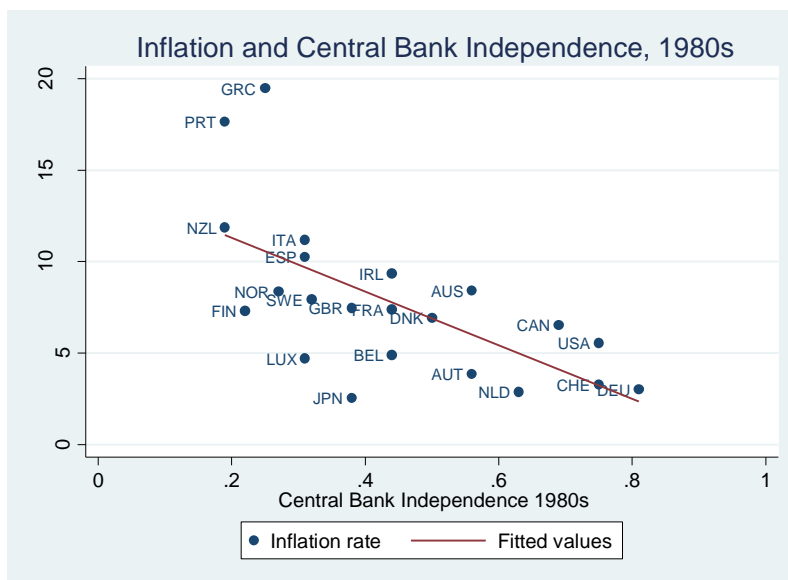
**Note on measurement:** Here and throughout the paper, we use the Grilli, Masciandaro and Tabellini (1991) measure of central bank independence for the 1980s, updated for 2003 by Arnone et al (2008). We discuss differences between this index and the other major measure of central bank independence by Cukierman, Webb and Neyapti (1992) in Annex B.

<sup>12</sup> The 1980s Eurozone marker is the average of its 2003 member states' CBI scores. The red markers show the Eurozone countries individually (with each Eurozone country's 2003 score as the ECB central bank independence score).

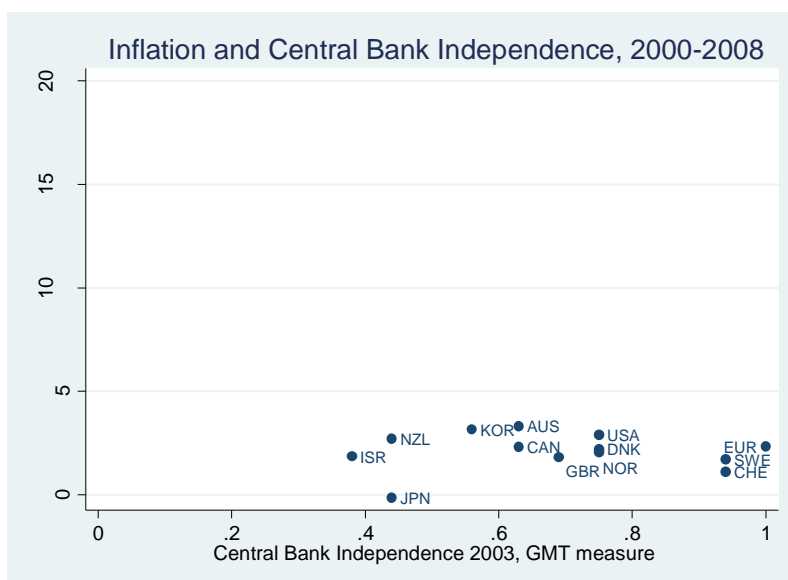
## Revisiting the pre-crisis consensus: political versus operational independence

The strong empirical relationship between central bank independence and inflation documented in the 1970s-1990s is no longer clear in the data for advanced economies. While advanced economy central banks still have very different levels of central bank independence, all converged on low and stable inflation during the “Great Moderation”, and many have struggled with too-low inflation since the crisis.

**Figure 3: Central bank independence and inflation in advanced economies, 1980s**



**Figure 4: Central bank independence and inflation in advanced economies, pre-crisis 2000s<sup>13</sup>**



<sup>13</sup> Note that a slight negative correlation persists in the 2000-2008 sample if Japan is excluded. The magnitude of the correlation, however, is very small: as can be seen, the range of average inflation in the sample excluding Japan is only 2 percentage points, with the majority of countries close to the 2% level which was many countries’



Focusing, however, on the distinction between *political* and *operational* central bank independence shows a different picture. While most academic work looked at composite central bank independence, Debelle and Fischer (1994) showed that only the operational component of central bank independence was important for advanced economies over the 1970s and 1980s. Today, all advanced economy central banks have converged on a model of full operational independence – but mostly low political independence<sup>14</sup>.

This has two implications: first, it changes our understanding of the extent to which central bank independence in monetary policy remains important today, and second, it bears on decisions as to how to structure central banks' new powers going forward.

We also provide, however, tentative evidence that in emerging and developing economies, *both* operational and political central bank independence are important.

### Defining political and operational independence

While exact definitions vary, the literature generally defines political independence as the degree of influence which elected politicians have over the central bank, and operational independence as the ability of the central bank to select and use monetary instruments with autonomy.

Different authors draw slightly different delineations. Grilli, Masciandaro and Tabellini (1991) for example distinguish between political and “economic” independence of central banks (similar to operational independence, encompassing control over the discount rate, freedom from pressure to lend to the government, and a lack of responsibility for bank supervision). Debelle and Fischer (1994) distinguish between political independence, instrument independence (analogous to operational independence), and goal independence, which is the ability of the central bank to set its own operational goal or target.

For the purposes of this paper, we define political independence as the absence of the possibility of political influence over the central bank. Following Debelle and Fischer (1994), our measure of political independence uses components<sup>15</sup> of the Grilli, Masciandaro and Tabellini (1991) index, updated by Arnone, Laurens, Segalotto, & Sommer (2007), and encompasses appointment and dismissal procedures for central bank officials, the presence of government representatives in central bank consultative or decision-making bodies, and the potential for conflicts of interest of central bank officials. We would also place goal independence under the heading of political independence (we would argue, for example, that the Bank of England's 2% inflation target set by the government reduces its political

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inflation target over the period. Since most countries had a symmetric target, the deviation from 2% is perhaps a more important measure of inflation control than the level of inflation: in that case, the negative relationship between central bank independence and deviation of inflation from target would exist strongly in the 1970s-1980s but would disappear completely in the 2000s.

<sup>14</sup> We use data on the level of central bank independence in 2003, close to the beginning of the period over which we average inflation. Arnone and Romelli (2013) and Masciandaro and Romelli (2015) provide evidence that the central bank independence scores did not change over the rest of the decade for most countries.

<sup>15</sup> Following Debelle and Fischer (1994) we use 7 of the 8 components of the GMT index, omitting the component which requires the central bank to have a price stability mandate set by the government.

independence); but since we do not have a consistent metric of goal independence, this is not included in our final definition for the empirical work.

We define operational independence as the ability of the central bank to select and use monetary tools with autonomy. Following Debelle and Fischer (1994), we use components<sup>16</sup> of the Grilli, Masciandaro and Tabellini (1991) economic independence index encompassing the ability of the central bank to use the instruments of monetary policy such as the discount rate, and the inability of the central bank to finance government deficits, which is considered to protect the central bank from any influence or obligation to fund the government at the expense of the ability to control inflation.

**Table 2: Measuring political and operational independence**

Political independence	Operational independence
<ul style="list-style-type: none"> <li>• Governor not appointed by government</li> <li>• Governor's term &gt; 5 years</li> <li>• Board not appointed by government</li> <li>• Board term &gt; 5 years</li> <li>• No government representative on board</li> <li>• No government approval for monetary policy formulation</li> <li>• Provisions to strengthen central bank in event of conflict with government</li> </ul>	<ul style="list-style-type: none"> <li>• Direct credit facility to government is: <ul style="list-style-type: none"> <li>○ Not automatic</li> <li>○ At market interest rates</li> <li>○ Temporary</li> <li>○ For a limited amount</li> </ul> </li> <li>• Central bank does not participate in primary market for government debt</li> <li>• Discount rate is set by central bank</li> </ul>

1 point is allocated to a central bank which fulfils each of the criteria. Each index is the average score across the criteria. The scores for the criteria are drawn from Grilli, Masciandaro and Tabellini (1991) and Arnone et al (2007).

## Political and operational independence in academic research

Most academic analyses of central bank independence hold both political and operational independence to be important for inflation control. Rogoff's (1985) case for the "conservative" central banker, for example, argues for complete delegation of monetary policy to a central banker with different preferences from the government, in essence recommending both political and operational independence (Debelle and Fischer 1994), while Walsh's (1995) argument in favour of optimal incentive contracts for central bankers essentially argues for only operational independence. Buchanan and Wagner (1975) require a central bank to be free from political influence in order to avoid political business cycles, implying a need for both political and operational independence (Eijffinger & De Haan, 1996). Neumann (1991) focuses on the importance of political independence, particularly the independence of central bank personnel from government influence in terms of appointment and reappointment: the "Thomas Becket" effect.

The major indices of central bank independence – including Grilli, Masciandaro and Tabellini (1991), Cukierman, Webb and Neyapti (1992), Dincer and Eichengreen (2014) and Bade and Parkin (1982) – all agglomerate aspects of both political and operational independence – i.e. the more independence the better. The final number, representing a central bank's overall degree of independence, is the sum of

<sup>16</sup> Our operational independence measure is analogous to the Debelle and Fischer (1994) instrument independence measure "EC6", which takes 6 of the 7 components of the GMT (1991) economic independence index, excluding the component about bank supervision responsibility.

both types of independence, suggesting that more of one can be traded off against less of the other. Empirical analyses tend to use these indexes in their complete form, rather than analysing the political and operational components of central bank independence separately<sup>17</sup>.

DeBelle and Fischer (1994), however, argue that instrument/operational independence is the key for controlling inflation, that political independence is unimportant, and that goal *dependence* of the central bank to government is important because it enables accountability. Analysing 17 OECD economies in the 1980s, they show a negative relationship between instrument independence and inflation, but not between political independence and inflation. DeHaan and Kooi (1997) also conclude that “instrument independence matters for inflation performance whereas ... other aspects of independence have little or no impact”. Other authors support restrictions to political independence in certain circumstances: Lohmann (1992) suggests that when large shocks occur a “conservative” central banker should be overruled by the government, and Eggertson & Woodford (2004) advocate fiscal-monetary coordination in the case of a liquidity trap.

These arguments, however, appear to remain in the minority in the literature on central bank independence. Alesina & Stella (2010) for example argue that it is “a rather “minimalist” view of the meaning of central bank independence”.

### Political and operational independence: practitioner opinions

Practitioners, including academic authors who have experience in monetary policy, seem to tend to place the greatest weight on operational independence – the ability to choose and use the tools of monetary policy – rather than political independence.

These include Fischer (2017): “goal independence... is not appropriate in a democracy”; Mishkin (2011): “Although there is a strong case for instrument independence, the same is not true for goal independence, the ability of the central bank to set its own goals for monetary policy” and Kohn (2013): “some control is exercised through the appointments process, which for the Chairman occurs every four years. But an independent central bank ... doesn’t need to follow the politicians’ instructions”<sup>18</sup>.

Most strikingly, the Bank of England’s (2000) survey of central bankers from 60 countries found that most central bankers see operational independence as paramount: “by far the most important factor by which most central banks define independence is the capacity to set instruments and operating procedures; 80% of central banks across a broad range of economies mentioned this in their responses....” In contrast, aspects of political independence were not rated as important: only 22% of respondents mentioned the ability to set targets, objectives or goals, 18% mentioned the importance of specific rules on senior officials’ terms of office, and 20% mentioned independence from political bodies in general<sup>19</sup>.

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<sup>17</sup> Dincer and Eichengreen (2014), Acemoglu et al (2008), Crowe and Meade (2008), Arnone et al (2007), Posen (1995), Alesina and Summers (1993), for example, all consider the aggregate central bank independence index.

<sup>18</sup> Blinder (1998) also notes that: “Theorists have lavished vastly too much attention on a non-existent “time inconsistency” problem... a long time horizon is the principal *raison d’être* for central bank independence”.

<sup>19</sup> The survey also found that the self-assessed degree of a central bank’s independence by its officials was strongly correlated with its degree of measured instrument independence and the absence of any deficit finance

## Advanced economies: only operational independence is important

As Debelle and Fischer (1994) showed, cross-country regressions of political and operational independence on inflation demonstrate that only operational independence was significantly and negatively associated with inflation over the 1970s and 1980s. The degree of political independence was unrelated to the level of inflation in each country over the periods.

In Table 3 we replicate Debelle and Fischer's results with additional control variables. We look at 22 advanced economies and regress inflation on central bank independence, controlling for real GDP per capita as a rough proxy for omitted country-level factors such as institutional quality, and openness and the exchange rate regime which affect the monetary transmission mechanism and the goals of the central bank. These controls follow Dincer and Eichengreen (2014) and Crowe and Meade (2008). For the 1970s, we look at inflation over 1973-1979 only, to exclude effects around the end of the Bretton Woods period. The index we are using, constructed from Grilli, Masciandaro and Tabellini (1991), is an index of central bank independence in the 1980s, but they note that it applies to earlier periods because there were few central bank reforms during these two decades. We are not aware of a publicly-available dataset of central bank independence scores for the 1990s so have not extended our work to this timeframe.

**Table 3: Summary table of regression results (advanced economies)**

Dependent variable: average inflation	(1)	(2)	(3)	(4)
	1970s		1980s	
Central Bank Independence	-8.70*** (2.78)		-9.99** (3.99)	
Political Independence		-2.69 (2.87)		0.55 (3.76)
Operational Independence		-3.17* (1.65)		-5.72** (2.56)
Real GDP per capita (log), 2005 USD	-5.96*** (1.63)	-7.86*** (1.59)	-6.17** (2.64)	-9.79*** (2.68)
Openness: Trade as % of GDP	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.03)	-0.01 (0.03)
Exchange rate regime	0.35 (0.68)	0.41 (0.82)	-0.50 (0.93)	0.16 (1.07)
Constant	31.28*** (3.91)	34.96*** (4.44)	34.10*** (7.18)	41.32*** (7.37)
Observations	22	22	22	22
R-squared	0.78	0.74	0.63	0.62

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As can be seen from the table and from the partial regression plots in Figures 5 and 6 overleaf, there is a highly significant negative relationship between inflation and operational independence, but no

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obligations (the two core components of operational independence), but that the self-assessed degree of independence was only weakly correlated with the ability of the central bank to set targets or the length of term of the governor (two aspects of political independence).

significant relationship between inflation and political independence, for advanced economies in the 1970s or 1980s. (Note that these graphs are partial regression plots, which show the relationship between political or operational independence and inflation when controlling for other factors. Simple correlations demonstrate similar results: the correlation between operational independence and the inflation rate is negative and significant, while the correlation between political independence and the inflation rate is not significant.)

Figure 5: Inflation and political independence in advanced economies, 1980s

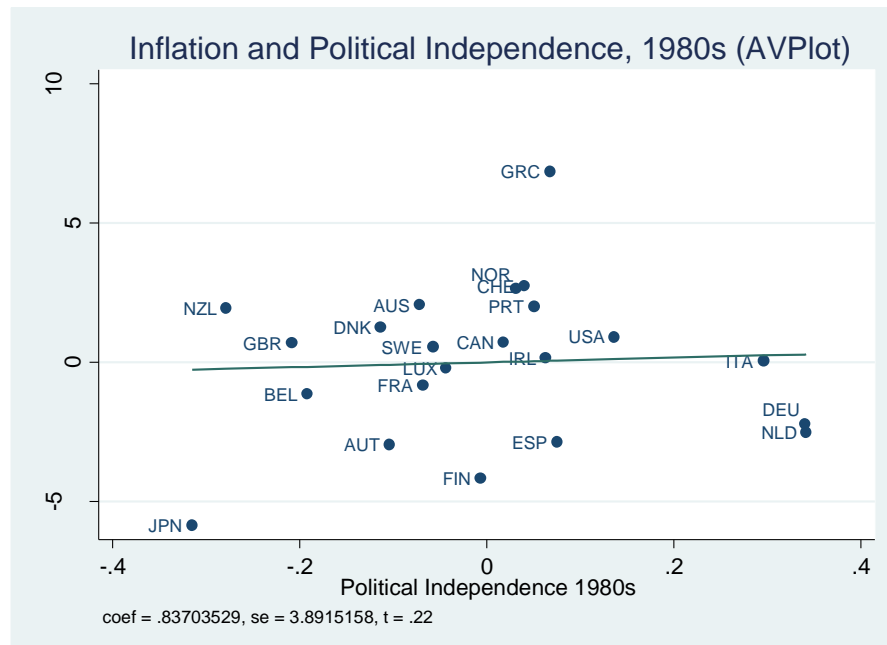
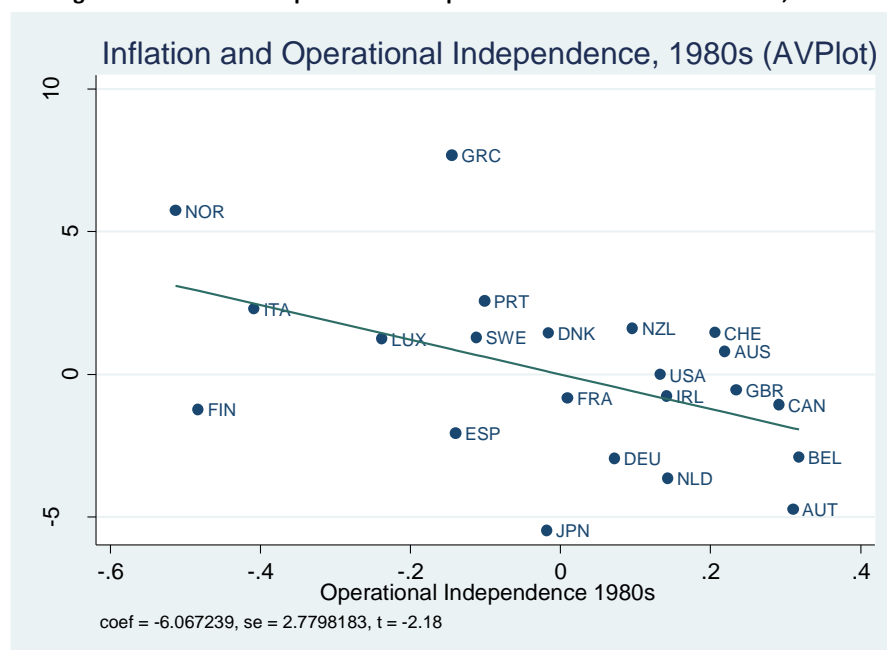


Figure 6: Inflation and operational independence in advanced economies, 1980s



## Advanced economy central banks converged on a model of high operational independence and low political independence

Actual central bank reforms over the 1980s to 2000s focused on operational independence, but not political independence (as shown in figures 7 and 8 overleaf<sup>20</sup>). The majority of advanced economy central banks became almost totally operationally independent by the 2000s. (New Zealand, Japan and Canada are not rated as fully operationally independent, as they do not have a full set of limits on central bank lending to the government).

Most advanced economy central banks, however, did not increase their political independence: the only ones which became much more politically independent were the Eurozone, Switzerland and Sweden. The Bank of England was made operationally but not politically independent from the outset in 1997, with the Government setting a symmetric inflation target and appointing new members of the Monetary Policy Committee to relatively short terms. Australia and Canada actually saw a measured fall in political independence from the 1980s to 2003, as their legal provisions to strengthen the central bank's position in a conflict with the government were weakened, according to the Arnone et al (2007) calculations of the GMT metric in 2003. Many of the advanced economy central banks retained low political independence scores as a result of continued government involvement in the appointment of the governor and board of the central bank, and/or relatively short term limits for those serving. The central banks of the US, Japan, Australia, New Zealand and UK all have their governor appointed by the government.

We would in fact consider many of these central banks to have even lower political independence than is measured here, because their operational targets are set by or in conjunction with their government. As discussed above we would define this as a lack of political independence, but it is not reflected in the index.

As such, the consensual model for most advanced economy central banks by the time of the financial crisis appeared to be full operational independence, but relatively low political independence. Some examples of this model include the UK, USA, Australia, New Zealand and Canada<sup>21</sup>.

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<sup>21</sup> For some examples of the constraints on political independence in these countries: the Bank of England's Monetary Policy Committee members are appointed by the government, subject to relatively short terms and the prospect of reappointment; an observer from the Treasury is present at all MPC meetings; and the Bank only has "constrained discretion" in that it must meet a symmetric inflation target set by the government, and is accountable through the open letter system if it misses its target in any month. The US government appoints the governor and board of the Federal Reserve. The Reserve Bank of Australia's Governor reports twice a year to the House of Representatives, and is appointed by the Treasurer; in the event of policy disputes between the RBA and the government, the government retains ultimate authority (Statement on the Conduct of Monetary Policy 2013, 2007). For both the RBA and the Reserve Bank of New Zealand, the inflation target is jointly determined by the central bank and the finance ministry. In Canada, the Deputy Minister of Finance sits on the Board of the Bank of Canada (but cannot vote), and the Board members are appointed by the government.

Figure 7: Changes in political independence in advanced economies, 1980s-2003

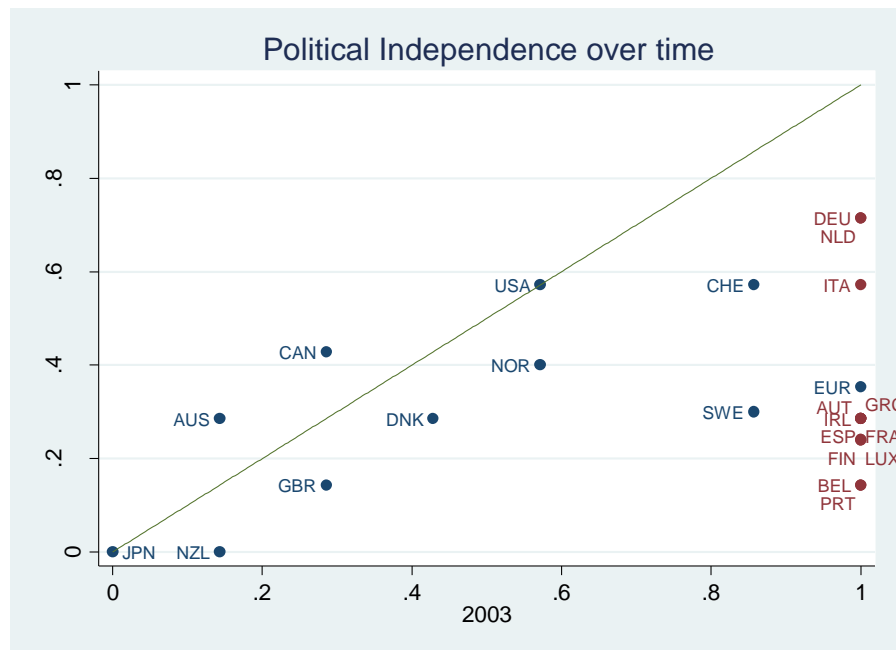
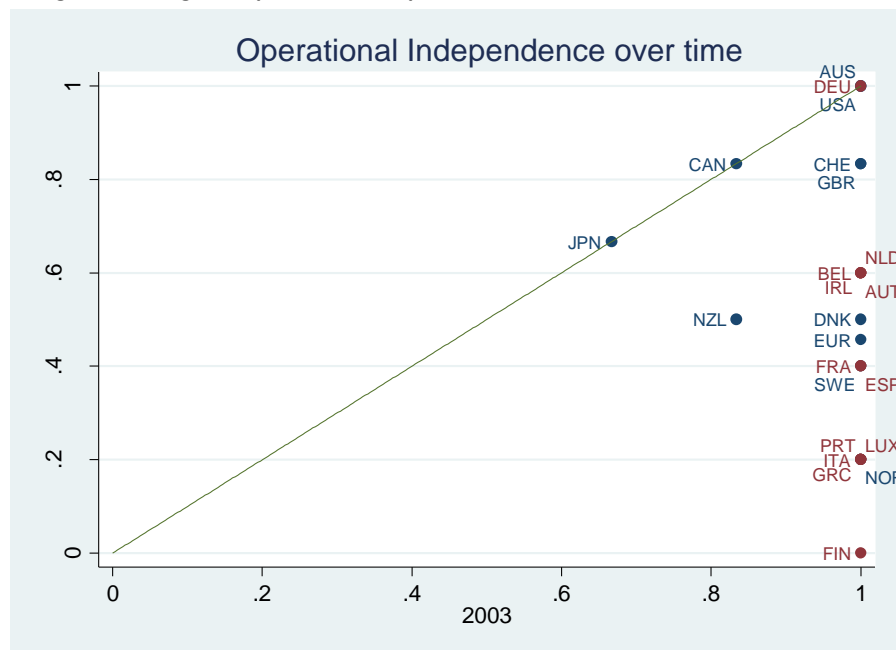


Figure 8: Changes in operational independence in advanced economies, 1980s-2003



All advanced economy central banks have both low inflation and operational independence

The consensus on central bank independence – and the empirical evidence above – was developed in a period where many countries were struggling with high and volatile inflation. In these circumstances central bank independence was a useful mechanism through which governments could credibly commit to price stability.

Since the early 2000s, however, no advanced economies have struggled with inflation; in more recent years the primary problem in monetary policy has been *creating* rather than reducing inflation. All advanced economies except Japan were within about a percentage point of 2% inflation over 2000-2008. Since 2008, most advanced economies have remained close to their inflation targets, and many have begun to struggle with undesired disinflation or deflation.

At the same time, throughout this period there was substantial variation in central bank independence across these economies. Unlike in the 1970s and 1980s, regression analysis returns no significant relationship between central bank independence and inflation - whether considering its absolute level, or its deviation from the target (Figure 4 on page 13 illustrates this, as do the regressions presented in Annex A).

When examining political and operational independence separately, today's data is consistent with the past. The advanced economies have converged *both* in terms of inflation performance and in terms of operational independence. Since our empirical results from the 1970s and 1980s suggest that it is only operational independence that is important for inflation control, convergence of advanced economy central banks on both dimensions means we cannot use recent data to prove or disprove the importance of operational central bank independence.

Figures 9 and 10 overleaf plot simple correlations of operational and political independence against inflation in the advanced economies. The green data points represent the 1980s and the orange data points represent the 2000s. The line of best fit and 95% confidence interval corresponds to the 1980s data. As can be seen, while the 1980s line of best fit is downward-sloping for both political and operational independence, the confidence interval is only downward-sloping at all ranges for operational independence.

When looking at data from both the 1980s and 2000s, with political independence it is clear that there is no consistent relationship between central bank independence and inflation – but when looking at operational independence, we see a consistently negative relationship between inflation and independence across time and countries.



Figure 9: Inflation and political independence in advanced economies, 1980s and 2000s

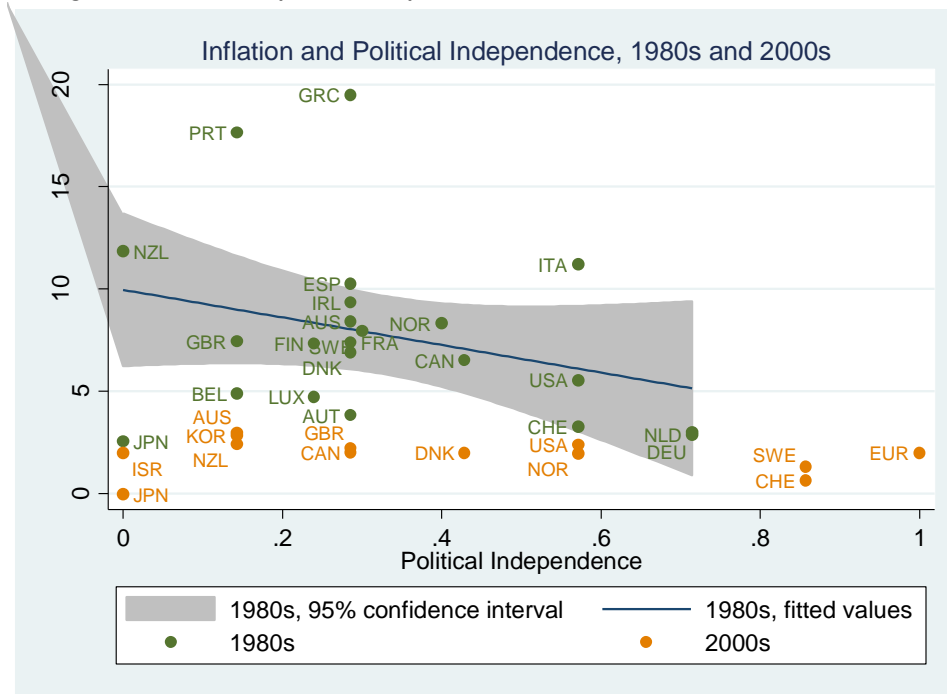
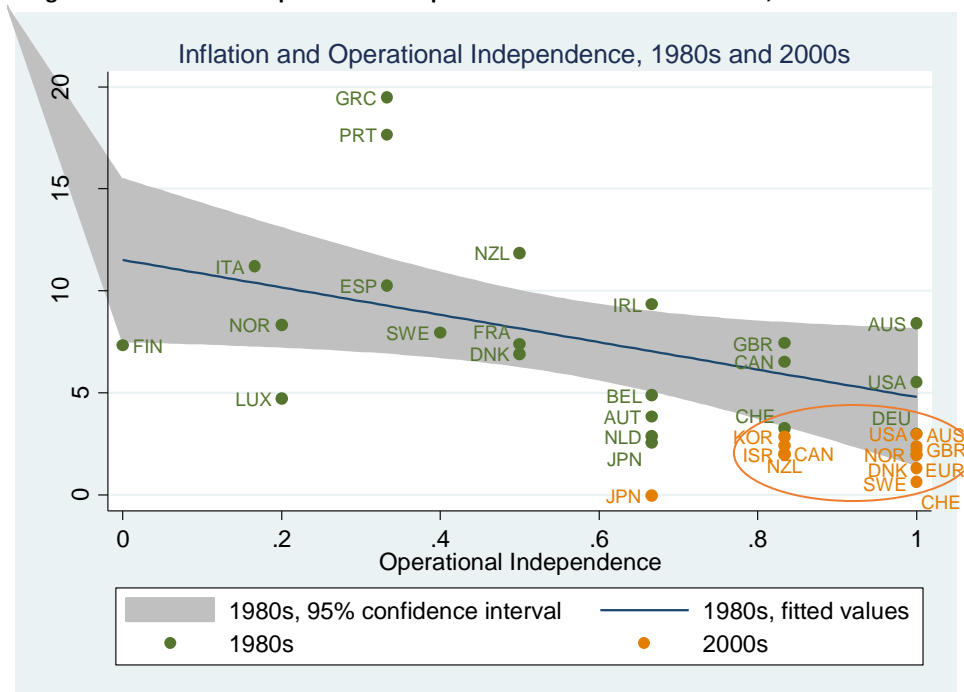


Figure 10: Inflation and operational independence in advanced economies, 1980s and 2000s



## Lessons from pre-crisis period for advanced economies: summary

Revisiting central bank independence before the crisis has suggested the following:

- **Operational independence has a negative and significant relationship with inflation** in advanced economies in the 1970s and the 1980s. (As shown by DeBelle and Fischer 1994 and DeHaan and Kooi 1997).
- **Political independence is not significantly related with inflation** in advanced economies in any of the time periods we examined<sup>22</sup>.
- **Advanced economy central banks have become significantly more operationally independent** since the 1980s – but there has been no such trend for political independence.
- In the 2000s and 2010s, **almost all advanced economy central banks are fully operationally independent**, and the main variation in central bank independence comes from cross-country differences in political independence.
- As such, there is insufficient variation in operational independence to see any significant regression results. But correlation plots suggest that **the relationship between inflation and operational independence in the 2000s is close to what the relationship from the 1980s** would have predicted.

Since the evidence from the 1970s and 1980s suggests operational independence is important for inflation control, and since the evidence from the 2000s and 2010s does nothing to refute that claim, we believe that operational independence of central banks in monetary policy should be maintained unless there is strong evidence to suggest that it is damaging to other central bank objectives.

Since, however, political independence does not seem to have been empirically associated with inflation control in advanced economies – and, consistent with this, since few central bankers or academic-practitioners appear to perceive it as important – we believe that there can be some flexibility in reducing central banks' political independence in advanced economies in order to accommodate new functions in the post-crisis era.

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<sup>22</sup> This result holds when altering the country sample to remove plausible outliers, and when using the Cukierman Neyapti and Webb (1992) measures instead of the GMT measures. The results with the CWN measures are shown in Annex A.

## Emerging/developing economies: operational *and* political independence are important?

In advanced economies, governments and central banks have come to a general consensus about the way monetary policy works and the optimal set-up for macroeconomic stabilization – at least pre-crisis. Stronger institutions mean both that political interference in monetary policy may be relatively unlikely and that legal measures of central bank independence may reflect relatively accurately the conditions in practice. In contrast in emerging or developing economies which may have weaker political institutions and/or greater pressure for high GDP growth, the objective functions of politicians versus central bankers may be less aligned, and there may be more political interference with allegedly independent monetary institutions. In this case, mere operational independence may not be enough: where institutions are weaker, insulating central banks from political pressure to pursue inflationary monetary policy is likely to be more important<sup>23</sup>.

The literature bears out this hypothesis to some degree. While studies have found mixed results of the effect of legal indexes of central bank independence on developing economies' levels of inflation, the *de facto* freedom from political interference, as proxied by the frequency of central bank governor turnover, is strongly related to inflation in developing economies (Cukierman, Webb, & Neyapti, 1992; Crowe & Meade, 2008; De Haan & Kooi, 1997). This result strongly suggests that political central bank independence is important in developing economies.

## Empirical evaluation: tentative support for conclusion that central bank independence is important for inflation control.

Our regressions on the importance of central bank independence in emerging/developing economies, and on the relative importance of operational versus political independence, do not allow strong conclusions to be drawn. Following recent literature (Dincer and Eichengreen 2014, Crowe and Meade 2008), we regress average inflation on the degree of central bank independence for developing and emerging economies in the 1970s, 1980s and 2000s controlling for real GDP, openness, the exchange rate regime, two institutional measures (constraints on the executive and democracy), and whether the country had an IMF program in the 1990s. We find that central bank independence is significantly related to inflation in developing economies in the 1970s and in developing economies in the 2000s – but not in developing economies in the 1980s or emerging economies in the 2000s<sup>24</sup> (results are presented in Annex A).

We then repeat the regressions, breaking down the central bank independence variable into operational and political independence. In the 2000s in developing economies, it is only the operational components

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<sup>23</sup> While not making the distinction between operational and political independence, Acemoglu et al (2008) show that central bank independence is most effective in countries with intermediate quality institutions, where central bank independence is both meaningful (because institutions are sufficiently good that central bank governance structures/laws are observed in practice) and useful (because institutions are sufficiently weak that the central bank needs to be insulated from political pressure).

<sup>24</sup> We term all non-advanced economies “developing” in the 1970s and 1980s, but draw a distinction between emerging and developing economies in the 2000s. The classification for emerging economies is drawn from Arnone et al (2008), which was the IMF classification for 2003, the year for which their CBI index was calculated.

of independence that are significantly related to inflation. In the 2000s in emerging economies, and in the 1970s and 1980s in developing economies, there is no significant relationship with either variable when breaking out operational and political independence (results in Annex A). This could be because of multicollinearity issues – since the aggregate variable for CBI was significant in the 1970s and the 2000s, but a breakdown of its components was not – although in some periods the correlation between the political and operational measures of independence is not high (range between 0.2 and 0.4).

### Central banks' decisions suggest that political independence may be more important in emerging/developing economies than in advanced economies

While the regression results are inconclusive, emerging and developing economy central bank reforms point toward the importance of both political and operational independence. The vast majority of emerging/developing economy central banks became more operationally independent over the 1980s to 2003: of the fifty-one emerging/developing economy central banks on which we have data for the 1980s, only two – Thailand and the Bahamas – became less operationally independent over that period (figures 12 and 14). This suggests that, as in advanced economies, operational independence is considered important by those instituting central bank reform in emerging and developing economies.

Different from advanced economies however, the majority of emerging/developing economy central banks also increased their political independence over the period, although the pattern was more mixed than for operational independence. Thirteen central banks became less politically independent, and a large proportion only increased their political independence by a small amount (figures 11 and 13).

These changes could reflect an understanding from individual developing economy governments and central banks that both aspects of independence are important. It could, however, also reflect the fact that the IMF was promoting increases in central bank independence – both operational and political – during that period, and many countries had IMF programs. In figures 11 and 12 below, we colour code the countries according to whether they had an IMF program over 1993-2002 (the CBI measurements are recorded in 2003).

Consistent with these results, emerging economies tend to have higher political independence than advanced economies, although their operational independence is a little lower. Developing economies have generally lower levels of central bank independence than advanced and emerging economies (figure 15). Disaggregating the operational and political independence variables, emerging economies have the biggest difference over advanced economies along components which involve institutional designs to restrict political interference in the monetary policy-making process: legal protections for the central bank, no government approval for the formulation of monetary policy, and the governor and central bank board appointed without government involvement (figures 16 and 17).

As we note above, legal measures of central bank independence may not represent the practical reality in emerging/developing economies, as actual central bank independence depends on the quality of formal and informal institutional arrangements as well as the possibility of political pressure exercised irrespective of institutional arrangements (Cukierman 2008, Cukierman et al 1992).

Figure 11: Political central bank independence in developing economies, 1980s and 2003

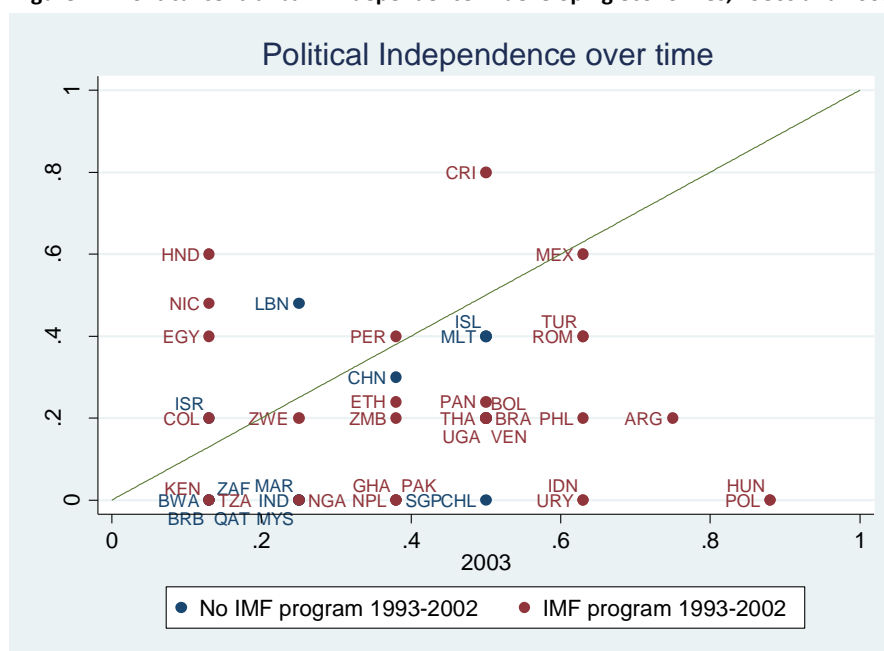
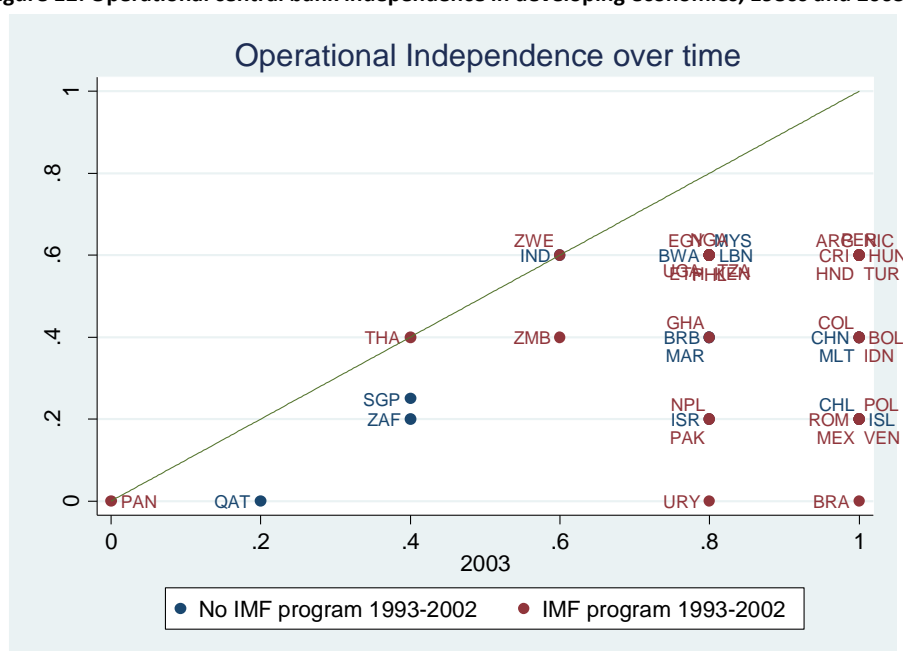
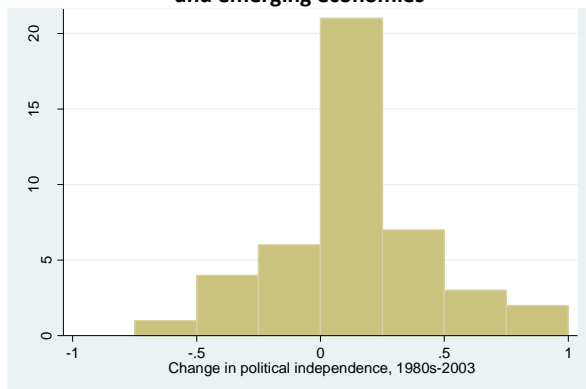


Figure 12: Operational central bank independence in developing economies, 1980s and 2003<sup>25</sup>

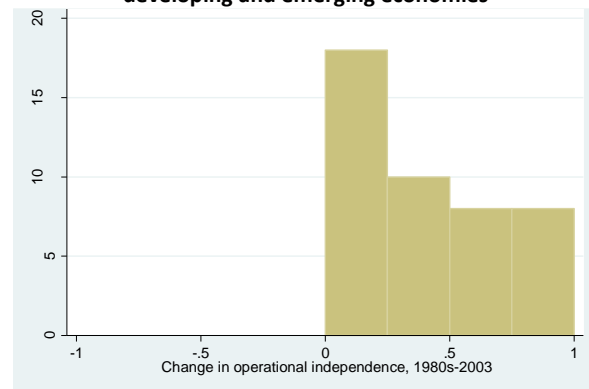


<sup>25</sup> Our measure for operational independence for emerging economies is unable to include the component on control over the discount rate because this is not part of the Arnove et al (2007) updates of the GMT index for emerging economies. As such this operational independence index is primarily an indicator of the limits on lending by the central bank to the government.

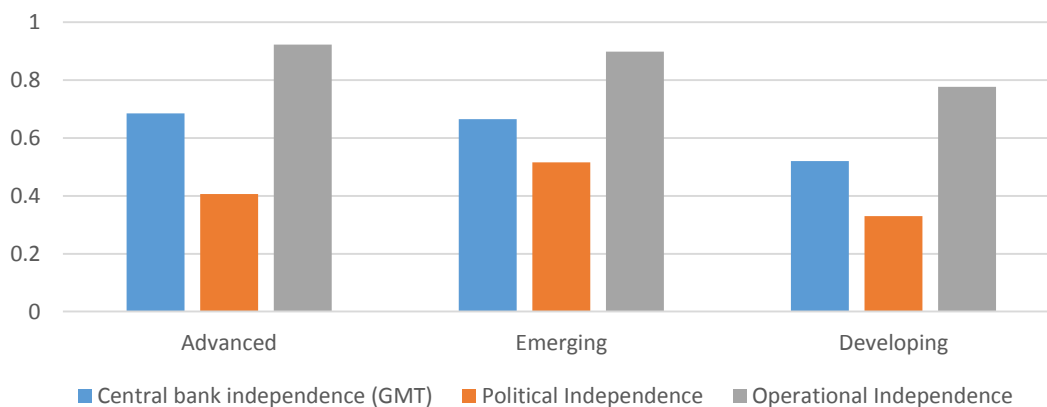
**Figure 13: Changes in political independence in developing and emerging economies**



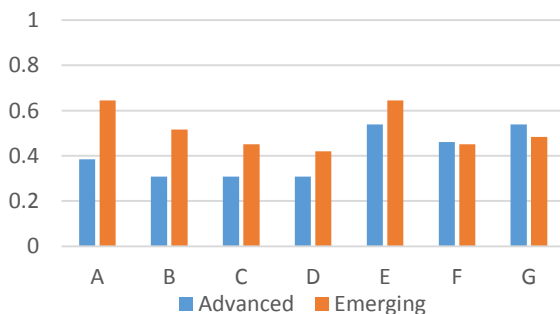
**Figure 14: Changes in operational independence in developing and emerging economies**



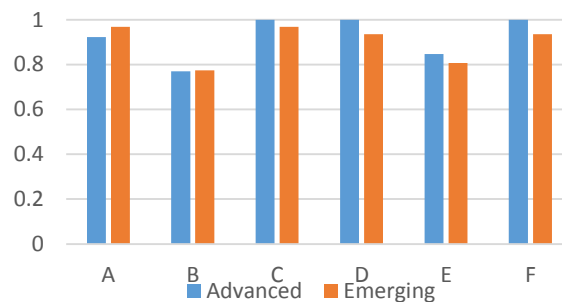
**Figure 15: Central bank independence and components in advanced, emerging and developing economies 2003**



**Figure 16: Components of political independence in advanced and emerging economies, 2003**



**Figure 17: Components of operational independence in advanced and emerging economies, 2003**



#### Political Independence Criteria

- A** No government approval is required for formulation of monetary policy
- B** Central bank board appointed for more than 5 years
- C** CB board appointed without govt involvement
- D** Governor appointed without govt involvement
- E** Legal protections that strengthen the central bank's position in the event of a conflict with government.
- F** Governor appointed for more than 5 years
- G** No mandatory participation of government representatives in the central bank board

#### Operational Independence Criteria

- A** No automatic procedure for government to obtain direct credit from central bank
- B** When available, credit extended to government at market interest rates
- C** Credit is temporary
- D** Credit is for limited amount
- E** Central bank does not participate in primary market for public debt
- F** Central bank responsible for setting policy rate

## Lessons from pre-crisis period for emerging/developing economies

Our work supports previous empirical work which suggests that central bank independence as a whole is important in emerging and developing economies. Yet our regressions cannot distinguish the relative importance of operational and political independence.

It is highly plausible that, unlike in advanced economies, *both* operational and political independence are important for inflation control in emerging and developing economies with weaker institutions.

We note that developing economy central banks tend to have become more independent on *both* the operational and political components of independence, and that central banks in emerging economies have higher levels of political independence on average than central banks in advanced economies. In addition, studies have found that the central bank governor turnover rate – a proxy for the *political* independence of the central bank – is positively and significantly related to inflation in developing economies<sup>26</sup>. These provide some evidence in favour of the hypothesis that both operational and political independence are important in emerging and developing economies.

## Operational and political independence in the Eurozone

We note additionally that the ECB, the central bank of a group of advanced economies, has many of the characteristics of an emerging economy central bank set-up. The ECB is fully operationally and politically independent from national governments. Operational independence without political independence, as we have argued above, only works well when there exist strong and well-developed institutions which are able to hold politicians to account, and which are able through scrutiny to disincentivise politicians who attempt to subvert central bank independence.

In the Euro area, however, there exists only a nascent European polity, less Euro area-wide scrutiny from both political institutions and media, and arguably a lack of a powerful and representative political body to which the ECB is effectively accountable (although surely that is a potential role for a formalised Eurogroup or Ecofin, the Council of finance ministers). In this way, the ECB's high level of independence on both the operational and political components is reflective of its unique institutional context.

While the ECB may be independent from national governments however, it does not operate in an apolitical vacuum. Given the incomplete nature of the monetary union, the ECB must inevitably interact with political actors such as other national governments. Draghi's commitment to do "whatever it takes" by implementing the Outright Monetary Transactions was, in part, a response to the failure of other political authorities to shore up the single currency during the euro-zone crisis. Similarly, Wyplosz (2015) argues that the ECB's refusal to extend emergency liquidity to Greece in 2015 was an example of the ECB's politicization and "central bank dependence".

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<sup>26</sup> Cukierman et al (1992), Crowe and Meade (2008), Dincer and Eichengreen (2014).

## Post-crisis: Do we still need – or want – independence in monetary policy?

The pre-crisis evidence indicates to us the importance of operational independence of monetary policy for developed countries. The context of monetary policy in the post-crisis period, however, is different. In particular, periods of too-low inflation in liquidity trap situations are likely to occur more frequently and for longer periods than was assumed under the pre-crisis consensus. This raises the questions: do we still need operational independence? Could it be damaging?

In the absence of sufficient data from the post-crisis period, we attempt to answer these questions from first principles, and using the newly-developing literature on the subject. Our discussion is inherently normative and, frequently, raises more questions than it can provide full answers.

Operational independence was important in the 1970s-1990s: “normal” economic circumstances where there was a need to stabilize inflation over the economic cycle, a short-run trade-off between growth and inflation, and an economy which was able to equilibrate aggregate demand and aggregate supply over the course of the economic cycle.

The current period has exposed that economies are more prone to liquidity traps than had been expected pre-crisis. In addition, the secular stagnation hypothesis (Summers 2014) posits that these situations are more than temporary, and that advanced economies are suffering from a period of prolonged low aggregate demand and an excess of desired savings over desired investment. In liquidity trap or secular stagnation situations, characterized by insufficient aggregate demand and ineffective conventional monetary policy constrained by the zero lower bound, it is unlikely that central bank independence is useful, and it could even be damaging.

Since there is uncertainty about the correct future macroeconomic paradigm, the case for operational independence in the future must rest on a balance between the benefits of operational independence in normal times and the possible costs of operational independence when at the zero lower bound, weighted by the expected probability or length of time that an economy is at the zero lower bound. This balance may well be different for different countries. Japan has been at the zero lower bound of nominal interest rates for most of the last twenty-five years.

We have argued that the bulk of evidence suggests that there are substantial benefits for developed countries from operational independence in normal times, but few benefits from political independence.

We now argue – more speculatively – that the costs of political independence at the zero lower bound may be high, but the costs of operational independence are likely to be low.

The core difference between normal times, and situations at the zero lower bound, is the ability of central banks to do all necessary macroeconomic stabilization without involvement in fiscal matters or intervention from government. When conventional monetary policy is constrained by the zero lower bound, central banks should take aggressive unconventional monetary policy measures, and coordinate with fiscal authorities on economic stimulus and debt management. While coordination with fiscal authorities may jeopardize the political independence of a central bank, a purely *operationally* independent central bank with a symmetric inflation target would be free to cooperate and coordinate



as required with a finance ministry over these issues<sup>27</sup>. We discuss possible institutional structures for this coordination in the fiscal-monetary coordination section below.

An additional concern with central bank independence at the zero lower bound may be that central banks will undertake insufficiently expansionary monetary policy. This would particularly apply under the Rogoff (1985) model of central bank independence where, to overcome time consistency problems, the government appoints an inflation-averse central banker (but not under the Walsh (1995) model where central bankers can be incentivized to achieve their inflation targets). In times where excess inflation is a problem, the welfare costs of this decision are small. But at the zero lower bound where optimal monetary policy would do all it can to stimulate inflation, the welfare costs may be large in terms of lost output (possibly magnified over the longer term by hysteresis effects).

We believe this problem could certainly apply to politically independent central banks, where the government has little control over the central bank's target and little recourse to hold the central banker accountable. In these cases – political independence (or goal independence) of a central bank may be problematic if central banks choose too-low inflation targets. With solely operationally independent central banks, however, this problem *should* not arise as long as the central bank can credibly commit to higher inflation. A symmetric and sufficiently high inflation target set by the government avoids any disinflationary bias in monetary policy, provided the central bank is able to be held accountable (for example, with relatively short term limits for the central banker, and the possibility for the government to reappoint the central banker if her/his performance has been deemed effective). That is, a central bank that is operationally independent but not politically independent.

Note that this set-up does not stipulate what the inflation target should be. Consensus prior to the financial crisis generally placed the optimal inflation target at around 2 percent, which was considered to minimize the costs of inflation and the probability of entering an inflationary spiral, while also being sufficiently high to avoid falling into a liquidity trap situation at the zero lower bound. Some economists have advocated a higher inflation target in recent years, arguing that the probability of hitting the zero lower bound on nominal interest rates is higher than previously believed, and that a higher inflation target would allow monetary policy to set more strongly negative real interest rates in times of crisis (Blanchard, Dell'Ariccia, & Mauro, 2010).

This is an important debate and the answer is not yet clear. Institutionally, however, we would argue that the choice of the inflation target should be within the purview of the government and the central bank should be operationally independent in its efforts to meet that target. Alongside an effective accountability framework this enables the government to counter any potential disinflationary bias of the central bank and to adapt the monetary policy framework if the economic environment fundamentally shifts.

As such, we argue that the argument for operational independence remains strong in normal periods where inflationary pressures exist and interest rates are above the zero lower bound. We also argue

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<sup>27</sup> Summers (2016) notes: “when the primary policy challenge for central banks was establishing credibility that the printing press was under control, it was appropriate for them to jealously guard their independence. When the challenge is to accelerate, rather than brake, economies, more cooperation with domestic fiscal authorities and foreign counterparts is necessary”. We believe that fiscal coordination can be achieved alongside operational independence.

that there are few or no costs to maintaining operational independence at the zero lower bound as long as deflationary bias is avoided through a symmetric inflation target set by the government.

In contrast the argument for political independence in advanced economies is weak in normal periods of higher inflation, and the costs of political independence may be high if it impedes monetary-fiscal coordination and effective macroeconomic stabilization policy at the zero lower bound.

For emerging market economies, the issue is more complex. The above arguments for operational independence hold – operational independence is important in normal times, and likely not to be costly at the zero lower bound – , but the arguments around political independence are different for emerging than for advanced economies. We have argued that political independence is likely to be important for emerging economies, as with weaker institutions it is necessary to restrict any possible pressure on the central bank to pursue too-inflationary monetary policy or monetary financing of government debt. Yet this political independence may prevent the monetary-fiscal coordination necessary for macroeconomic stabilization at the zero lower bound: joint monetary-fiscal decision-making bodies with shared objectives and/or processes removes some of the separation between monetary and fiscal authorities designed to protect the central bank’s political independence. This may not matter when the problem is raising inflation, not lowering it. However, the existence of these structures to act in unusual times may also enable politicians to exert pressure on central banks during normal times. Hence our conclusion that for emerging market economies, issues of political independence are likely to be more important – and there is not yet a clear-cut answer as to how to trade off these competing priorities.

As such, **our discussion for the next section of the paper will primarily focus on advanced economies.** To the extent that many emerging economies have managed to stay far from the zero lower bound in recent years, the discussion to follow is also likely to be more imminently relevant for advanced economies. We hope that further research will investigate these questions in more detail for emerging and developing economies.

## 4. Central banks' new functions: a systematic approach

In the post-crisis period, central banks have taken on a range of new responsibilities alongside their core roles as monetary policy maker and as lender of last resort. Many central banks now have mandates to supervise financial institutions and to ensure financial, as well as price, stability. In order to achieve these new objectives, they have gained a range of new powers, including systemic risk monitoring, macro- and micro-prudential regulation, crisis management and policing financial conduct. Some central banks have even adopted mechanisms to coordinate monetary policy with fiscal policy and debt management.

This expansion of powers, however, has not been uniform. The mandates, tools and institutional structures of central banks now vary widely across countries because no consensus has been reached as to the correct approach. This may partly reflect the fact that the expansion of central bank powers has happened largely as an urgent and necessary response to the financial crisis and its aftermath. The need for *some* institutional reform may have overridden the desire to find the optimal framework.

This diversity of approaches also reflects difficult questions around how best to structure and allocate responsibility for these new areas. Central banks' new powers are likely to interact with monetary policy and central bank independence in complex ways. New responsibilities could distract from or conflict with central banks' core functions as monetary policy-maker and lender of last resort, or could risk involving the central bank in complex inter-agency politics or contentious policy areas, potentially jeopardizing both the efficacy and the independence of the central bank.

As a result, countries around the world are wrestling with how to structure their money-credit constitutions. In the US, many worry that the new powers and responsibilities outlined above are too fragmented across institutions. For example, the Federal Reserve lacks appropriate macro-prudential powers (Fischer S. , 2015). At the opposite end of the spectrum, the Bank of England might now be too powerful as financial stability responsibilities and powers are centralized within it (Buiter, Central Banks: Powerful, Political and Unaccountable?, 2014). In Sweden, some policy-makers are reviewing whether it is appropriate to house bank supervision and macro-prudential policy outside of the Riksbank (Ingves, 2016). Similar debates are raging elsewhere.

All of this highlights the need for a systematic approach to deciding how – indeed, if – central banks should adopt these new powers and responsibilities.

Any approach to evaluating the central bank's role in new policy areas is inherently subjective and depends on a country's particular political and economic context. Yet there are common principles which can determine the institutional design of these new powers. Drawing on insights from economics, public choice theory and politics, we develop a framework to evaluate whether each new responsibility should be located in the central bank. Broadly speaking, this framework rests on three questions:

1. What are the benefits of locating this policy inside the central bank?
2. What is the cost of doing so to the central bank's core monetary policy functions?
3. Might housing this policy inside the central bank undermine its operational independence?

## 1. What are the benefits of locating this function inside the central bank?

A function could be located in the central bank, government, or elsewhere. For new coordination responsibilities with fiscal policy or debt management for example, the leadership responsibility could conceivably lie with either government or the central bank. For new financial stability powers, responsibility could lie within government, in the central bank, or in a separate agency such as the financial regulator. To maximize the effectiveness of the new function, we should consider the need for independence from government, the expertise required and the need for coordination.

### *1a. Does decision-making need to be operationally independent?*

If a policy area is vulnerable to problems of dynamic inconsistency, the political business cycle or powerful vested interests, it is attractive to house it in an independent institution such as the central bank (Alesina & Tabellini, 2004). In addition actions by, or recommendations from, independent institutions can provide governments with the political legitimacy to make unpopular decisions. As we argue earlier in this paper, operational (and not also political) independence is likely to be sufficient to guard against these problems for advanced economies.

### *1b. Does the central bank have valuable resources and expertise for this function?*

The central bank's most important resource is its capacity to provide unlimited amounts of liquidity to the financial system. The central bank also usually has analytical resources that few other institutions can rival. Finally, the central bank may derive relevant information and expertise from its other functions. For example, as bank supervisor, the central bank could gather useful information for its lender of last resort duties.

### *1c. Does this policy area require coordination across agencies? (E.g. information sharing, joint monitoring and coordination)*

If complex coordination across agencies is required, the government may be better placed to take the lead because it has the legitimacy to compel other agencies. Indeed, it has the legitimacy to wield sufficiently decisive authority to navigate political and economic obstacles, particularly in times of crisis. By contrast, the central bank should avoid situations in which it fights "political" turf wars with other institutions. Not only may the central bank lack the authority to do so, hence slowing down decision-making, fighting political battles with other agencies may undermine support for its independence.

There may be benefits to centralising powers within one institution such as the central bank: decision-making may be swifter than if these powers are split across agencies or reside in a committee comprised of several agencies. The greater the need for information-sharing and cooperation, the more likely centralisation of powers is to enable effective policy-making and avoid turf wars between agencies. On the other hand if decision-making is too centralised in one institution, there is a danger of group think and other behavioural biases (Haldane, 2014). Decision-making structures can be designed to mitigate this (Warsh, 2014), such as the addition of external members to decision-making committees, but these may be less robust than breaking up monetary policy and other mandates across several institutions.

## 2. What are the costs of locating this function inside the central bank?

Monetary policy, and the related function of providing liquidity to the financial system, should be the central bank's primary objective: no other institution is capable of performing these tasks. As a

result, the central bank should only take on new powers and responsibilities if they either support or impose only a small hindrance on the central bank's core monetary policy function, either in terms of objectives or tools:

*2a. Is there harmony between the objectives of the new function and those of monetary policy?*

Burdening a central bank with new objectives in addition to its core price stability and lender of last resort duties has costs. Where tensions exist between objectives, dual mandates may lead central banks to sub-optimally prioritise one objective. For example, central banks with a responsibility for supervising banks may keep monetary policy looser than is necessary for price stability in order to inflate away a debt overhang after a crisis. This may lead to time-inconsistency, and therefore an inflation bias (Smets, 2013). Alternatively, given that the inflation target is a quantifiable objective, a central bank may feel that it is more likely to be held accountable for short-term inflation rates rather than a “fuzzier” financial stability mandate that involves minimising long-term tail risks. This might be exacerbated if the business cycle and the financial cycle may be of different lengths (Borio, 2012). As a result, a central bank may privilege pursuit of the former at the expense of the latter (Holmstrom & Milgrom, 1991). If its institutional focus on inflation is diluted, it may lose credibility. With competing objectives and tools, a central bank may also struggle to communicate its intentions effectively.

On the other hand, to the extent that there are trade-offs between two objectives in related policy areas, a single institution responsible for both objectives may be best able to internalise these trade-offs. For example an agency focused solely on financial stability may pursue the “stability of the graveyard”, while an agency focused solely on price stability may be excessively hawkish on inflation even in the face of financial sector difficulties; in contrast a central bank with mandates for both price and financial stability can internalize the trade-off between financial stability and economic dynamism, since its (symmetric) inflation mandate forces it to care about growth (Blanchard & Gali, 2007).

*2b. Is there harmony between the tools of the new function and those of monetary policy?*

If tools for monetary policy and a particular new policy can be used independently without affecting each other, this policy can be housed in a separate institution from the central bank. But if instruments in a policy area interact strongly with monetary policy tools, it becomes more beneficial to have the new policy area housed in the central bank, which could manage the conflict most effectively. For example, both monetary policy and macro-prudential tools vary the cost of credit, and if these tools are working at contretemps, it can lead to a sub-optimal push-pull dynamic (Kohn, 2015). As an additional benefit, by expanding its powers, the central bank may also gain information/expertise that boosts its effectiveness at its core monetary policy responsibility.

*3. Does this function pose a threat to central bank independence?*

As discussed above, it is important to maintain operational central bank independence in monetary policy. The legitimacy of this independence can only be ensured through a framework of transparent and frequent accountability to the government. While these mechanisms exist for monetary policy, the legitimacy of central bank independence may be jeopardized by a perceived

lack of accountability or politicization of the central bank in its new functions. Since central bank functions and the theory of their independence may be poorly understood, backlash against an independent central bank action in one new policy area may undermine support for its independence in monetary policy. If political pressures build on central banks, these institutions may also become reluctant to take controversial decisions or to stand up to governments.

### *3a. Can a clear and transparent accountability mechanism be created for this function?*

The legitimacy of central bank independence rests on an ex-ante mandate and on ex-post accountability mechanisms defined and assessed by the democratic process. If this operational scope is poorly defined, the central bank may over-reach. Or, conversely, it may come under intense political pressure to do more if its mandate is unclear. Some of central banks' new objectives are difficult to define clearly: in particular, financial stability (Cecchetti, 2013). If objectives and tools are difficult to define clearly, the involvement of democratic institutions in the decision-making process will help ensure accountability and insulate the central bank from political pressures.

As the previous section of this paper argued, operational autonomy can coexist (at least in advanced economies) with politicians setting mandates, providing oversight and accountability, as well coexisting with coordination between the ministry of finance and the central bank. This coordination is particularly important because there are likely to be wider economic and political goals that require ministry of finance involvement: for example, interventions in the housing market may need to satisfy distributional as well as efficiency goals. Coordination bodies like the FSOC in the US or the FSC in Sweden help mitigate these concerns.

There is often a trade-off between insulating decision-making from short-term political pressures and protecting technocratic bodies that regularly make controversial decisions from a long-term loss of legitimacy. One potential solution is for the government to set an annual remit for a technocratic body which can take decisions in an operationally independent fashion, and which provides it with political legitimacy. For instance, the UK Treasury recommends that the Bank of England's Financial Policy Committee focus on particular areas every year. In 2016, it called for the FPC to take account to the need to promote productive long-term investment in the economy (Her Majesty's Treasury, 2016).

### *3b. Can this function avoid first order distributional impacts?*

If the central bank is involved in the allocation of resources between sectors or groups, it is at risk of being politicised (for example, varying credit standards for first-time house buyers). This may undermine public support for the institution, and is likely to generate political pressure and lobbying, which may lead to regulatory capture (Stigler, 1971). While monetary policy also distributional impacts, with differential effects across sectors of the economy and groups of the population, the distributional impacts of financial stability policies may be more problematic both because the mechanism by which the central bank should act is less consensual (and therefore more subject to criticism that a political choice has been made), and because in contrast to the central bank's inflation target and monetary policy tools, financial stability actions may be focused only on one specific sector. To maintain democratic accountability for major distributional choices, and to protect the central bank from politicisation, the central bank

should seek to minimise its exposure to such decisions or seek government approval of its decisions in these areas.

### *3c. Can this function be performed without public money?*

In order to maintain support and remain legitimate, an unelected central bank should not put taxpayers' money at risk. Of course, this is a matter of degree. Central banks' existing functions do have fiscal implications. By altering the shape of the yield curve and the size of the central bank's balance sheet, conventional monetary policy – which should remain operationally independent – impacts a government's debt management costs and seignorage revenues. The threat to central bank independence is likely to be significantly larger when these institutions begin taking on large amounts of credit risk, particularly to specific – and politically unpopular – types of institutions and asset classes.

If a central bank cannot avoid decisions that expose the state balance sheet to significant losses, it must seek government approval of its decisions. Under its Memorandum of Understanding on resolution planning and financial crisis management, the Bank of England can trigger Treasury involvement in decision-making if it believes that there is a material risk to public funds.

The questions in our framework for central bank design apply equally to developed and emerging economies. But the answers that they yield for a given policy may differ. For example, in emerging markets, central banks often have significantly more operational capacity than other domestic institutions, so it may make sense to house more policies in them despite some of the dangers outlined above. As our earlier empirical data suggested, political independence is also more important in emerging than in developed economies. The tensions between many of these new functions – which require significant amounts of involvement with or coordination with politicians – and political independence could be significant in emerging economies. Further work needs to be done to assess these higher-stakes trade-offs in order to establish the optimal structure for a modern central bank in emerging economies.

As a result of all this, our recommendations below will primarily apply to advanced economies.

## 5. A template for ideal central bank independence

Using the framework laid out in Section 4, we approach each of central banks' new policy responsibilities in turn, discussing the rationale for the new policy area, evaluating the grounds for the central bank to be involved and setting out the accountability mechanisms required. Finally we make a – necessarily subjective and normative – recommendation on an institutional architecture that can maximize the benefits of the central bank's involvement in the new policy area while avoiding encroachment on operational independence in monetary policy. In table 4 overleaf, we present a summary of our conclusions for each new policy area.

## Monetary Policy

As a quick check for the appropriateness of our framework, we scored the central bank's traditional function of monetary policy on the basis of the criteria laid out above in section 4. Given its ability to create high powered money and vary its balance sheet almost at will, the central bank is of course the most effective home for monetary policy. By definition, there are no adverse interactions between monetary policy and itself. Finally, the central bank's core monetary function poses limited risks to the institution's independence. The government can build a precise and clear accountability framework around an inflation target and conventional monetary policy decisions have few first order distributional or fiscal implications<sup>28</sup>.

Admittedly, this may be less true for unconventional monetary policy such as QE and targeted lending programs such as the Bank of England's Funding for Lending Scheme. But central banks generally seek to minimize these concerns by concentrating their purchases on government securities and seeking explicit government approval if they are taking on credit risk.

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<sup>28</sup> Domanski, Scatigna and Zabai (2016) argues that unconventional monetary policy has contributed to rising wealth inequality in advanced economies since the Great Recession. Unconventional monetary policy has also had fiscal implications in terms of debt management policy, as we discuss below.



Table 4: A Template for ideal central bank independence

	The benefits of locating this function inside the central bank.			The cost of locating this function inside the central bank.		The threat this function poses to central bank independence			Recommendation
	Does decision-making need to be operationally-independent?	Does the CB have valuable resources & expertise for this function?	Can the CB operate independently in this function?	Is there harmony between the objectives of the new function and those of monetary policy?	Is there harmony between the tools of the new function and those of monetary policy?	Can a clear and transparent accountability mechanism be created for this function?	Can this function avoid first order distributional impacts?	Can this function be performed without public money?	<b>Legend:</b> ✓ = Yes ~ = Somewhat X = No
Monetary Policy	✓	✓	✓	✓	✓	✓	✓	✓	Monetary policy should be housed in the central bank.
Monetary-fiscal coordination	X	✓	X	✓	✓	✓	✓	~	At the ZLB, the central bank should coordinate with government and take a view on fiscal stance.
Monetary- debt management coordination	X	✓	X	✓	✓	✓	✓	X	At the ZLB, there should be coordination between MP and debt management.
Systemic risk monitoring	✓	✓	X	✓	✓	~	✓	✓	A systemic risk monitoring body should bring together regulators but be led by the government.
Macro-prudential tools	✓	✓	~	✓	✓	~	~	✓	A macro-pru policy committee should bring together different regulators but be led by CB.
Crisis management	X	✓	X	~	~	X	X	X	The CB should not take the lead in crisis management.
Bank supervision	✓	X	✓	~	~	~	~	✓	We are neutral about whether the central bank should have supervisory responsibilities.
Bank Conduct	✓	X	X	✓	✓	~	X	✓	Conduct should not be housed within the central bank

## Monetary-Fiscal Coordination

Prior to the financial crisis, there was a consensus that monetary policy could generally achieve optimal output stabilization regardless of the path of fiscal policy. Policy interactions between monetary and fiscal policy were small or could be internalized by the monetary authority (Woodford 2010). If a government did attempt to engineer a boom by loosening fiscal policy, an independent central bank could fully offset the effect on aggregate demand with contractionary monetary policy, returning the economy to its optimal path (and vice versa). As such, monetary-fiscal coordination was unnecessary. In fact, it was often considered dangerous to have close cooperation between these two policy arms (Duisenberg, 2003). At the extreme, it might encourage the government to accumulate such large amounts of debt that monetary policy is effectively dominated by the need to keep official borrowing costs low (Bossone, 2015; Jácome & Mancini-Griffoli, 2014).

The last few years have frayed this consensus. Conventional monetary policy now appears likely to be constrained by the zero lower bound far more frequently, and for longer, than previously assumed. When an over-indebted private sector is determined to deleverage, even unconventional monetary policy action will struggle to revive an economy (Leeper, 2010). As a result, fiscal stimulus may be necessary to stimulate the economy at the zero lower bound. In fact, there are growing calls for the central bank to make explicit “helicopter drops” to finance fiscal policy. Under these proposals, the central bank would create reserves for the government to spend or to fund tax cuts, releasing it from the need to issue debt (Bernanke, 2016; Turner A. , 2015).

All of this suggests the need for greater coordination between fiscal and monetary policy. But the post-crisis years have also shown that governments may be unwilling to play their part in this. There is an emerging consensus that fiscal policy is too tight across the developed world, which is undermining the ability of central banks to meet their inflation targets (OECD, 2016; IMF, 2016). At first glance, this is somewhat of a puzzle. The economics literature has traditionally focused on the disposition of governments to run excessively *loose* fiscal policy because of short-term political pressures. But after the financial crisis, governments across the developed world for many years defied mainstream economic advice to loosen fiscal policy. While this may partly reflect governments’ concerns about the long-term fiscal outlook, many economists have argued that recent austerity did not improve fiscal positions much, and may even have worsened them<sup>29</sup>.

Rather, there is reason to believe that fiscal policy is structurally prone to undermine monetary policy at the zero lower bound. Indeed, many governments also responded with austerity in the Depression, the last time that western economies fell into a liquidity trap. One possible explanation for the popularity of austerity at the zero lower bound is that recessions are opportunities for those calling for a smaller state to trim public expenditure. A second is that households, particularly those with the median voters, are sympathetic to the argument that the government must “tighten its belt” at the same time as they do. Third, the government’s understanding of the situation may evolve: it may believe that the recession is a conventional one and that monetary policy can deal with it, or may underestimate the size of fiscal multipliers<sup>30</sup> or overestimate the costs of high deficits in terms of high interest rates. But by the time the economy has fallen into a liquidity trap, the

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<sup>29</sup> DeLong and Summers (2012) demonstrated that in a depressed economy at the zero lower bound (with few supply-side constraints and large fiscal multipliers), even small hysteresis effects could lead expansionary fiscal policy to be self-financing.

<sup>30</sup> As many organizations did during the crisis, including the IMF (Blanchard and Leigh 2013).

government has tied itself to the mast of austerity. Climbing back down would be a political embarrassment.

Whatever the explanation, a government eager to implement austerity has first-mover advantage in a strategic game with the central bank. There is an optimal mix of monetary and fiscal loosening but the government can impose austerity, or put off controversial structural reforms, for its own political gain, because it knows that the central bank will then be forced to aggressively loosen monetary policy. The resulting mix of austerity and aggressive monetary loosening gives the government a high pay off, but is sub-optimal from society's point of view. The central bank is left as "the only game in town" (Tucker, 2015).

As a result of all this, there needs to be an institutional structure that both allows the coordination of monetary and fiscal policy, and that incentivises the government to participate in this coordination. Such a framework should be built around several broad principles.

The first principle is that the central bank should shape the broad outlines of the coordination. Not only does the central bank have macro-economic expertise which is vital if the coordination is to work, its leadership of the process is crucial to avoiding fiscal dominance. The central bank should be in charge of both initiating and ending the monetary-fiscal coordination process. To minimise political pressures on the central bank, the coordination process also needs to be clearly defined at the outset. In the event of helicopter drops, for example, the central bank needs to outline triggers for stopping them, such as an inflation knockout. This will protect the operational independence of core monetary policy, thereby anchoring inflation expectations.

The second principle is that any coordination mechanism must maintain political control over fiscal policy. So although the central bank can propose the outlines of a coordination plan, the government can refuse to participate. What's more, the coordination mechanism must distinguish between the stance and the content of fiscal policy. While the content of fiscal policy does have macroeconomic impact, the overall fiscal stance is more important for the stimulatory effect on the economy. In addition, commenting on individual fiscal spending items both politicises the central bank and undermines the democratic argument for government to retain discretion over tax spending policies. So while the central bank might call for looser fiscal policy, it should not comment on the composition of this loosening.

The third principle is that monetary-fiscal coordination should be strictly limited to situations where interest rates are near the zero lower bound and inflation is below target – situations where conventional monetary policy is ineffective. Even if a coordination mechanism effectively protects central bank independence and preserves democratic control over fiscal policy, entering the realm of fiscal policy still presents considerable threats to central bank independence. The prospect of central bankers routinely commenting on fiscal policy may undermine political support for central bank independence or may open up the central bank to reciprocal criticism over monetary policy from the government. By limiting such coordination to only when it is truly necessary, these risks can be minimised.

In light of these principles, there should be a mechanism for the central bank to comment on the stance of fiscal policy. Once a pre-defined threshold at or close to the zero lower bound has been hit (for example, the discount rate at 0.5% or lower), the central bank could, for example, write a quarterly open letter to the government announcing what it believes to be the appropriate stance of fiscal policy on macroeconomic stabilization grounds. The government would then have a duty to respond to such a letter publicly, either altering its fiscal stance or providing a rationale as to why it

disagrees with the central bank's recommendation. This disagreement could be a disagreement as to the need for fiscal policy for macroeconomic stabilization – or it could be a trade-off between the need for expansionary fiscal policy and another policy priority such as (perceived or real) long-term debt sustainability. While this is perhaps a fairly modest recommendation, this mechanism achieves a measure of coordination while minimising the threat to central bank independence and maintaining democratic control over fiscal policy<sup>31</sup>.

Of course, this framework would need to be significantly enhanced if countries decide to adopt helicopter money. Both Turner (2015) and Bernanke (2016) have proposed institutional set-ups for monetary financing that could meet the three principles outlined above. For example, under Bernanke's plan, the Fed would have the power to create reserves and credit them to a special Treasury account. Congress would then choose how to spend the funds, if at all. The system has the advantage of preserving the Fed's freedom from political influence to finance deficits, as the Fed chooses when and with how much money to credit the account. And it has the advantage of maintaining democratic legitimacy in the spending of the money, by ensuring Congress' involvement. While the details of any institutional set-up for monetary financing would vary by country, we believe the three principles outlined above can guide their design.

**Recommendation for monetary-fiscal coordination:** In normal situations where monetary policy is unconstrained, the existing monetary-fiscal framework in most countries is likely to remain effective: fiscal rules and fiscal watchdogs constrain fiscal excesses and independent central banks stabilize the economy. At the zero lower bound, however, an alternative monetary-fiscal coordination framework is necessary.

A coordination mechanism should be established that respects the following three principles: it should be triggered by the central bank, it should protect democratic control over fiscal policy and it should be limited to the zero lower bound. An open letter system, in which the central bank outlines its views about the appropriate stance of fiscal policy at times when interest rates are below a pre-defined level close to the zero lower bound, would meet these principles.

## Monetary Policy-Debt Management Coordination

Many central banks were founded to manage the borrowing needs of their governments. Yet, by the time of the financial crisis, debt management policy in most countries was carried out in isolation from monetary policy and usually outside of central banks themselves because of concerns about principal-agent problems and conflicts with monetary policy<sup>32</sup>.

Traditionally, debt managers have focused on minimizing the trade-off between the fiscal cost of debt issuance, where short-term debt is often cheapest, and the risk of a country's debt profile,

<sup>31</sup> In Sweden, the fiscal council – a fiscal watchdog – has commented on the cyclical appropriateness of the government's fiscal stance. A third independent body (ie not the central bank or the government) commenting on the fiscal stance is appealing as it avoids opening up the central bank to political criticism or threats to its independence; yet unlike the central bank a fiscal watchdog lacks both expertise in and an explicit mandate for macroeconomic stabilization. We believe that, under a carefully designed framework, the advantages of housing this power within the central bank outweigh the potential threat to the central bank's independence that may result.

<sup>32</sup> For example, the perception might exist that debt management choices were influenced by inside information about monetary policy. The central bank might need to conduct both monetary policy and debt management sub-optimal optimal ways in order to manage these perceptions (Chrystal, 1998).

which is usually best served by longer-term liabilities. The crisis underlined that optimal debt management includes at least two other considerations that are very relevant to monetary policy. First, changes in the supply of different maturities of public debt can impact monetary conditions by influencing long-term interest rates and asset prices. Second, changes in the supply of short-term debt directly affects the supply of safe assets and the liquidity transformation in the financial system (Greenwood, Hansen, Rudolph, & Summers, 2014). While these two factors were considered to be fairly minor prior to the financial crisis (Chrystal, 1998), the last few years have brought them back into the spotlight. What's more, the optimal debt management strategy that minimises the trade-off between these four considerations is likely to be time-varying depending on broader economic and financial conditions (Greenwood, Hansen, Rudolph, & Summers, 2014).

In order to avoid them pulling in opposite directions, there is therefore a need for coordination between debt management and monetary policy. In normal times, the central bank can usually sterilise the macro-economic impact of debt management. But this may be impossible at the zero lower bound because the central bank can no longer use its policy rate to offset the impact of changes in debt management on interest rates. A lack of coordination may even undermine unconventional monetary policy. For example, during "Operation Twist", the US Fed shifted its QE portfolio towards long-term assets in order to reduce long-term government bond yields. But, at the same time, the US Treasury extended the average maturity of its debt, counter-acting the effect of Fed policy on the yield curve (Greenwood, Hansen, Rudolph, & Summers, 2014).

The institutional design of the relationship between the central bank and the debt managers is key to achieving the potential welfare gains from coordination between monetary policy and debt management. The US Fed shied away from such collaboration with the Treasury out of consideration for its independence. This risk can be minimised if the process is led by the central bank (Tucker, 2015). But the central bank's leadership role should be one of coordination not compulsion, since debt management has implications for the cost and risk of government debt, i.e. fiscal implications. The Bank of England co-ordinated in this way with the UK Treasury during the financial crisis, receiving an up-front public undertaking that the UK Treasury would not change its debt management strategy, as well as an indemnity against financial risk to its balance sheet of holding long-term assets (Tucker, 2015).

**Recommendation for monetary policy-debt management coordination:** There is a case for monetary and fiscal coordination on debt management in order to help the central bank influence interest rates across the yield curve. The scope for welfare gains from cooperation is particularly big at the zero lower bound. But this needs to be initiated by the central bank in order to protect its independence and the government should have a veto in order to maintain democratic control over fiscal policy.

## Systemic risk monitoring and macro-prudential policy

The global financial crisis revealed two key weaknesses in our financial stability frameworks (Jenkins & Longworth, 2015). First, supervisors and regulators paid too little attention to the build-up of *systemic* risks. Such risks might build up over time, for example herding behaviour can lead to pro-cyclical investment strategies. Systemic risks might also be cross-sectional as firms develop complex exposures to risks that micro-prudential supervisors, looking only at individual firms, might miss. Supervisors often lacked adequate *macro*-prudential tools – system-wide changes to capital and

liquidity requirements, to market structures and permissible terms of lending – to respond to such risks. Second, many assumed that price stability would guarantee financial stability. As a result, monetary policy-makers largely left financial concerns to supervisors.

Since the financial crisis, countries around the world have started to set up macro-prudential frameworks that can monitor and respond to systemic risks, but as yet there is no consensus about how to structure them. In the UK for example, these powers and responsibilities have been centralised in the Bank of England's Financial Policy Committee (FPC). The FPC identifies systemic risks and is endowed with a range of macro-prudential powers to mitigate them, including loan-to-value limits on mortgages and sectoral capital requirements. By contrast, the US approach is more fragmented. In order to monitor systemic risks, the Financial Stability Oversight Council<sup>33</sup> (FSOC) brings together the country's plethora of financial regulators and is chaired by the Secretary of the Treasury. But, apart from SIFI-designation, the FSOC has no powers of its own because macro-prudential powers are split across several regulators, with the Fed controlling relatively few. In the Eurozone, systemic risk monitoring is carried out by the European Systemic Risk Board in conjunction with the ECB and national regulators; most macroprudential powers belong to national authorities, but the ECB has the power to apply additional requirements for bank capital buffers. In Sweden, the integrated financial regulator, rather than the central bank, is responsible for financial stability. Other countries follow other models.

We will argue that the central bank has a key role to play in monitoring and responding to systemic risks. But this policy area presents significant challenges for central banks because of interactions and interdependencies with monetary policy and because prioritizing and responding to systemic risks is inherently more “political” than monetary policy. As such, new governance structures need to be implemented that both protect the operational independence of central banks and ensure effective accountability for their decisions.

The central bank should be central to any financial stability framework. Like monetary policy, financial stability policy is likely to be vulnerable to political cycles and may also be subject to time inconsistency problems (Caruana, 2011; Bianchi & Mendoza, 2015; Cukierman, 2013), so policy for financial stability should be controlled by an institution with operational independence such as a central bank. In addition, central banks have particularly valuable resources to offer in this area. A central bank's economists and other analytical resources are useful for monitoring systemic risks, and the institution will glean information relevant to financial stability from its other functions such as managing the policy rate and lender of last resort, as well as perhaps bank supervisor.

Central banks are also best placed to internalise the complex interactions between monetary and macro-prudential policies. Monetary policy affects credit growth, which has implications for the health of the financial system. Conversely, macro-prudential policies affect the cost of financial intermediation, which will affect aggregate demand and the prospects for inflation. Encouragingly, over the long term, monetary policy and financial stability objectives are aligned. After all, the transmission of monetary policy requires a stable financial system and, as lender of last resort, the central bank wants to minimise the number of firms that it needs to rescue. But business and financial cycles are not always synchronised. There may be tensions between monetary and financial stability policy in the short- to medium-term if the financial cycle requires tightening but the

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<sup>33</sup> The FSOC “is charged with identifying risks to the financial stability of the United States; promoting market discipline; and responding to emerging risks to the stability of the United States' financial system” (FSOC mission statement). Note, though, that the The Office of Financial Research (OFR), which is part of the US Treasury, supports the monitoring and analysis of systemic risks.

business cycle does not (or vice versa). So there is potential for macro-prudential and monetary policy to operate at cross-purposes.

In order to minimize these tensions between monetary and macro-prudential policy, the central bank should play a key role in the formulation of the latter. The central bank, for example, may want to loosen monetary policy to stimulate the economy now without exacerbating a housing bubble that may threaten price stability later: it can better manage this trade-off if it also has macro-prudential tools at its disposal (Stein, 2013). Cecchetti & Kohler (2014) and De Paoli & Paustian (2013) find that coordination between monetary and macro-prudential policy is optimal. In fact, a central bank could even use macro-prudential measures as active substitutes for the traditional tools of monetary policy if the latter became ineffective. This may be important if, even in an advanced economy with a floating currency, an open capital account undermines a central bank's ability to independently set conventional monetary policy (Rey, 2013).

Conversely, macro-prudential policy-makers may need the help of monetary policy to ensure financial stability. In a world with imperfect information and a less-than-full set of macro-prudential tools, the blunter instrument of the monetary policy rate may be necessary to tackle risks "in all the cracks" of the financial system (Stein, 2013).

There are, therefore, good reasons for the central bank to play a key role in financial stability policy. But this policy area also presents significant risks to central bank independence. First, it might undermine the pursuit of price stability (Mersch, 2017). A dual mandate for both price and financial stability might lead to dynamic inconsistency issues, for example giving the central bank an ex-post incentive to reduce the real burden of private debt through higher-than-optimal inflation (Ueda and Valencia 2012).

Second, it is very difficult to design an effective accountability mechanism that both legitimates housing such important powers and responsibilities in an independent institution *and* that insulates a central bank from the resulting political pressures. In conventional monetary policy, an operationally-independent central bank is able to act quickly within a well-defined process, using agreed-upon tools to reach a clear and transparent objective. This transparency and accountability enables the political system and public to hold the central bank to account and therefore limits the potential risks to central bank independence. In contrast, with macro-prudential regulation we know relatively little about the appropriate ways to define and measure systemic risk, specify goals for macro-prudential policy, or understand the macro-prudential policy transmission mechanism and optimal reaction function. Given constant changes in the nature of the financial system, macro-prudential regulators may have to regularly expand their toolkit as risks shift to different parts of the financial system, perhaps in response to previous macro-prudential measures. This is likely to be particularly true when responding to risks in the shadow banking sector. And as noted by Posen (2017), too much discretion over too many instruments is likely to lead to distrust about motives.

Macro-prudential policy is also more political than monetary policy. Society does not yet have a settled preference about the appropriate trade-off between financial stability and other objectives such as economic growth and providing credit to certain sectors of the economy. Macro-prudential policies may have first order distributional impacts. For example, loan-to-income limits on mortgages are likely to disproportionately impact first-time buyers. Finally, success in financial stability policy is defined by the absence of problems, so a central bank may struggle to justify, ex post, an unpopular measure (Freixas, Laeven, & Peydró, 2015). All this suggests that it is still very difficult for elected governments to draw up ex-ante operational frameworks for macro-prudential policy and therefore points to governments playing a more prominent role in macro-prudential

policy than they do in conventional monetary policy. Perhaps reflecting the “political” nature of macro-prudential policy, Masciandaro and Volpicella (2016) find that higher central bank political independence was associated with lower central bank involvement in macro-prudential supervision.

In order to balance the need for central bank involvement in financial stability policy with a recognition of the “political” nature of this function, we argue that a much sharper distinction must be drawn between political and operational independence than is currently the case in most countries. There should be a separate body for systemic risk monitoring and prioritisation, and for macro-prudential policy. By identifying and prioritising risks to the financial system, the former body provides a mandate for macro-prudential policy. As such, the government should lead this body. But once it has laid out the objectives, an independent body should have operational autonomy to implement macro-prudential policy to meet these objectives. The following two sub-sections elaborate on these recommendations.

#### i. Systemic risk monitoring

Central banks should play an important role in systemic risk monitoring because of their analytical resources and the potential synergies with their other functions. But the central bank should not dominate the monitoring process.

Monitoring risks across the financial system is likely to involve many different regulatory agencies. The endemic nature of regulatory arbitrage in finance makes close coordination important to maintain a uniform degree of resilience across the financial system (Tucker, 2015). Given the uncertainty, complexity and cross-sectoral nature of systemic risk analysis, it is also important to bring together diverse perspectives on these risks in order to encourage debate and avoid group think. If systemic monitoring happens in the central bank alone, it is possible that different objectives and viewpoints are not given appropriate weight in internal discussions, or that information from other financial regulators is not fully available.

The government should also be actively involved in systemic risk monitoring. As discussed above, prioritizing and responding to systemic risks is much more political than conventional monetary policy. If the government plays a key role in the process to identify and prioritize risks to the financial system, it provides independent institutions with the legitimacy to tackle these risks, which may be in politically contentious parts of the financial system, and it gives elected politicians an ability to signal their desired trade-off between financial stability and their other objectives.

Given the government’s central role in crisis management – which we elaborate on below – it should be involved in discussions about risks to the financial system. The IMF has credited some of Canada’s successful crisis response in 2008-9 to the close pre-crisis cooperation between the government and different regulatory agencies on various supervisory committees (IMF, 2014). By contrast, in the UK, the government is only properly included in this process once the Bank of England deems there to be a crisis. The Treasury does have one civil service observer seat on the Bank of England’s financial policy committee, but it is non-voting. While receiving all FPC papers, the Treasury official occupying this seat may not have the same immersion in financial stability issues as other members of the committee. This set-up risks giving too much power to the central bank and leaves the government unprepared for a crisis.

Overall, we recommend that the government, central bank and other regulators are represented on a systemic risk oversight body, which would be responsible for identifying and prioritizing systemic risks and making (non-binding) recommendations as to which risks should be responded to. In some



ways this body would be similar to the US's FSOC. Admittedly, the FSOC is widely criticised for being toothless, politicised and unwieldy (Kohn, 2015). In our framework, it would be quite appropriate that the systemic risk oversight body should be advisory and politically-led because it would set the remit for a separate macro-prudential committee, which has the autonomy and power to tackle risks to financial stability. But the current FSOC is needlessly cumbersome and would benefit from significant institutional reforms such as demanding that each member agency has financial stability goals incorporated into their individual mandates (Kohn, 2014). Depending on the size of the systemic risk body, it may also benefit from external members that are not tied to a particular agency. In other words, the US might benefit from learning from the UK's FPC, while the UK could in turn incorporate elements of the FSOC that provide a greater role for the government.

**Recommendation for systemic risk oversight:**

There should be a body that is responsible for the oversight and prioritisation of systemic risks to the financial system. The body would monitor and assess these risks, and set financial stability priorities for the macro-prudential body, which will have greater operational independence. The systemic risk oversight body should include the central bank, other regulators and the government. This diverse membership will minimise the dangers of group think and help coordinate responses to systemic risks.

The government should chair this body, giving it the power to set the agenda and to veto recommendations. As the mandate-setting body for financial stability policy, this high level of government involvement is necessary to provide legitimacy and accountability to financial stability policy. Indeed, it will strengthen the operational independence of macro-prudential policy, as discussed below.

ii. Macro-prudential policy

Once the monitoring body is in place to identify risks to financial stability, there should be a separate macro-prudential policy committee that implements responses to these risks. Given the broad nature of risks to financial stability, the macro-prudential committee should include other financial regulators apart from the central bank to ensure cooperation and fight against group think. This committee should also have the freedom to tackle risks not specifically identified by the monitoring body.

Operational independence is crucial to macro-prudential policy-making. Given that it involves many policy levers, the macro-prudential policy-making process is more vulnerable to political pressures than the abstract discussion of systemic risk monitoring in a monitoring body. In fact, by allowing the government to play a significant role in the identification of systemic risks and the oversight of the response to them, an FSOC-style body provides an accountability mechanism that supports the legitimacy of operational independence in the implementation of macro-prudential policy.

The monitoring body can also be the forum which grants the macro-prudential committee greater powers if it requires them. Indeed, there needs to be an effective and relatively quick procedure for the macro-prudential committee to expand its toolkit given the shape-shifting nature of financial risks and endemic regulatory arbitrage. This is likely to be particularly true in the shadow banking system, where policy-makers may need to develop a suite of macro-prudential tools, including counter-cyclical margin requirements and haircuts.

With its operational independence protected, the central bank should lead the macro-prudential policy committee. As described above, it has invaluable resources for this policy area and it is best placed to internalise the interactions between financial stability measures and monetary policy. The central bank might have power to compel other agencies to act. Alternatively, the body might work by consensus, with disputes being resolved by the government dominated-monitoring body.

Of course, splitting the systemic risk monitoring and the macro-prudential bodies may lead to conflict. But we believe the long-term advantages outlined above of our proposed set up outweigh this potential problem. Indeed, by clearly mandating responses to particular systemic risks, a government-led FSOC body reduces the likelihood that regulators fail to cooperate in tackling that risk. If a regulator persists in failing to implement tools demanded by the macro-prudential policy body, disagreements can be thrown back to the systemic risk monitoring body for the governments' adjudication. In other words, our proposal provides a framework to improve accountability and to resolve conflicts between regulators, rather than cause them.

**Recommendation for macro-prudential policies:** While the government-led systemic risk body should set financial stability priorities and decide on the perimeter of permissible tools, the macro-prudential policy-making body should be operationally independent from government. This division of labour ensures that the goals of financial stability policy are decided by politicians, which will provide overarching political legitimacy for macro-prudential policy, but its implementation is protected from short-term political pressures.

This macro-prudential body should bring together financial regulators to avoid group think and ensure that a mechanism is in place to coordinate responses to systemic risks. But it should be dominated by the central bank because of its expertise and capacity to internalise the trade-offs between macro-prudential tools and monetary policy.

## Crisis management

Across the world, central banks played central roles in the response to the financial crisis. They aggressively eased monetary conditions by slashing interest rates and introducing innovative new tools that massively expanded their balance sheets. By buying private sector assets, they assumed credit (and potentially interest rate<sup>34</sup>) risk on their balance sheets. In many countries, they also financed – usually temporarily – government programmes to bail out or resolve struggling financial institutions. But the leading role that central banks played in the crisis has strained the traditional conception of central bank independence as they accumulated powers and strayed into more political territory. Partly as a result, there has been a backlash against the institutions. In order to avoid such controversies in the future, we need to rethink the relationship between the central bank and the rest of the state during a financial crisis.

Crisis management has two core components: the allocation of the losses that underpin the crisis and the prevention of new losses through contagion. The case for central bank involvement in the resolution of failed financial institutions – the allocation of losses – is ambiguous. On the one hand,

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<sup>34</sup> Interest rate risk is only relevant if assets are not held to maturity.

resolution and a central bank's lender of last resort function are deeply interconnected. In the midst of a crisis, it is often impossible to disentangle insolvency from illiquidity and any resolution is likely to involve the extension of emergency central bank liquidity, either to a bridge bank or another institution that might purchase its failed counterpart. This suggests that resolution and lender of last resort functions should be housed together inside the central bank.

However, the allocation of losses in the resolution process is inherently a distributional choice, is often contentious and may require public money. Of course, a country can design *ex ante* rules to try to formalise the process. The EU's Bank Recovery and Resolution Directive (BRRD), for example, is intended to reduce discretion by codifying the hierarchy of creditors that will be "bailed-in" in the event of a bank failure, avoiding the need for a public bail-out. But rules such as the BRRD will not always put the resolution of a failed financial institution on a technocratic auto-pilot. The rules may be inappropriate for the *next* crisis, the origins of which may lie outside of banks for instance. The resolution authority may also need to trade off society's desire to minimise moral hazard through bail-ins with the risk of runs on other institutions caused by writing down creditors in the midst of a crisis (Scott, 2016). Public funds may also be required to backstop the financial system. Much of this can be observed in the recent struggles of the Italian bank Monti dei Paschi di Siena. Constrained by the BRRD rulebook, the Italian government engineered a quasi bailout of small bond holders with a share swap and purchase scheme.

The resolution of a failed institution may also have external costs and benefits that technocratic institutions cannot internalise. After all, a financial crisis can cause huge strains on a society's economic and social fabric. A central bank that follows a rule book designed to minimise moral hazard and the direct costs of resolving an institution may fail to adequately internalise the potential for these risks to crystallise.

As a result of all this, the resolution of failed institutions is likely to involve unavoidably political considerations. The government should therefore be part of the resolution process, perhaps with a representative on decision-making committees and joint sign-off on the final decision. Of course, independent institutions such as the central bank will continue to play a crucial role and their recommendations may provide political legitimacy for the government to take politically unpopular decisions.

There are strong reasons for the central bank to play a key role in the second component of crisis management: preventing contagion. Central banks have unparalleled macroeconomic expertise to understand the inter-linkages in the financial system. Most importantly, they can provide unlimited liquidity to the financial system. During the financial crisis, central banks around the world were forced to lend to a wide range of counterparties, at incredibly low rates and against hard to value collateral, as well as to provide bridge financing for the resolution of failed institutions. Some institutions such as the Bank of England even acted as market-maker-of-last-resort (Tucker, 2014). In order to prevent liquidity strains in the financial system turning into runs and ultimately solvency problems, central banks must have the flexibility to expand their balance sheets and lend to a wide range of non-bank borrowers. In the next crisis, this might include, for instance, central counterparty clearing houses and asset managers. Given the need to aggressively provide liquidity to stem a financial crisis, statutory limits on a central bank's balance sheet may be unwise. For example, the Dodd-Frank Act prevents the Fed lending to individual non-banks. Instead, it can only do so as part of a "broad-based programme". This may prove difficult to put together at speed in the midst of a financial crisis (Scott, 2016).

Of course, by aggressively and expansively providing liquidity to the financial system, the central bank will take greater risk with the state's balance sheet and become a prominent political player. It is very difficult to design an ex-ante accountability mechanism to minimise these risks because crisis management requires a high degree of flexibility and discretion: it is impossible to predict the nature of the next crisis and impossible to clearly define the parameters of the appropriate response in advance.

But one legitimate restriction is that the central bank should be required to seek Treasury approval before it takes measures that involve credit risk<sup>35</sup>, i.e. which have fiscal implications, such as buying private sector assets. Given the difficulty of disentangling solvency and liquidity problems in a crisis, this principle should extend to liquidity support to institutions that may not have received the same depth of supervision as banks. By receiving an up-front sovereign indemnity, the central bank not only ensures its actions have democratic legitimacy, it also reduces the incentive for the government to rely on central bank support as a means of off-balance sheet support to the financial system (Buiter, 2014). For instance, the BoE received a full sovereign guarantee for its Special Liquidity Scheme during the financial crisis, while the Reserve Bank of Australia cannot support insolvent institutions without a Treasury guarantee (BIS, 2011).

Admittedly, in some countries, formal indemnities from the government may be difficult. At the very least, a mechanism should be in place for the central bank to receive government approval before it assumes credit risk. Note, though, that central banks should only require approval from the government. The legislature should not be part of this process given that it is typically a slow-moving branch of government.

In order to effectively allocate losses and prevent panic, a country's crisis management must also coordinate the plethora of institutions that govern financial markets, both domestically and abroad. As such, the crisis management function must involve coordination not only between the ministry of finance and central bank, but also with the other relevant supervisory and regulatory institutions. This may involve difficult inter-agency coordination that the government is best equipped to direct.

While coordination is important, speed of decision-making is also crucial. As such, the ministry of finance is best placed to coordinate the often fragmented financial regulators and build public support for a policy response, and this should occur in a well-defined process to enable rapid decision-making in times of crisis. This committee could be the government-led body that monitors systemic risks outlined in the previous section. Indeed, the government must have the power to direct different agencies in a crisis. In his book *Stress Test*, ex-US Treasury Secretary Tim Geithner suggested that bodies such as the FDIC were too narrowly focused on their own organisational interests and failed to internalise the national implications of their actions, while he lacked the powers to direct them (Geithner, 2014).

Of course, in countries where governments may be more in thrall to narrow vested interests, central banks may need a veto of government recommendations. These countries might follow the Japanese model, in which the government can issue directions to independent institutions such as the central bank in a crisis, but they can be turned down (BIS, 2011). In any case, the power to activate a country's crisis-management framework should lie with the government.

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<sup>35</sup> This approval may also need to cover significant interest rate risk associated with the purchase of long-term assets.

**Recommendation for crisis management:** The government should lead crisis management efforts because this area is inherently political and contentious, it is difficult to codify ex-ante processes and accountability mechanisms and, finally, it involves the coordination of multiple agencies. The fiscal implications of a crisis are also significant. A committee, chaired by the government, should direct crisis management and the government should have the power to compel actions by agencies that are otherwise independent in normal non-crisis times. This committee might be the government-led systemic risk monitoring body. So while the central bank should may have responsibility for the resolution of failed financial institutions, the government should participate in decision-making and have joint sign-off on the final decision.

Of course, the central bank has a crucial role to play in a crisis because of its expertise and ability to provide liquidity re-insurance to the financial system. Given the impossibility of predicting the nature of the next crisis, there should be few statutory restrictions on the central bank's provision of liquidity. But, in order to ensure political legitimacy, the central bank should seek approval from the minister of finance (but not the legislature) before it assumes additional credit risk in its liquidity operations.

## Bank supervision and conduct

There are two broad models of central bank involvement in financial supervision. In the integrated model such as that of the UK, the central bank is responsible for supervision. Meanwhile, in countries such as Australia or Sweden, supervision is housed in a separate prudential body (Nier, 2009). Although over the last few years the pre-crisis trend for the supervision of financial institutions to be removed from central banks has reversed somewhat, as a number of central banks gained supervisory powers over banks and non-banks (Masciandaro and Romelli 2015), there is still no clear consensus on the appropriate model.

There are strong reasons for delegating bank supervision to an independent body rather than housing it in government, including the scope for political influence and time inconsistency (Hellwig, 2014). The process of bank supervision is relatively well-defined, involving routine activities and inspections that can be encoded in clear processes. An independent bank supervisor can operate relatively independently without the need for complex inter-agency coordination: while it must liaise with the plethora of regulators whose territory the bank's activities are likely to involve, this cooperation is likely to involve information sharing rather than directing other agencies.

The reasons for housing bank supervision in a central bank rather than a specialist financial supervisory body are less clear-cut. There are several disadvantages to doing so. First, the central bank does not necessarily have valuable resources or expertise in the area of bank supervision. Although macroeconomic analysis is important for supervisors to understand the pressures that banks are likely to face, supervisors' core skillset is more based in accounting and risk management. Furthermore, supervision and monetary policy rest on different cultures. While monetary policymakers rely on voluntary market mechanisms to influence the economy, supervisors act by rules and diktat (Hellwig, 2014). In fact, there may be advantages to splitting up systemic risk supervision and banking supervision in order to generate different viewpoints on risk (Goodhart, 2010).

Second, while monetary policy is best served by a stable financial system, conflicts may exist between bank supervision and monetary policy which would not be best solved by housing both responsibilities in the same institution. A central bank, for example, may seek to cover up lax supervision with loose monetary policy. What's more, an institution with both monetary and supervisory roles may overlook the build-up for risks in the "good times" when the institution is more focused on price pressures, while a body with a single supervisory focus would be less distracted by other objectives and pressures (Ellis, 2013).

Third, taking on responsibility for bank supervision may threaten the legitimacy of the central bank's independence in monetary policy. It would be relatively difficult to hold the central bank accountable for bank supervision in a transparent way. Failure or lack of failure is the only clearly observable output and transparency may be counterproductive when dealing with fragile institutions. Given that supervisors are blamed for failures but taken for granted in good times, supervisory duties may damage the central bank's credibility (Goodhart & Schoenmaker, 1995). Furthermore, the close relationship between banks and supervisors, combined with the lack of transparency inherent in supervision, may leave the central bank vulnerable to perceptions of regulatory capture.

That said, there may also be significant advantages to housing bank supervision inside the central bank. There may be synergies between supervision and a central bank's core function. By supervising financial institutions, central banks may gain a better understanding of the transmission mechanism for monetary policy. Indeed, many banks themselves host critical market infrastructure. In the US, for example, there are only two custodian banks, JP Morgan and Bank of New York Mellon, for the \$1.5trn tri-party repo market. As the lender of last resort, the central bank can also benefit from the information and expertise accumulated through supervision and will internalise the costs of poor supervision.

These synergies are likely to be even greater if central banks play an important role in macro-prudential policy, as we believe they should (Ellis, 2013; Cukierman, 2013). For example, altering the counter-cyclical capital buffer for banks requires sophisticated understanding of interactions with their micro-prudential capital regime and coordination with bank supervisors to ensure that the latter do not take offsetting actions. Combining macro- and micro-prudential supervisory powers in one institution also ensures smooth and timely information-sharing, and avoids turf wars over status or over particular powers and responsibilities. In emerging economies in particular, a central bank that also supervises banks is better placed to ensure that its macro-prudential measures are effectively implemented.

Overall, then, we believe that it is ambiguous whether supervision should be housed inside central banks. Indeed, no particular relationship between the central bank and supervision has emerged as clearly preferable from the empirical literature that tests the effect of different institutional set-ups on outcomes such as inflation and financial stability. (Bayoumi, Dell'Ariccia, Habermeier, Mancini-Griffoli, & Valencia, 2014). The optimal relationship between a central bank and supervision (if there is one) is likely to depend on each country's particular context.

The case for placing financial conduct – regulation which governs the interaction between financial institutions and the public and promotes confidence in the financial system, and powers to promote market competition – inside the central bank is much weaker. Although conduct and competition regulation should be carried out by an independent agency given the need to insulate it from short-term political pressures, the central bank's macroeconomic expertise and balance sheet are of little

use in this area. What's more, it is a politically contentious area, so the risks to central bank legitimacy are high.

**Recommendation for bank supervision:** The micro-prudential regulator should be operationally independent. But given that the case is finely balanced, we are neutral on whether the central bank should be responsible for bank supervision. The appropriate decision may depend on each country's political and institutional context.

There is, however, a strong case that the central bank should not be responsible for policing financial conduct. The central bank is not key to the effectiveness of this function, while it presents significant risks to the central bank's legitimacy.

### Emerging market context may be more complex

Most of the analysis above applies equally to advanced and emerging economies' central banks. The need for operational independence (for example, in macro-prudential policy), the presence of relevant expertise in the central bank, the ability of the central bank to operate within a well-defined process and independently without inter-agency coordination, the presence or absence of conflicts between a new function and monetary policy – these are all discussions which should apply in both advanced and emerging market contexts.

However, emerging market contexts face an added layer of complexity: unlike in advanced economies, it is likely that political central bank independence is also important for inflation control. Political central bank independence requires insulation of the central bank from the possibility of influence by the government. Many of our recommendations above require close coordination and cooperation between the central bank and the government, which might interfere with the central bank's political independence.

As such, the degree to which our recommendations should apply to emerging economies depends on the degree to which political independence can be sacrificed in favour of coordination on macroeconomic stabilization and financial stability. At this stage, we have not reached a conclusion on this point: a satisfactory answer will require significant further investigation and discussion.

As such our recommendations outlined above are more applicable for advanced economies.

## There is scope for further reform everywhere

By the late 2000s, central banks in most of the major economies had converged on a particular model of central banking. In order to deliver its monetary policy and lender of resort functions, the typical central bank was given a high level of operational, and in many countries, political independence. But since the financial crisis, central banks have taken on financial stability responsibilities and the interaction of monetary and fiscal policy has become more complex.

Central banks' responses to this new environment have been extremely varied – as illustrated by our central bank case studies in Annex C. This suggests that the optimal model for a central bank has not been agreed upon, and that there is likely to be scope for further reform in every country. According to our assessment of the new central bank functions and their relationship with monetary policy, many countries have successfully established some parts of their new institutional structure, while having something to learn from other countries on other aspects.

Some brief examples illustrate this point:

- In the US, the central bank lacks the macro-prudential tools required to fight risks to the country's financial stability. The US should learn from the Bank of England's more expansive macro-prudential toolkit and the mechanism that the Bank's Financial Policy Committee has in place to request new powers from the government.
- The UK should also look to the US for lessons. After the centralisation of prudential regulation – both of the micro and macro variety – and systemic risk monitoring inside the Bank of England, there is a danger that the UK money-credit constitution is too concentrated in the central bank, leading to the possibility of groupthink, a lack of oversight and ultimately risks to central bank independence. While the US regulatory infrastructure may be too fragmented, it has some useful institutions such as the FSOC. As we argued earlier, the FSOC should be streamlined to be more effective; nonetheless it provides a forum for different regulators to challenge the Fed's views of risks to financial stability and, because it is chaired by the Treasury, it can confer important political legitimacy for contentious regulatory decisions.
- In Europe, the ECB has made progress building up its macro-prudential toolkit. But it still lacks powers to influence the non-bank financial sector and this macro-prudential policy capacity is fractured across several different institutions without effective oversight, a concern for political accountability especially in a union representing many different countries and political systems.
- Sweden has an effective crisis management framework. But the country could benefit from housing macro-prudential policy inside the central bank. Given that macro-prudential policy is highly political, Sweden should ensure that there are mechanisms for effective government oversight, perhaps following our recommendations for a government-dominated systemic risk monitoring committee.

In annex D, we develop a metric which scores ten central banks more systematically against the criteria we have drawn up for an optimal central bank structure.



## Concluding Remarks

In the wake of the financial crisis, central banks accumulated large numbers of new responsibilities, often in an ad hoc way. In light of these new responsibilities, concerns have mounted about central bank independence – both whether the new powers undermine central bank independence, and whether the new powers make independent central banks too powerful and unaccountable. The old academic assumption that the more independent a central bank is, the better it is, should no longer hold.

With this paper, we set out to explore what a modern central bank should look like. First we revisit the evidence on central bank independence:

- **Advanced economy central banks have become significantly more operationally independent** since the 1980s – but there has been no such trend for political independence.
- **Operational independence has a negative and significant relationship with inflation** in advanced economies in the 1970s and the 1980s. (As shown by DeBelle and Fischer 1994 and DeHaan and Kooi 1997).
- **Political independence is not significantly related with inflation** in advanced economies in any of the time periods we examined.
- In the 2000s and 2010s, **almost all advanced economy central banks are fully operationally independent**, and the main variation in central bank independence comes from cross-country differences in political independence.
- As such, there is insufficient variation in operational independence to empirically assess its relationship with inflation. But correlation plots suggest that **the relationship between inflation and operational independence in the 2000s is close to what the relationship from the 1980s** would have predicted.
- For emerging economies however, theory and empirics suggest that **both political and operational independence are important**.

When many central banks are struggling to *increase* inflation because of liquidity traps and the threat of secular stagnation, the argument that operational independence is required to anchor inflationary expectations may seem superfluous. But we have argued that the cost of protecting operational independence is low in this environment. And when – or perhaps if – inflationary pressures return, we are likely to rediscover its importance. We do not, however, advocate full political independence of central banks in advanced economies. Political independence – freedom from the potential for government to influence a central bank's goals or personnel – appears not to be particularly important for inflation control in advanced economies. Indeed, political *dependence* may make it easier for countries to raise their inflation targets in their fight against secular stagnation and to hold central banks to account as they become increasingly powerful.

After the crisis, it is clear that central banks need to become more powerful institutions with powers beyond their traditional monetary policy toolkit. What's more, many of these new responsibilities require the central bank to work with a range of institutions, including the government, and to do so in sometime contentious political territory. But we have so far lacked a framework to guide the restructuring of central banks. While the crisis revealed the danger of central banks that were not powerful enough, this paper has argued that there are also risks if these institutions become *too*

powerful. When assessing if and how to equip a central bank with one of the many new powers that has been discussed, a country must think through the benefits of locating the policy inside the central bank, the interactions between the new function and monetary policy, and the possibility of undermining the central bank's operational independence.

Below we lay out our recommendations for the ideal modern central bank in an advanced economy. The underlying thread is the need to protect operational independence of monetary policy (as well as certain new functions), while prioritising coordination and cooperation with the government where necessary over full central bank political independence. Of course, each country's particular political and economic circumstances may warrant adaptations to this ideal model. What's more, even if national policy-makers believed that our recommendations made sense, many are politically infeasible in the current climate. For example, the US Congress may be unlikely to strengthen the Fed's powers to provide emergency liquidity to the financial system or boost its macro-prudential toolkit any time soon. Nonetheless, we hope that these recommendations will stimulate discussion about how a modern central bank should look and thereby move the reform process forward, even if only a little in some countries.

Our recommendations are as follows:

#### **Monetary-fiscal coordination**

In normal situations where monetary policy is unconstrained, the existing monetary-fiscal framework in most countries is likely to remain effective: fiscal rules and fiscal watchdogs constrain fiscal excesses and independent central banks stabilize the economy. At the zero lower bound, however, an alternative monetary-fiscal coordination framework is necessary.

A coordination mechanism should be established that respects the following three principles. It should be triggered by the central bank, it should protect democratic control over fiscal policy and it should be limited to the zero lower bound. An open letter system, in which the central bank outlines its views about the appropriate stance of fiscal policy at times when interest rates are below a pre-defined level close to the zero lower bound, would meet these principles.

#### **Monetary-debt management coordination**

During quantitative easing, there is a case for monetary and fiscal coordination on debt management. This needs to be initiated by the central bank in order to avoid risks of monetary financing.

#### **Systemic risk oversight**

There should be a body that is responsible for the oversight and prioritization of systemic risks to the financial system. The body would monitor and assess these risks, and set financial stability priorities for the macro-prudential body. The systemic risk oversight body should include the central bank, other regulators and the government. This diverse membership will minimise the dangers of group think and help coordinate responses to systemic risks.

The government should chair this body, giving it the power to set the agenda and veto recommendations. As the mandate-setting body for financial stability policy, this high level of government involvement is necessary to provide legitimacy and accountability to financial stability policy. Indeed, it will strengthen the operational independence of macro-prudential policy.

### **Macro-prudential policies**

While the government-led systemic risk body should set financial stability priorities and decide on the perimeter of permissible tools, the macro-prudential policy-making body should be operationally independent from government. This division of labour ensures that the goals of financial stability policy are decided by politicians, which will provide overarching political legitimacy for macro-prudential policy while protecting its implementation from short-term political pressures.

This macro-prudential body should bring together financial regulators to avoid group think and ensure that a mechanism is in place to coordinate responses to systemic risks. But it should be dominated by the central bank because of its expertise and capacity to internalise the trade-offs between macro-prudential tools and monetary policy.

### **Crisis management**

The government should lead crisis management efforts because this area is inherently political and contentious, it is difficult to codify ex-ante processes and accountability mechanisms and, finally, it involves the coordination of multiple agencies. A committee, chaired by the government, should direct crisis management and the government should have the power to compel actions by agencies that are otherwise independent in normal non-crisis times. While the central bank may have responsibility for the resolution of failed financial institutions, the government should participate in decision-making and have joint sign-off over the final decision.

Of course, the central bank has a crucial role to play in a crisis because of its expertise and ability to provide liquidity re-insurance to the financial system. Given the impossibility of predicting the nature of the next crisis, there should be few statutory restrictions on the central bank's provision of liquidity. But, in order to ensure political legitimacy, the central bank should seek approval from the minister of finance (but not the legislature) before it assumes additional credit risk in its liquidity operations.

### **Bank supervision and conduct**

The micro-prudential regulator should be operationally independent. But given that the case is finely balanced, we are neutral on whether the central bank or a different body should be responsible for bank supervision. The appropriate decision may depend on each country's political and institutional context.

There is, however, a strong case for ensuring that the central bank is not responsible for policing financial conduct. The central bank is not key to the effectiveness of this function, while it presents significant risks to the central bank's legitimacy.

Our recommendations to date apply primarily to advanced economies and we believe that there is room for improvement in all the countries that we examined. As outlined above, in the US the Federal Reserve lacks necessary macro-prudential tools, and should learn from the Bank of England's expansive macro-prudential toolkit and mechanism to request powers from the government. The UK, in turn, risks over-concentration of financial policy functions in the Bank of England and should learn from the US' FSOC, with a body, chaired by the Chancellor of the Exchequer, which provides a forum for different regulators to share information, opinions and challenge the central bank perspective. In the Eurozone, the ECB's macro-prudential toolkit lacks powers over the non-bank financial sector and is fractured across several different institutions without effective oversight.

Yet this is no time to throw the baby out with the bathwater. We do argue for a more nuanced approach to central bank independence, with political accountability in terms of mandate-setting and appointment of officials, and oversight of wider financial stability powers. Nonetheless, we reiterate that the case for operational independence in both monetary and macro-prudential policy is strong: to retreat on this now would be a serious mistake.

While much of our analysis applies to emerging economies as well, they face an added complexity – the trade-off of increased coordination with government against reduced political independence of the central bank. Further work is needed to better understand this trade-off and to adapt the recommendations for central bank structure in light of this.

Our recommendations also broach a number of contentious topics that the financial crisis and its aftermath have thrust back into the heart of macroeconomic debates, such as the need for greater coordination between fiscal and monetary policy and the usefulness of inflation targeting at the zero lower bound. As the merits of these policies continue to be debated for some time yet, the appropriate institutional structure for their implementation may also need to evolve beyond our recommendations.

Overall there has been a great divergence in central bank responsibilities and structures across the world since the financial crisis. According to our framework, no central bank has yet adopted the optimal structure, but some aspects of it are present in each central bank. The world's governments and central banks have much to learn from each other.

**ENDS**

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## Annex A: Empirical results on central bank independence

This annex presents the results of regressions of inflation on central bank independence and its political/operational components for various groups of economies and time periods.

Our regressions are OLS cross-sectional regressions as follows:

$$Inflation_i = \alpha + \beta CBI_i + \sum_j^j \gamma_{ij} X_{ij} + \varepsilon_i$$

For advanced economies the dependent variable, inflation, is the arithmetic average of the annual inflation rate in country  $i$  over the chosen time period. We also use a variable reflecting the squared deviation of inflation from 2%, a common inflation target. For emerging economies we use log inflation as the dependent variable (the arithmetic average of the annual logged inflation rate in country  $i$  over the chosen time period). We use log inflation because there are some countries with extremely high inflation rates in particular decades (especially the 1970s) and these skew the results in levels.

The independent variable of interest, CBI, is the metric for central bank independence in country  $i$  at the relevant point during the chosen time period. Since we are limited by data on central bank independence, for the 1970s and 1980s regressions our CBI value is the value calculated for the 1980s by Grilli, Masciandaro and Tabellini (1991). Central bank independence did not change much between the 1970s and 1980s so this extension of the index back to the 1980s is plausible. For the 2000s regressions, our CBI value is the value calculated for 2003 by Arnone, Laurens, Segalotto and Sommer (2007). We do not carry out regressions for the 1990s because we are not aware of a dataset calculating central bank independence and its political/operational component for the 1990s; and since many countries reformed their central banks during this period, we cannot use the 1980s or 2003 indexes as a proxy.

We also include control variables  $X_j$ . These are designed to control for country-specific qualities which may be correlated with both central bank independence and inflation. Following the literature including Dincer and Eichengreen (2014), for advanced economies we control for real GDP per capita at the start of the time period (to proxy some aspect of institutional quality which may be correlated with income), openness, and the exchange rate regime. For emerging and developing economies we introduce additional measures of institutional quality (democracy and constraints on the executive) and a dummy variable denoting whether the country had an IMF program during the time period (which would affect its likelihood to adopt reforms increasing central bank independence, and is likely to be correlated with its inflation rate and general macroeconomic conditions).

Data for inflation, GDP per capita and openness (trade as % of GDP) was obtained from the World Bank World Development Indicators and from Eurostat for the Euro area. The exchange rate regime is the Reinhart coarse classification, obtained from Carmen Reinhart's website. The democracy and constraints on the executive variables were from the Polity IV database. The variable on IMF program was from the IMF Monitoring of Fund Arrangements database.

We examine the 1970s after Bretton Woods ended (1973-1979), the 1980s (1980-1989) and the 2000s before the financial crisis (2000-2007).

Table A.1 shows the regression results for 22 advanced economies over 1970s and 1980s, and 13 advanced economies over the pre-crisis 2000s. Regressions (1) through (6) are the specification above, with the dependent variable as the average inflation rate. Regressions (7) and (8) use instead the dependent variable as the squared deviation of the average inflation rate over 2000-2007 from 2 percent. This reflects more closely central banks' likely objective functions over the period.

As can be seen from the table, in the 1970s and 1980s central bank independence as an aggregate was strongly negatively and significantly related to average inflation – a strong result in such a small sample of countries. When disaggregating central bank independence into operational and political independence, only operational independence is significantly and negatively related to inflation in both decades. In the 2000s however, there is no significant relationship. The only exception is regression (6), where the positive coefficient on operational independence is driven by the inclusion of Japan, which has the lowest operational independence score and was in deflation at the time. This unexpected result goes away when the deviation of inflation from a 2% target is used instead.

**Table A.1: Advanced economies, regressions of inflation on central bank independence**

Dependent variable: average inflation	Dep var: average inflation						Dep var: +	
	(1) 1973-1979	(2)	(3) 1980-1989	(4)	(5) 2000-2007	(6)	(7) 2000-2007	(8)
Central Bank Independence	-8.70*** (2.78)		-9.99** (3.99)		3.28 (2.33)		-3.06 (2.99)	
Political Independence		-2.69 (2.87)		0.55 (3.76)		-0.28 (1.28)		-0.69 (1.85)
Operational Independence		-3.17* (1.65)		-5.72** (2.56)		7.90** (2.75)		-7.13 (3.96)
Real GDP per capita (log), 2005 USD	-5.96*** (1.63)	-7.86*** (1.59)	-6.17** (2.64)	-9.79*** (2.68)	-1.89 (1.03)	-1.89** (0.78)	0.74 (1.33)	1.21 (1.13)
Openness: Trade as % of GDP	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.03)	-0.01 (0.03)	-0.02 (0.02)	-0.01 (0.02)	-0.00 (0.03)	-0.00 (0.02)
Exchange rate regime	0.35 (0.68)	0.41 (0.82)	-0.50 (0.93)	0.16 (1.07)	-0.58 (0.55)	-0.23 (0.46)	0.70 (0.71)	0.62 (0.66)
Constant	31.28*** (3.91)	34.96*** (4.44)	34.10*** (7.18)	41.32*** (7.37)	9.81* (4.60)	3.11 (4.99)	-1.71 (5.92)	1.61 (7.19)
Observations	22	22	22	22	13	13	13	13
R-squared	0.78	0.74	0.63	0.62	0.30	0.65	0.40	0.63

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

\*The dependent variable for regressions (7) and (8) is the squared deviation of the average inflation rate over 2000-2007 from 2 percent, the most common inflation target over the period.

Tables A.2 and A.3 carry out the same regressions for emerging and developing economies in the 1970s, 1980s and pre-crisis 2000s. Our sample is determined entirely by data availability. For the 1970s and 1980s, we group all non-advanced economies together as “developing” economies (regressions (1) and (2)). We have 25 countries for the 1970s and 29 countries for the 1980s. For the 2000s, we look at the full sample of countries (regression (3)) and also split countries into emerging and developing economies, following the IMF classification adopted by Arnone, Laurens, Segalotto and Sommer (2007), in regressions (4) and (5). We control for GDP per capita, openness, the exchange rate regime, and two measures of institutional quality, following Crowe and Meade (2008) and Dincer and Eichengreen (2014).

Table A.2 carries out the regressions for the aggregate metric of central bank independence. As can be seen, there is some evidence of a negative and significant relationship between central bank independence and inflation, but it is not consistent across all country groups and time periods.

Table A.3 carries out the regressions with the disaggregated operational and political aspects of central bank independence. There are no results which are significant at the 5% level, suggesting that further investigation should be done before any conclusions are drawn on the relative importance of operational versus political independence in emerging and developing economies.

**Table A.2: Emerging and developing economies, regressions of inflation on central bank independence**

	Dependent variable: log inflation				
	(1) 1970s (full)	(2) 1980s (full)	(3) 2000s (full)	(4) 2000s (emerging)	(5) 2000s (developing)
Central Bank Independence	-1.105** (0.442)	-0.433 (0.974)	-0.953*** (0.363)	-0.456 (1.718)	-0.995** (0.392)
Real GDP per capita, 2005 USD	0.0691 (0.0452)	-0.0905 (0.0840)	-0.0170* (0.00876)	0.0465 (0.0999)	-0.0286*** (0.00897)
Openness: Trade as % of GDP	-0.00259* (0.00146)	-0.00172 (0.00356)	-0.00331** (0.00134)	-0.00809* (0.00411)	-0.00248* (0.00141)
Exchange rate Regime	0.259*** (0.0495)	0.835*** (0.121)	-0.0459 (0.0638)	-0.00853 (0.320)	-0.0939 (0.0692)
Constraints on the executive	-0.0833 (0.0859)	0.205 (0.241)	-0.0383 (0.0813)	-0.259 (0.497)	0.0403 (0.0842)
Democracy (Polity IV score)	0.0504* (0.0264)	0.0101 (0.0681)	0.0146 (0.0274)	0.0838 (0.117)	-0.0164 (0.0287)
Participation in IMF program, 1993-2002	0.612*** (0.206)	0.686 (0.410)	0.402*** (0.138)	0.646 (0.512)	0.271* (0.151)
Constant	2.388*** (0.447)	-0.270 (1.242)	2.679*** (0.401)	2.948* (1.569)	2.623*** (0.417)
Observations	25	29	109	23	86
R-squared	0.826	0.820	0.258	0.444	0.311

**Table A.3: Emerging and developing economies, regressions of inflation on political and operational independence**

	Dependent variable: log inflation				
	(1) 1970s (full)	(2) 1980s (full)	(3) 2000s (full)	(4) 2000s (emerging)	(5) 2000s (developing)
Political Independence,	-0.595 (0.511)	-0.356 (0.977)	-0.364 (0.237)	-0.471 (1.161)	-0.337 (0.242)
Operational Independence	-0.512 (0.575)	-0.0762 (1.030)	-0.725* (0.377)	0.0278 (1.085)	-0.910** (0.411)
Real GDP per capita, 2005 USD	0.0679 (0.0696)	-0.0830 (0.103)	-0.0176** (0.00881)	0.0487 (0.103)	-0.0294*** (0.00897)
Openness: Trade as % of GDP	-0.00261 (0.00152)	-0.00174 (0.00365)	-0.00353** (0.00137)	-0.00777* (0.00432)	-0.00282* (0.00144)
Exchange rate Regime	0.259*** (0.0540)	0.835*** (0.124)	-0.0487 (0.0641)	-0.0174 (0.329)	-0.0964 (0.0691)
Constraints on the executive	-0.0838 (0.0891)	0.209 (0.248)	-0.0320 (0.0818)	-0.240 (0.518)	0.0477 (0.0842)
Democracy (Polity IV score)	0.0505* (0.0274)	0.00878 (0.0706)	0.0139 (0.0274)	0.0823 (0.121)	-0.0159 (0.0287)
Participation in IMF program, 1993-2002	0.605** (0.270)	0.726 (0.507)	0.389*** (0.139)	0.692 (0.549)	0.256* (0.151)
Constant	2.402*** (0.532)	-0.346 (1.399)	2.804*** (0.435)	2.745 (1.731)	2.840*** (0.457)
Observations	25	29	109	23	86
R-squared	0.824	0.820	0.262	0.449	0.322

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



### Country Samples:

**Advanced economies, 1970s and 1980s:** Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

**Advanced economies, 2000s:** Australia, Canada, Denmark, Euro Area, Israel, Japan, Republic of Korea, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States.

**Developing economies, 1970s:** Bolivia, Botswana, Colombia, Costa Rica, Egypt, Ghana, Honduras, Indonesia, India, Israel, Kenya, Korea, Morocco, Mexico, Malaysia, Nigeria, Nepal, Pakistan, Peru, Philippines, Singapore, South Africa, Thailand, Turkey, Uruguay

**Developing economies, 1980s:** Bolivia, Brazil, Botswana, China, Colombia, Costa Rica, Egypt, Ghana, Honduras, Indonesia, India, Israel, Kenya, Korea, Morocco, Mexico, Malaysia, Nigeria, Nepal, Pakistan, Panama, Peru, Philippines, South Africa, Singapore, Thailand, Turkey, Uruguay, Zambia

**Emerging economies, 2000s:** Bulgaria, Brazil, China, Croatia, Czech Republic, Egypt, Estonia, Hungary, Indonesia, India, Jordan, Lithuania, Morocco, Mexico, Malaysia, Pakistan, Peru, Philippines, Poland, Romania, Russia, Slovak Republic, Slovenia, South Africa, Thailand, Turkey

**Developing economies, 2000s:** Albania, Algeria, Armenia, Azerbaijan, Burundi, Bangladesh, Bahrain, Bosnia Herzegovina, Belarus, Bolivia, Bhutan, Botswana, Cambodia, Colombia, Comoros, Cape Verde, Costa Rica, Cyprus, Dominican Republic, Ecuador, El Salvador, Ethiopia, Fiji, Georgia, Ghana, Guinea, Guatemala, Guyana, Honduras, Haiti, Iran, Iraq, Jamaica, Kazakhstan, Kenya, Kyrgyz Republic, Kuwait, Laos, Liberia, Libya, Lesotho, Latvia, Moldova, Madagascar, Macedonia, Mongolia, Mozambique, Mauritius, Malawi, Namibia, Nigeria, Nicaragua, Nepal, Oman, Panama, Papua New Guinea, Paraguay, Qatar, Rwanda, Saudi Arabia, Sierra Leone, Singapore, Solomon Islands, Sri Lanka, Sudan, Suriname, Seychelles, Syrian Arab Republic, Tajikistan, Trinidad and Tobago, Tunisia, Tanzania, Uganda, Ukraine, Uruguay, Vietnam, Yemen Republic, Zambia.

## Annex B: Using an alternative metric of central bank independence

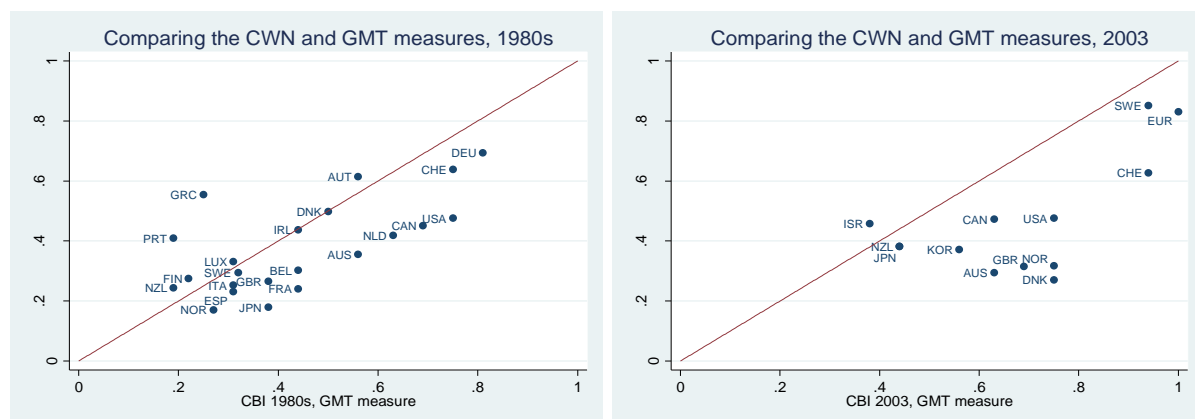
### Measurement and subjectivity

To evaluate central bank independence empirically, a variety of metrics of central bank independence have been created. The two most commonly-used indexes of central bank independence – and the two that we use in this paper – are the Grilli, Masciandaro and Tabellini “GMT” (1991) index and the Cukierman, Webb and Neyapti “CWN” (1992) index. These indexes attempt to capture the legal/statutory independence of a central bank from government based on four broad criteria: the independence of central bank personnel from government influence, the independence of the central bank’s policy formulation and implementation procedures, the central bank’s objectives, and limits on the central bank’s ability to lend to government. These indexes have been updated to the present by authors including Crowe and Meade (2008), Dincer and Eichengreen (2014) and Arnone, Laurens, Segalotto and Sommer (2007).

The process of evaluating central bank independence is inherently subjective in three ways: which variables to measure, how to interpret the central bank legislation on those variables, and how to aggregate and weight them. As such, different central banks are often assessed very differently on the GMT and CWN measures of central bank independence (Eijffinger and Schaling 1995, Magnano 1999).

### Which measure of central bank independence is more appropriate?

We believe the GMT measure gives results for the 2000s which accord better with our understanding of actual central bank independence. The graphs below show the advanced economies on the GMT and CWN measures. The two measures seem relatively consistent for the 1980s, but are quite different for the 2000s for many countries.



We believe the evaluations of the UK, US, Denmark and Australia in particular are less plausible under the CWN measure:

- **UK:** The CWN measure shows the UK becoming only a little more independent over the 1980s-2003, in spite of the 1997 reform which granted the Bank of England operational independence.

- **US:** The CWN measure shows the US as significantly less independent than on the GMT measure. The Federal Reserve is downgraded on the CWN measure compared to the GMT measure because of its appointment procedures, its dual mandate for price stability *and* full employment (rather than a sole price stability mandate), and because of ostensible low independence in monetary policy formulation.
- **Australia:** The CWN measure shows Australia as significantly less independent than it is under the GMT measure, almost entirely because of different assessments as to the Reserve Bank of Australia's ability to lend to the government. The CWN measure rates limits on lending to the government as almost non-existent, while the GMT measure gives the RBA full credit for having sufficient limits on lending to the government.
- **Denmark:** The CWN measure shows the Denmark's Nationalbank as having become significantly less independent over 1980s to 2003, partly because its statutes no longer required it to pursue price stability as a primary objective, and partly because its limits on lending to the government were assessed to have decreased. In contrast the GMT measure assesses the limits on lending as having become stricter over 1980s to 2003, and government involvement in the formulation of monetary policy as having decreased.

As such, we use the GMT metric of central bank independence in our paper because we believe that – as measured in the 2000s – it may be more reflective of the degree of central bank independence *as it is actually perceived* or experienced in many countries.

## Data used

In the body of the paper, we use the Grilli, Masciandaro and Tabellini (1991) measure of central bank independence. We believe that it provides results for central bank independence in the 2000s that more accurately accord with our understanding of the term, as discussed above. It also enables us to more easily make the distinction between political and operational central bank independence.

However in light of the inherent subjectivity of CBI measurement, we also present in this annex results of our analysis when using the Cukierman, Neyapti and Webb (1992) measure of central bank independence. For OECD and developing economies in the 1970s and 1980s, we use the original Cukierman, Webb and Neyapti (1992) data. For OECD and developing economies in the 2000s, we use the 2003 data from Crowe and Meade (2008). We also repeat our regressions for the 2000s with the estimates of the CWN index from Dincer and Eichengreen (2014), and find no significant difference compared to the results with Crowe and Meade (2008) data.

To construct our political and operational independence variables for the analysis using the CWN independence data, we do the following:

**Political independence :** we combine the variables “Appointments” and “Policy Objectives” into our political independence measure. These encompass appointment and dismissal procedures for the central bank governor, the ability of the central bank governor to hold government office, and the requirement that the central bank must pursue inflation as a primary objective.

**Operational independence:** we combine the categories “Policy Formulation” and “Limits on Lending to Government” into our operational/economic independence measure.

The exact components of the measures are as follows:

POLITICAL INDEPENDENCE		OPERATIONAL INDEPENDENCE	
Appointments	Policy objectives	Policy formulation	Limits on central bank lending
Length of governor term	Monetary stability as (one of) primary policy objectives	Central bank responsible for mon. pol. formulation	Advances and securitized lending
Entity delegated to appoint governor		Rules concerning resolution of conflicts between CB and govt	Authority having control over terms of lending
Provisions for governor dismissal		Degree of CB participation in formulation of budget	Width of circle of potential borrowers from central bank
Ability for governor to hold another office in government			Types of limitations on loans, including maturity and interest rates Prohibitions on CB participation in primary market for govt securities

As Table B.1 below shows, the CWN measure does not show any significant relationships between central bank independence and inflation for advanced economies. This result however is highly driven by three outliers – Spain, Greece and Portugal – which were OECD economies in the 1970s and 1980s but were emerging from dictatorships and transitioning their economic and political systems. The CWN metric ranks them as having relatively independent central banks during the period – and they also had extremely high inflation. Given that these countries had institutional characteristics more like emerging than advanced economies during that time period, we repeat the regressions in Table B.2 without those three countries and the negative and significant relationship expected emerges with full independence and operational independence in the 1970s and 1980s.

**Table B.1: Advanced economies, regressions of inflation on central bank independence**

Dependent variable: average inflation	Dep var: average inflation				Dep var: *			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1973-1979		1980-1989		2000-2007		2000-2007	
Central Bank Independence (CWN)	-5.93*		-0.55		-1.01		-1.77	
	(3.37)		(4.87)		(2.27)		(2.74)	
Political Independence (CWN)		-2.48		-2.39		-2.08		0.11
		(3.06)		(4.24)		(2.34)		(3.00)
Operational Independence (CWN)		-5.65		0.60		-0.40		-0.74
		(4.02)		(4.95)		(1.62)		(2.08)
Real GDP per capita (log), 2005 USD	-8.65***	-8.61***	-9.12***	-9.52***	-0.78	-1.12	-0.12	-0.09
	(1.62)	(1.90)	(2.77)	(2.95)	(0.81)	(0.94)	(0.98)	(1.21)
Openness: Trade as % of GDP	0.00	0.00	-0.02	-0.01	0.00	0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Exchange rate regime	0.66	0.83	-0.92	-0.81	0.08	0.31	0.64	0.40
	(0.84)	(0.85)	(1.07)	(1.11)	(0.68)	(0.72)	(0.82)	(0.93)
Constant								
	35.78***	35.72***	39.70***	41.15***	4.76	5.92	0.66	1.07
	(4.53)	(5.25)	(8.05)	(8.63)	(4.35)	(4.70)	(5.25)	(6.04)
Observations								
R-squared	21	21	22	22	13	13	13	13
	0.69	0.72	0.49	0.50	0.14	0.22	0.35	0.33

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table B.2: Advanced economies, excluding Greece, Spain and Portugal (1970s-1980s)**

Dependent variable: average inflation	Dep var: average inflation						Dep var: +	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1973-1979		1980-1989		2000-2007		2000-2007	
Central Bank Independence (CWN)	-7.45*		-6.55		-1.01		-1.77	
	(3.76)		(3.87)		(2.27)		(2.74)	
Political Independence (CWN)		0.27		1.58		-2.08		0.11
		(3.52)		(4.01)		(2.34)		(3.00)
Operational Independence (CWN)		-10.15**		-10.07**		-0.40		-0.74
		(4.21)		(4.62)		(1.62)		(2.08)
Real GDP per capita (log), 2005 USD	-5.25**	-3.26	-3.02	0.13	-0.78	-1.12	-0.12	-0.09
	(2.34)	(2.95)	(2.90)	(3.87)	(0.81)	(0.94)	(0.98)	(1.21)
Openness: Trade as % of GDP	-0.00	-0.01	-0.02	-0.03	0.00	0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Exchange rate regime	0.14	0.14	-0.57	-0.73	0.08	0.31	0.64	0.40
	(0.90)	(0.89)	(0.81)	(0.80)	(0.68)	(0.72)	(0.82)	(0.93)
Constant	27.44***	21.86**	21.15**	11.81				
	(6.16)	(8.02)	(8.85)	(11.73)	4.76	5.92	0.66	1.07
					(4.35)	(4.70)	(5.25)	(6.04)
Observations	18	18	19	19				
R-squared	0.50	0.59	0.33	0.43	13	13	13	13
					0.14	0.22	0.35	0.33

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

\*The dependent variable for regressions (7) and (8) is the squared deviation of the average inflation rate over 2000-2007 from 2 percent, the most common inflation target over the period.

Tables B.3 and B.4 below show the results of the regressions for emerging and developing economies with the CWN metric of central bank independence. As can be seen, these are even less conclusive than the results with the GMT metric. As we note, authors including Cukierman, Neyapti and Webb (1992) themselves did not find a significant relationship between their measure of central bank independence and inflation for developing economies. This is because the statutory provisions for central bank independence may not necessarily reflect the reality in countries with weak institutions and high potential for political pressure. Using an alternative measure of *de facto* central bank independence, the turnover of the central bank governor, they did find a negative and significant relationship between central bank independence and inflation in developing countries over the 1970s and 1980s. Since this is a measure of *de facto* political central bank independence but not necessarily *de facto* operational central bank independence, it does not allow us to draw conclusions about the relative importance of different components of central bank independence.

**Table B.3: Emerging and developing economies, regressions of inflation on central bank independence**

	Dependent variable: log inflation				
	(1) 1970s (full)	(2) 1980s (full)	(3) 2000s (full)	(4) 2000s (emerging)	(5) 2000s (developing)
Central Bank Independence (CWN)	-0.56 (0.85)	0.44 (1.68)	-0.66 (0.54)	-0.02 (0.80)	-1.49* (0.84)
Real GDP per capita, 2005 USD	0.14 (0.09)	-0.08 (0.19)	-0.07 (0.09)	0.03 (0.21)	-0.08 (0.12)
Openness: Trade as % of GDP	-0.00*** (0.00)	-0.01* (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Exchange rate Regime	0.27*** (0.06)	0.80*** (0.12)	0.20* (0.11)	0.20 (0.19)	0.18 (0.18)
Constraints on the executive	-0.09 (0.09)	-0.05 (0.22)	-0.12 (0.12)	-0.09 (0.29)	-0.09 (0.16)
Democracy (Polity IV score)	0.03 (0.03)	0.06 (0.07)	0.04 (0.04)	0.04 (0.08)	0.03 (0.06)
Participation in IMF program, 1993-2002			0.52** (0.22)	0.40 (0.32)	0.59* (0.32)
Constant	2.84*** (0.50)	1.10 (1.08)	2.30*** (0.70)	1.51 (1.33)	2.86*** (0.98)
Observations	25	29	60	25	35
R-squared	0.72	0.79	0.33	0.39	0.39

**Table B.4: Emerging and developing economies, regressions of inflation on political and operational independence**

	Dependent variable: log inflation				
	(1) 1970s (full)	(2) 1980s (full)	(3) 2000s (full)	(4) 2000s (emerging)	(5) 2000s (developing)
Political Independence, (CWN)	-0.17 (0.57)	-0.04 (0.94)	0.56 (0.58)	0.15 (0.81)	0.58 (0.95)
Operational Independ Independence (CWN)	-0.29 (1.09)	1.70 (1.93)	-0.74 (0.46)	-0.02 (0.80)	-1.15* (0.67)
Real GDP per capita, 2005 USD	0.15 (0.10)	-0.08 (0.19)	-0.11 (0.09)	0.01 (0.21)	-0.15 (0.14)
Openness: Trade as % of GDP	-0.00*** (0.00)	-0.01 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Exchange rate Regime	0.27*** (0.06)	0.77*** (0.12)	0.20* (0.11)	0.21 (0.19)	0.13 (0.19)
Constraints on the executive	-0.09 (0.10)	-0.08 (0.22)	-0.09 (0.13)	-0.08 (0.32)	-0.04 (0.16)
Democracy (Polity IV score)	0.03 (0.03)	0.07 (0.07)	0.02 (0.04)	0.03 (0.09)	0.02 (0.06)
Participation in IMF program, 1993-2002			0.49** (0.22)	0.39 (0.34)	0.51 (0.34)
Constant	2.81*** (0.55)	1.05 (1.09)	1.90** (0.72)	1.42 (1.45)	2.20** (1.02)
Observations	25	29	60	25	35
R-squared	0.72	0.80	0.34	0.39	0.39

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Annex C: G20 Case Studies

### Central Bank Independence and the role of the Finance Ministry

The case studies below are structured around our scoring system for a modern central bank structure. They include the relevant characteristics both before and after the global financial crisis.



## UNITED STATES

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	<p>The Federal Reserve has a dual mandate of maximum employment and stable prices (12 USC 225a, added by the 1977 Federal Reserve Reform Act):</p> <p>“The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.”<sup>i</sup></p>	<p>There has been no change to the dual mandate, but the Fed has been assigned new responsibilities by the 2010 Dodd-Frank Act (DFA) to promote financial stability. The DFA authorizes the Financial Stability Oversight Council (FSOC) to subject nonbank financial firms to supervision and regulation by the Fed if it “determines that material financial distress” at such a company could pose a threat to US financial stability.<sup>ii</sup> Another DFA provision requires the Fed to establish a range of enhanced prudential – especially macroprudential – standards, both for bank holding companies (BHCs) with total consolidated assets in excess of \$50bn, and for systemically important nonbank financial companies.<sup>iii</sup> Required standards include capital and liquidity requirements, stress testing, single-counterparty credit limits, an early remediation regime, and risk-management and resolution-planning requirements.</p>
1.b	<b>How are these objectives set?</b>	<p>Although the Fed’s dual mandate is specified by the US Congress, the Federal Open Market Committee (FOMC) retains the flexibility of specifying its own target. Prior to 2012, the FOMC did not specify an official inflation target. Rather, it used data on current and expected inflation alongside estimates of the longer-run normal rates of output growth and unemployment in its decision-making process.<sup>iv</sup></p>	<p>In January 2012 the FOMC issued a statement of long-run goals and policy strategy, including specifying that an inflation target rate of 2%, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the dual mandate.<sup>v</sup></p> <p>The Fed’s new financial stability responsibilities were assigned by Congress</p>
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	<p>The FOMC consists of twelve members: the seven members of the Board of Governors; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis. The seven Reserve Bank presidents not sitting on the FOMC attend meetings and participate in monetary policy discussions.</p>	<p>While the decision-making process has not changed, post-crisis monetary policy has made use of a number of new tools, including the ability to set interest on reserves and reverse repurchase agreements, to make substantial purchases of longer-term securities, and to provide forward guidance.<sup>ix</sup></p>

		<p>The Board of Governors is responsible for the discount rate and reserve requirements, while the FOMC is responsible for open market operations (OMOs). Interest rates are set at the eight FOMC meetings each year, in which the FOMC reviews economic and financial conditions, determines the most appropriate stance of monetary policy, and assesses the risks to its long-run goals of price stability and full employment.<sup>vi</sup></p> <p>The seven members of the Board of Governors are nominated by the US President and confirmed by the US Senate. No two Governors may come from the same Federal Reserve District. The full term of a Governor is 14 years. A Governor who has served a full term may not be reappointed. The President appoints the Chairman and Vice Chairman from among the existing Board members, both of whom serve four-year terms, subject to confirmation by the Senate.<sup>vii</sup> The Reserve Bank presidents are appointed by their own boards of directors, subject to the approval of the Board of Governors.<sup>viii</sup></p>	
2.b	<b>How is CB held to account?</b>	<p>Once appointed, members of the FOMC may not be removed for their policy views. In order to protect monetary policy from short-term political influence, Congress has also given the Fed “considerable” operational independence. This is paired with central bank accountability to the public and to Congress.</p> <p>The FOMC publishes a statement immediately after each meeting, outlining its view on the economic outlook and providing a rationale for its policy decision. Full minutes are published three weeks after each FOMC meeting.</p> <p>The Fed submits an extensive semi-annual report to Congress, detailing recent economic developments and its plans for monetary policy. The Chair also testifies semi-annually to Congress, and holds quarterly press conferences to discuss the future path of monetary policy. Financial statements of the</p>	<p>During the financial crisis, the Fed provided information about its lending programmes on its public website and in a special monthly report to Congress. The Board also regularly reports the results of supervisory stress tests of large banks.<sup>xi</sup></p> <p>In addition, since April 2011, the Chair has held a press conference following every FOMC meeting for which a Summary of Economic Projections is prepared. The Summary of Economic Projections includes FOMC participants’ views on the most likely future paths of interest rates, inflation, output and unemployment. Press conferences allow the Chair to explain the rationale behind the policy decision in greater detail than provided in the FOMC statement.<sup>xii</sup></p> <p>The DFA included further changes designed to promote transparency while protecting operational independence. These included a requirement that the Board of Governors disclose the Fed’s balance sheet and discount window lending, along with persons or entities participating in the mortgage-backed</p>

		Reserve Banks and the Board of Governors are audited annually by an independent external auditor. <sup>x</sup>	securities (MBS) purchase programme, foreign currency liquidity swap lines, or Term Auction Facility (TAF) on a weekly basis. <sup>xiii</sup>
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	No. The pre-crisis regulatory approach was entirely microprudential, with no statutory objective for financial stability. <sup>xiv</sup>	Some. The DFA requires the Fed to supervise all systemically important institutions and, along with the FSOC, to establish stricter prudential standards for these firms. <sup>xv</sup> Under Title I, the FSOC also has the power to place nonbank financial companies or domestic subsidiaries of international banks under the supervision of the Fed if they pose a threat to US financial stability. <sup>xvi</sup> Title III abolished the Office of Thrift Supervision, transferring its power over holding companies to the Board of Governors. <sup>xvii</sup> Another key element of the enhanced supervision of large banking organizations is the stress-testing process, including the DFA stress tests and the Comprehensive Capital Analysis and Review (CCAR). The Board of Governors also sets the countercyclical capital buffer (CCyB). <sup>xviii</sup> However, the Fed does not have certain macroprudential tools used by other central banks, such as loan-to-value ceilings for investors with multiple mortgage lines outstanding. <sup>xix</sup>
3.b	<b>Are macro-prudential tools limited to banks?</b>	N/A. (The pre-crisis approach was entirely microprudential.)	Yes. The most significant set of macroprudential reforms has focused on the banking sector, particularly on regulation and supervision of the largest and most interconnected firms. While there have been some macroprudential reforms to the nonbank sector (e.g. the final rule on risk retention in securitization, issued jointly by the Fed and five other agencies, and the new money market fund (MMF) rules, issued by the SEC), these have almost all taken place outside of the Fed. The SEC has also proposed rules to modernize data reporting by investment companies and advisers, and rules to enhance liquidity risk management and disclosure by open-end mutual funds. <sup>xx</sup>
3.c	<b>Is there a clear decision-making structure in place</b>	N/A.	No. Macroprudential regulatory responsibilities are distributed across the FSOC, the Board of Governors and the SEC. The FSOC itself has ten voting members, including the Fed, and five advisory nonvoting members. While the FSOC monitors a range of potential threats to financial stability, it has

	<b>for macro-prudential tools?</b>		limited enforcement powers. The FSOC therefore refers concerns to other agencies, including the Fed, the Commodity Futures Trading Commission and the SEC. <sup>xxi</sup>
3.d	<b>Does the CB have supervisory responsibilities?</b>	Some. The Fed is responsible for overseeing US BHCs and foreign banking organizations operating in the US, and has ultimate supervisory authority for institutions with commercial bank subsidiaries. However, most day-to-day regulation was carried out by state bank regulators, the FDIC and the SEC.	Yes. The DFA assigned the Fed primary supervisory responsibility over all financial firms (including nonbanks) designated as systemically important by the FSOC. These firms include community and regional financial institutions (supervised on a risk-adjusted basis), foreign banking organizations with a long-standing US presence (which the Fed jointly supervises with other state and federal authorities), state member banks (supervised for compliance with consumer- and community-oriented laws), and large financial institutions and financial market utilities. <sup>xxii</sup> In addition, a new position – the Vice Chairman for Supervision – was created on the Board of Governors. <sup>xxiii</sup>
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	No. The Treasury controls government debt maturity, while the Fed sets short-term interest rates through OMOs. Fed Governors are essentially prohibited from speaking with Treasury officials about debt management policy. Despite weekly bilateral meetings between the Treasury Secretary and the Fed Chair, there was no fiscal-monetary policy coordination pre-crisis. <sup>xxiv</sup>	No. The FSOC, based in the Treasury, is chaired by the Treasury Secretary, with the Fed and other financial regulators as members. However, there is still no fiscal-monetary policy coordination post-crisis.
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No.	No change.
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	No.	Yes. The FSOC identifies and responds to risks to financial stability, while promoting market discipline. It is chaired by the Treasury Secretary (who has a veto), with the Fed Chair and other financial regulators as members. <sup>xxv</sup>

5.b	<b>Do other agencies have resources to challenge CB view?</b>	N/A.	Yes. The Office of Financial Research (OFR), created with the FSOC by the DFA as a department within the Treasury, has significant analytical resources. <sup>xxvi</sup>
5.c	<b>Can the monitoring body issue binding recommendations?</b>	N/A.	The FSOC designates financial firms as systemically important (SIFIs), thereby placing them under the supervision of the Fed. In addition, it can make recommendations, and when it recommends more stringent regulation and heightened safeguards to regulatory agencies it can do so on a “comply or explain” basis. In other words, the FSOC can make recommendations to Congress on issues it encounters with the boundaries of regulation, but it lacks the authority to act unilaterally, except for SIFI designations. <sup>xxvii</sup>
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	Some. The Fed’s lender of last resort (LOLR) function is designed to prevent liquidity shortages in the event of a financial panic. However, there was no government-chaired committee to direct overall crisis management.	Yes. The Fed retains the power to extend discount window loans to insured depository institutions, including commercial banks, thrift institutions, credit unions, and US branches of foreign banks. In addition, the DFA requires the Fed to publish information on any discount window loan, including the identity of the borrowers, with a two-year lag, in order to avoid the stigma associated with borrowing from the discount window. The DFA removed the Fed’s authority to lend to an individual troubled institution and prohibits emergency lending to insolvent borrowers; it enables the Fed to offer emergency lending facilities with “broad-based eligibility”, defined by section 13(3) of the FRA <sup>xxviii</sup> . The DFA in addition expanded the authority of the FDIC to resolve a troubled systemic institution in an orderly manner. The FSOC facilitates coordination between the Treasury, the Fed and other financial regulators. <sup>xxix</sup>
6.b	<b>What is role of MoF?</b>	The Treasury coordinated closely with the Fed during the bailouts of Bear Stearns <sup>xxx</sup> and AIG <sup>xxxi</sup> . In addition, the Troubled Asset Relief Program (TARP) was funded by Congress, while the Fed played a crucial role in determining eligible assets. <sup>xxxii</sup> Parts of the	The Treasury chairs the FSOC, but cannot directly instruct the Fed.

		programme were jointly administered, and the Fed lent to banks in conjunction with certain TARP programmes. <sup>xxxiii</sup>	
6.c	<b>Can the CB extend liquidity to non-banks?</b>	Yes. The Fed lent to nonbank financial institutions, such as MMFs.	No. The DFA (Title XI) removed the Fed's authority to lend to an individual troubled institution, requiring the Fed to seek Treasury approval. <sup>xxxiv</sup>

## EUROZONE

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	<p>Maintaining price stability is the primary objective of the Eurosystem and its single monetary policy – Treaty on the Functioning of the European Union (“TFEU”), Article 127 (1)<sup>xxxv</sup>. The TFEU establishes a hierarchy of objectives for the Eurosystem and assigns an overriding importance to price stability.</p> <p>The TFEU doesn’t give a clear definition of price stability, and therefore the governing council adopted a quantitative definition of price stability in 1998: “Price stability is defined as a year-on-year increased in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%.”<sup>xxxvi</sup></p> <p>Secondary objectives, without prejudice to the objective of price stability, include supporting the general economic policies in the Union including, inter alia, “full employment” and “balanced economic growth”.</p>	<p>The ECB considered that it did not need “to change its mandate” as it is “well communicated and understood by the markets.”<sup>xxxvii</sup></p> <p>The ECB also has some responsibilities for financial stability, defined by the ECB as “a state whereby the build-up of systemic risk is prevented”<sup>xxxviii</sup>. The ECB monitors developments in the EU banking and financial sectors alongside the other central banks of the Eurosystem and the European System of Central Banks; most financial stability policy tools are devolved to national regulators, and not within the direct remit of the ECB.</p>
1.b	<b>How are these objectives set?</b>	The TFEU set the overarching objective of price stability, and the inflation target was set by the Governing Council in 1998.	
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	<p>The Governing Council of the ECB sets interest rates.</p> <p>The Governing Council comprises six members on the Executive Board, plus the national central bank governors of 19 Eurozone countries.<sup>xxxix</sup></p> <p>Governing Council Members are appointed on non-renewable eight year terms by governments of “the Member States at the level of Heads of State or Government, on recommendation from</p>	<p>As well as setting the interest rate, the Governing Council is responsible for a number of additional, non-standard, monetary policy measures, including enhanced credit support, outright monetary transactions etc.<sup>xlii</sup></p> <p>Since 2015, voting rights on the Governing Council have been rotated between countries. This was triggered by the accession of Lithuania to the euro area: under the European Union treaties, a rotation system was to be implemented as soon as the number of Governors exceeded 18. Governors</p>

		<p>the European Council, after it has consulted the European Parliament and the Governing Council of the ECB<sup>xi</sup></p> <p>The Governing Council meets twice a month. Monetary policy decisions are taken every six weeks. At the other meetings, the Council determines the tasks and responsibilities of the ECB.<sup>xii</sup></p>	<p>from the five largest economies – Germany, France, Italy, Spain and the Netherlands, share four voting rights, while the other countries share 11. <sup>xliii</sup></p>
2.b	<b>How is CB held to account?</b>	<p>The ECB publicly announces its monetary policy strategy and reports on economic developments to help the market to understand the systematic response pattern of monetary policy in response to economic change.<sup>xliv</sup></p> <p>The European Parliament is the democratically elected body mandated to hold the ECB to account. The ECB President and members of the Governing Council participate in quarterly hearings of the of the EP’s Committee on Economic and Monetary Affairs. The ECB is obliged to answer written questions from MEPs and submits an annual report to the EP, Council of the EU, European Commission and EU Council. Nevertheless, there are no formal mechanisms to grant MEPs powers of enforcement over the ECB.<sup>xlv</sup> There is no mechanism to dismiss the Executive Board or president except through disciplinary action adjudicated by the CJEU.<sup>xlvi</sup></p> <p>Votes of Governing Council members are not reported, but the monetary policy decision and strategy is reported at a press conference. Minutes are recorded and will be released after 30 years.</p> <p>There is no national FM observer.</p>	<p>Since the beginning of 2015, the ECB has also published accounts of the Governing Council’s monetary policy meetings to further enhance transparency regarding its actions.</p>
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	N/A	<p>Most macro-prudential tools remain with national authorities. The ECB gained certain macro-prudential powers and responsibilities through the Regulation on the Single Supervisory Mechanism (“SSM”).</p> <p>The ECB can demand that national authorities tighten a number of regulations for macro-prudential purposes, including: CCyBs, capital</p>



			<p>surcharges for SIFIs, some risk weights, exposure limits and disclosure requirements.</p>
3.b	<p><b>Are macro-prudential tools limited to banks?</b></p>	<p>N/A</p>	<p>Yes. The ECB monitors the build-up of risks in non-bank financial institutions but does not have specific macro-prudential tools to act on them.</p>
3.c	<p><b>Is there a clear decision-making structure in place for macro-prudential tools?</b></p>	<p>There is a requirement for national authorities to undertake annual assessments, for example of O-SII buffer requirements for systemically important institutions operating within their jurisdictions. Before making any decisions on macroprudential policies resulting from this annual assessment process national authorities are required to notify the ECB. If there are any objections national authorities are duly required to consider the ECB's reasons prior to proceeding. A reciprocal arrangement applies to the ECB which must notify national authority if it wishes to "top-up" macroprudential measures. <sup>xlvii</sup></p>	<p>National authorities to undertake annual systemic risk assessments. Before making any decisions on macroprudential policies resulting from this annual assessment process, national authorities are required to notify the ECB. If there are any objections, national authorities are duly required to consider the ECB's reasons prior to proceeding. A reciprocal arrangement applies to the ECB which must notify the national authority if it wishes to "top-up" macroprudential measures. <sup>xlviii</sup></p> <p>Within the ECB, macroprudential policy decisions are taken by the ECB Governing Council. These decisions are informed by the Financial Stability Committee and by the Macroprudential Forum, comprised of the ECB Governing Council and Supervisory Board.</p>
3.d	<p><b>Does the CB have supervisory responsibilities?</b></p>	<p>Regulation of financial institutions remained a national competence, with responsibility at the level of national regulators.</p>	<p>The Single Supervisory Mechanism (SSM), comprising the ECB and National Competent Authorities (NCAs), was set up in 2014 to harmonize prudential supervision of credit institutions to promote the robustness of the euro area banking system. Since November 2014, the ECB has had direct supervisory responsibility for "significant" banks, while smaller banks remain supervised by NCAs. Supervision under the SSM is only for banks; supervision of other financial institutions remains a national competence.</p> <p>The SSM is designed to ensure that the ECB and NCAs perform supervision jointly, working alongside the European Banking Authority (EBA), European Parliament, the Eurogroup, the European Commission and the European Systemic Risk Board (ESRB). Cooperation between national authorities, as well as cross-border supervision, is promoted by the European Supervisory Authorities (ESA).</p>

4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	A clear division between monetary and fiscal actors, with a belief that “ex-ante coordination tends to blur the fundamental responsibilities for the respective economic actors” <sup>xlix</sup> .	No
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No	No
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	There were several fora for cooperation on financial stability at the EU level, including the Financial Stability Table of the Economic and Financial Committee, which prepared a financial stability assessment for ECOFIN; the Financial Services Committee, comprising finance ministries’ representatives, the Banking Supervision Committee of the ESCB, which promotes cooperation between national central banks, supervisory authorities and the ECB; and the Level 3 Committees (CEBS, CESR and CEIOPS), which also regularly offer an assessment of the risks to financial stability in the EU. However, these institutions had few formal powers.	<p>After the crisis, the European Systemic Risk Board (“ESRB”) was set up to conduct systemic risk analysis and macro-prudential policy making at the EU level. It has a clearly defined mandate to coordinate with national macro-prudential authorities and facilitate macro-prudential policy at the level of individual member states.<sup>l</sup></p> <p>ESRB does not have control over the instruments to address systemic risks, as macro-prudential instruments remain within the hands of national authorities and the ECB. The ESRB is limited to issuing recommendations on the application of policy tools. Close cooperation with Member States therefore remains essential.</p> <p>The ESRB has a legal responsibility for macro-prudential oversight and the prevention and mitigation of systemic risks to the EU financial system. The Chair of the ECB is Chair of the ESRB. The board is comprised of central bank governors, and chairs of other EU wide regulators – giving it a similar but distinct composition to the ECB. The ESRB reports to the Council when advising on systemic risks.</p>

5.b	<b>Do other agencies have resources to challenge CB view?</b>	National central banks and regulators have significant analytical resources.	National central banks and regulators have significant analytical resources and sit on the board of the ESRB.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No.	ESRB can issue “comply or explain” recommendations to the EU, member states and European and national supervisory authorities. It cannot compel actions.
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	Prior to the crisis, MoUs existed between national governments, regulators and central banks on co-operation in financial crisis situations. But responsibility essentially rested with the national policy-makers and depended on bilateral relationships between the competent authorities of Member States for effective resolution.	<p>Responsibility for triggering crisis response rests principally with national authorities – who make calls on the European Stability Mechanism (ESM) for funds, or the ECB in their role as banking supervisors, or the ESRB when reporting to national authorities on systemic risks. If an ailing credit institution that is directly supervised by the ECB needs to be recapitalised, the ECB will be responsible for compiling the necessary information. For institutions that it does not directly supervise, the ECB, on notification of the petition for direct ESM support, must immediately start preparations to assume direct supervision of the respective credit institution.</p> <p>In both macro and micro terms, there has been an express decision taken to remove the ECB from crisis decision making, in an effort to preserve its neutrality.</p> <p><b><u>European Stability Mechanism –</u></b> The ESM can provide funds for a sovereign or bank bail-out. If countries need an injection of capital, the Commission will propose to the EU Council a decision endorsing the macroeconomic adjustment programme, while the granting and the terms and conditions of financial assistance will be decided by the Board of Governors of the ESM. The ECB will be involved in conducting debt sustainability analysis, programme design and monitoring. Decisions are taken by ESM governing board - this consists of the finance ministers of the Euro area with the ECB President an observer. The ECB will advise on whether there is a risk to the Euro area as a whole.</p> <p><b><u>Single Resolution Mechanism / Board</u></b> - The Board will resolve failed banks and can draw on the Single Resolution Fund for this purpose.</p>

6.b	<b>What is role of MoF?</b>	The role of each national MoF differed prior to the crisis.	Since 2011, national MOF's will participate in Cross-Border Stability Groups (CBSGs) and will consult with the ECB's Crisis Management Division within the SSM during a crisis. The expectation is that finance ministries and the public authorities responsible for guarantee scheme jurisdictions should maintain Crisis Management Groups. Through the European Council and the board of the ESM, national governments will be at the heart of any crisis response.
6.c	<b>Can the CB extend liquidity to non-banks?</b>	No	National central banks may extend Emergency Liquidity Insurance to financial institutions provided that they inform or consult the ECB (the type of consultation depending on the scale of the operation) <sup>36</sup> .

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<sup>36</sup> Agreement on Emergency Liquidity Assistance, May 2017

## UNITED KINGDOM

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	The Bank of England's primary monetary policy objective is to deliver price stability (as defined by the symmetric 2% CPI inflation target set by the Chancellor of the Exchequer), with secondary objectives to support the UK government's own economic objectives, including those for growth and employment. <sup>li</sup>	Since 2013, the Bank has had a financial stability objective in addition to its original monetary policy objective. The Financial Policy Committee (FPC) is tasked with "identifying, monitoring and taking action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system". The FPC also has a secondary objective to support the government's economic policy. <sup>lii</sup>
1.b	<b>How are these objectives set?</b>	The Bank's monetary policy objective is set by the Chancellor.	No change for the monetary policy objective, but the financial policy objective was introduced by the Financial Services Act of Parliament 2012.
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	The Monetary Policy Committee (MPC) sets monetary policy at monthly meetings. The MPC has nine members: the Governor (chair); three Deputy Governors; the Bank's Chief Economist; and four external members appointed directly by the Chancellor. <sup>liii</sup>	Following the Bank of England and Financial Services Act 2016, the MPC has met eight times per year (rather than twelve), in light of the Warsh Review. <sup>liv</sup>
2.b	<b>How is CB held to account?</b>	If the 2% inflation target is missed by more than 1pp in either direction, the Governor is required to write an open letter to the Chancellor outlining the reasons why. Before the crisis, the Bank published minutes of MPC meetings with a two-week lag, detailing the voting record of individual MPC members along with the reasoning behind the policy decision. The Bank also publishes quarterly Inflation Reports. Bank officials appear regularly for	In addition to the above: Full transcripts of MPC meetings from March 2015 onwards will be published with an eight-year lag. Since August 2015, the Bank has published the minutes of MPC meetings at the same time as the monetary policy decision. The FPC also publishes a record of its formal policy meetings, and is responsible for the Bank's biannual Financial Stability Report. <sup>lvi</sup> MoU requirements were updated by the Financial Services Act 2012. <sup>lvii</sup>

		parliamentary hearings. A non-voting observer from HM Treasury attends MPC meetings. The Bank is required under the Financial Services and Markets Act 2000 to enter into certain Memoranda of Understanding (MoU) with other UK regulators and HM Treasury. <sup>lv</sup>	
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	No. Before the crisis, the Financial Services Authority (FSA) was the UK financial regulator, and its approach was entirely microprudential. <sup>lviii</sup>	Yes. The FPC oversees all macroprudential regulation, with tools including countercyclical capital buffers (CCyB), sectoral capital requirements, and limits on debt-to-income (DTI) and loan-to-value (LTV) ratios. <sup>lix</sup>
3.b	<b>Are macro-prudential tools limited to banks?</b>	N/A. (The pre-crisis approach was entirely microprudential.)	No. The FPC can also limit mortgage loan-to-income ratios and curb lending in the buy-to-let market, using LTV ratios and interest coverage ratios (ICRs). <sup>lx</sup>
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	N/A.	Yes. The FPC is responsible for setting all macroprudential tools: the CCyB, sectoral capital requirements, and limits on housing and leverage ratios. <sup>lxi</sup> The FPC has thirteen members: six Bank staff (including the Governor, four Deputy Governors and the Executive Director for Financial Stability); five independent external experts (appointed by the Chancellor); the Chief Executive of the FCA; and a non-voting member from HM Treasury. <sup>lxii</sup>
3.d	<b>Does the CB have supervisory responsibilities?</b>	No. All supervisory responsibilities rested with the FSA.	In April 2013, responsibility for prudential regulation was transferred from the FSA to the Prudential Regulation Authority (PRA), a new subsidiary of the Bank. The PRA is responsible for the prudential regulation and supervision of around 1,700 banks, building societies, credit unions, insurers and major investment firms. It has three statutory objectives: to promote the safety and soundness of the firms it regulates to help secure an appropriate degree of protection for those who are or may become insurance policyholders; and to facilitate effective competition. <sup>lxiii</sup>
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination</b>	No official mechanisms. While the Bank has no direct role in setting fiscal policy, the MPC does receive briefings from the Treasury representative on fiscal policy developments and other	The Bank coordinated government debt issuance and the implementation of its QE programme with HM Treasury. HM Treasury also guaranteed indemnity for the Bank's Funding for Lending Scheme. <sup>lxv</sup>

	<b>(at the zero lower bound)?</b>	aspects of government economic policy. There are also regular bilateral meetings between the Chancellor and the Governor. <sup>lxiv</sup>	
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No.	No.
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	Some. Before the crisis, the board of the FSA was appointed by HM Treasury, but operated independently of government. <sup>lxvi</sup> The Tripartite Standing Committee on Financial Stability, consisting of the Chancellor, the Governor, and the Chairman of the FSA, had a remit to identify systemic risks. <sup>lxvii</sup> However, in practice the Bank had little knowledge of financial activities. <sup>lxviii</sup>	Yes. The Bank of England has taken over responsibility for systemic risks. The FPC brings together the Governor (who chairs the MPC and the FPC), the Chief Executive of the PRA, the Chief Executive of the FCA, and a non-voting Treasury representative. The FPC focuses on systemic risks, while the PRA supervises individual firms that are deemed systemically important. <sup>lxix</sup> The Bank has also implemented a programme of regular joint meetings of the MPC and FPC to further improve inter-agency coordination. <sup>lxx</sup>
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Some. The Tripartite Standing Committee had access to all Bank, FSA and Treasury data at its meetings, which could be used to challenge the Bank. <sup>lxxi</sup>	Some. While there is a non-voting Treasury representative on the FPC, there is no regular meeting between the Bank and the Treasury. “The Financial Services Act 2012 places obligations on the Bank, in pursuing its financial stability objective, to notify the Treasury where there is a material risk of public funds being required and to notify the Treasury of any subsequent changes to such a risk.” Substantial additional regulatory powers have been transferred to the Bank following the crisis and the disbandment of the FSA. <sup>lxxii</sup>
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No, although the Chancellor, Governor and FSA Chairman individually could implement recommendations within their respective organisations.	Partially. The FPC oversees all macroprudential regulation, with the power to set tools such as the CCyB and loan-to-income ratios directly. It can also issue “comply or explain” recommendations to the PRA and FCA, along with plain recommendations to other regulators. <sup>lxxiii</sup>
6	<b>Crisis Management</b>		

6.a	<b>Do crisis management mechanisms exist?</b>	Partially. The Tripartite Standing Committee had a remit to identify systemic risks. However, there was a lack of clarity on the ability of the Treasury to direct the Bank to make changes.	Yes. The primary responsibility for crisis management now largely rests with the Bank (FPC and PRA). However, in cases where public funds are put at risk, the primary responsibility for crisis management lies with the Treasury. <sup>lxxiv</sup>
6.b	<b>What is role of MoF?</b>	HM Treasury largely directed the Tripartite Standing Committee. <sup>lxxv</sup>	HM Treasury can direct the Bank to support insolvent firms and to provide support to the financial system beyond the existing frameworks. After the Bank formally notifies HM Treasury of a material risk to public funds, and either there is a serious threat to financial stability or public funds are already committed by the Treasury to resolve such a serious threat, the Chancellor has the authority to direct the Bank. <sup>lxxvi</sup>
6.c	<b>Can the CB extend liquidity to non-banks?</b>	Yes. The Bank acted as market maker of last resort in the crisis by buying and selling capital market assets against central bank money. <sup>lxxvii</sup>	Yes. LOLR access has now been extended to certain nonbank organisations, including broker-dealers and Central Clearing Counterparties (CCPs). <sup>lxxviii</sup>



## AUSTRALIA

		BEFORE CRISIS	AFTER CRISIS
1	Central Bank Policy Targets		
1.a	<b>What are the Objectives?</b>	The Reserve Bank of Australia (RBA) has a duty to “contribute to the stability of the currency, full employment, and the economic prosperity and welfare of the Australian people”. The RBA achieves these statutory objectives by targeting average consumer price inflation of 2-3%, over the medium term. <sup>lxxxix</sup> The RBA has also had a longstanding responsibility for financial stability. The RBA has a role “both in mitigating the risk of financial disturbances that may have systemic consequences, and in responding to a financial system disturbance should it occur”. <sup>lxxx</sup>	<p>In December 2007, following the change in government, a new Statement on the Conduct of Monetary Policy was jointly issued by the Treasurer and the Governor of the RBA. While this Statement did not alter the RBA’s previous policy objectives, it did incorporate substantive amendments relating to the independence of the RBA practices relating to transparency and communication.</p> <p>A revised version of the Statement was issued following the 2010 election, which explicitly covered the RBA’s financial stability mandate. A further Statement was issued following the change in government in October 2013, which emphasised the importance of the RBA’s inflation-targeting framework<sup>lxxxi</sup> and clarified how the RBA promotes financial stability: by managing and providing liquidity to the system and chairing the Council of Financial Regulators. The statement further specified that the Payments System Board has explicit regulatory authority for payments system stability, which the RBA supports by publishing its biannual Financial Stability Review.<sup>lxxxii</sup></p>
1.b	<b>How are these objectives set?</b>	The dual mandate objectives are set out in the Reserve Bank Act 1959, while the Treasury sets targets and other considerations through Statements on the Conduct of Monetary Policy, in consultation with the Governor of the RBA.	No change, although the RBA’s responsibilities have become more explicit since the crisis, following a series of Statements and Amendments. <sup>lxxxiii</sup>
2	Monetary Policy		
2.a	<b>How are MP decisions taken?</b>	The nine-member Reserve Bank Board sets interest rates with a simple majority vote, so as to achieve the objectives set out in the Reserve Bank Act 1959. The Board typically meets eleven times each year, with meeting dates publicly available well in advance. The Board comprises the Governor (chair), the Deputy Governor and the Secretary to the Treasury, along with six non-	No change.

		executive members appointed by the Treasurer. The Governor and Deputy Governor are appointed for terms of up to seven years, while the non-executive members are appointed for terms of up to five years. All members are eligible for reappointment. <sup>lxxxiv</sup>	
2.b	<b>How is CB held to account?</b>	In accordance with Section 11 of the Reserve Bank Act 1959, the RBA is required to inform the Australian government on the RBA's monetary and banking policy. This occurs largely through frequent formal and informal contacts between the Governor and the Treasurer. The Act also sets out procedures to be followed if there is a difference of opinion between the government and the Reserve Bank Board as to whether the RBA's monetary policy is 'directed to the greatest advantage of the people of Australia'. If the Treasurer and the Board are unable to reach agreement, the Board must provide the Treasurer with a statement on the matter. The Treasurer may then submit a recommendation to the Governor-General who, with the advice of the Federal Executive Council, may determine the policy to be adopted by the RBA. In addition, since 1996, the Governor and senior RBA officers have appeared twice annually before the House of Representatives Standing Committee on Economics to report on the conduct of monetary policy and other matters within the responsibility of the RBA. <sup>lxxxv</sup>	The Public Governance, Performance and Accountability Act 2013 requires that the Governor prepare an annual report by 15 October, for presentation to the Treasurer and tabling in the Commonwealth Parliament. <sup>lxxxvi</sup>
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	No. The RBA promotes financial stability by: laying the foundation for low and stable inflation and sustainable growth; monitoring the health of the financial system and publishing results of analysis in the Financial Stability Review; and ensuring that the payments system is safe and robust. <sup>lxxxvii</sup> The Council of Financial Regulators (CFR), established in 1998, is the coordinating body for Australia's main financial regulatory agencies: the RBA (chair); the APRA; the Australian Securities and Investments Commissions (ASIC); and the Treasury. <sup>lxxxviii</sup> The main tools for macroprudential supervision in Australia are only exercisable by APRA – the only	No change. Macroprudential tools still reside with the APRA. Following the crisis, the APRA has committed to adopting the countercyclical capital buffer (CCyB) as part of its implementation of the Basel III reforms. <sup>lxxxix</sup>

		agency with the power to act to change the behaviour and balance sheets of entities directly to achieve macroprudential outcomes. The APRA can vary through the cycle the intensity of supervision, backed up as appropriate by its prudential tools (particularly capital) and, in extreme cases, its legislated direction powers. These direction powers include the ability to obtain information from an authorised deposit-taking institution (ADI), to investigate an ADI, to give binding directions to an ADI (such as to recapitalise) and, in more extreme circumstances, to appoint a statutory manager to assume control of a distressed ADI.	
3.b	<b>Are macro-prudential tools limited to banks?</b>	Yes. Macroprudential tools are limited to ADIs.	No change.
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	Yes. The APRA exercises the main tools for macroprudential supervision in Australia, while the CFR coordinates actions across the RBA, the APRA, the ASIC and the Treasury.	No change.
3.d	<b>Does the CB have supervisory responsibilities?</b>	No. All financial institutions are supervised by the APRA. <sup>xc</sup>	No change.
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	No. The government appoints the members of the Reserve Bank Board, who have substantial operational independence under the Reserve Bank Act 1959. The government also recognises the importance of a strong RBA balance sheet, and the Treasurer decides on the annual distribution of the RBA's earnings. However, there is no further coordination at the zero lower bound beyond these usual measures; the CFR only has a financial stability role. <sup>xc<sup>i</sup></sup>	No change.
4.b	<b>Is there a procedure for CB/independent body to</b>	No.	No change.

	<b>recommend coordination?</b>		
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	Yes. The CFR coordinates actions by the RBA, APRA, ASIC and Treasury. <sup>xcii</sup>	No change.
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes. The APRA is separate from the RBA, and has substantial analytical and policy resources. <sup>xciii</sup>	No change.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No. According to its Charter, the CFR merely provides a forum for: identifying important issues and trends in the financial system; ensuring the existence of appropriate coordination arrangements for responding to actual or potential instances of financial instability; and harmonising regulatory and reporting requirements, while keeping regulatory costs to a minimum. <sup>xciv</sup>	No change.
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	Yes. Each of the four CFR member agencies has specific roles in planning for and managing distress in the financial system. If needed, the CFR coordinates responses to potential threats to financial stability. The RBA has primary responsibility for the maintenance of overall financial stability, including stability of the payments system and providing liquidity support to the financial system or individual financial institutions where appropriate. The APRA is responsible for the prudential supervision of financial institutions, balancing the objectives of financial safety and efficiency, competition contestability and competitive neutrality. The ASIC is responsible for monitoring, regulating and enforcing corporations and financial services laws, and for promoting market integrity and consumer protections across the financial services sector and the payments system. Finally, the Treasury	No change.

		advises the government on policy and possible reforms to promote a sound financial system, including on financial distress management arrangements. <sup>xcv</sup>	
6.b	<b>What is role of MoF?</b>	Although the CFR is chaired by the RBA not the Treasury, the Australian government can legislatively direct the APRA and the ASIC. <sup>xcvi</sup> The Reserve Bank Act 1959 also sets out procedures to be followed if there is a difference of opinion between the government and the Reserve Bank Board. <sup>xcvii</sup>	No change.
6.c	<b>Can the CB extend liquidity to non-banks?</b>	No.	No. The RBA provides a Committed Liquidity Facility (CLF) only to certain ADIs as part of Australia's implementation of the Basel III liquidity standards. Consistent with the standards, certain ADIs are required by APRA to maintain a liquidity coverage ratio (LCR) at or above 100%. These ADIs may seek approval from APRA to meet part of their Australian dollar liquidity requirements through a CLF with the RBA. <sup>xcviii</sup>

## CANADA

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	The principle role of the Bank of Canada (BoC), as defined in the Bank of Canada Act is to “Promote the economic and financial welfare of Canada” <sup>xcix</sup> . The Bank targets low and stable inflation: since 1995 the target has been an inflation rate of 2 percent within a symmetric control range of 1-3 percent as measured by the consumer price index (CPI) <sup>c</sup> .	No change.
1.b	<b>How are these objectives set?</b>	The inflation-control target is renewed every five years by the Bank and Government of Canada (this has happened every five years since 1991).	The most recent inflation target was set in October 2016 for the five years until the end of 2021. The policy rate is raised or lowered to achieve the target typically within six to eight quarters.
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	Prior to December 2000, the Bank had no fixed schedule for its interest rate decisions. After this period, the Bank moved to a system of fixed announcement dates, making interest rate decisions on eight pre-announced dates throughout the year with intervals of six or seven weeks between each. The Bank also reserves the right to change on policy rates that fall outside this schedule.  The Governing Council is responsible for setting the interest rate. It is made up of the Governor, the Senior Deputy Governor and four Deputy Governors. The Monetary Policy Review Committee and the four economics departments at the Bank play an important role in the discussions leading up to the monetary policy decision. <sup>ci</sup>	No changes were made to the decision-making schedule after the crisis.
2.b	<b>How is CB held to account?</b>	Inflation targets were introduced in 1991 to make the BoC’s actions “more readily understandable to financial market participants and the general public” <sup>cii</sup>	The BoC’s Governor Stephen S. Poloz has tried to evolve the Bank’s policy to improve the level of accountability by: 1) Building forecast ranges into public policy dialogue 2) Pointing to elements of fundamental uncertainty

	<p>The Monetary Policy decision is announced the day after the decision with a synchronous release of the <i>Monetary Policy Report</i> that details the Bank’s economic projections, economic developments and risks that could affect the inflation outlook.<sup>ciii</sup></p> <p>Two other publications are issued: the <i>Business Outlook Survey</i>, a “reality check” on economic developments, and the <i>Senior Loan Officer Survey</i> based on interviews around lending conditions. Finally, a press conference is held by the Governor and Senior Deputy Governor, and they appear in front of the Standing Committee on Finance and the Standing Committee on Banking, Trade and Commerce.</p> <p>However, no formal arrangements are in place to hold the BoC accountable if targets are missed<sup>civ</sup>.</p>	<ol style="list-style-type: none"> <li>3) Consulting with Canadian businesses and financial market participants around alternative interpretations of macroeconomic data.</li> <li>4) Bringing a more fulsome narrative to the policy decision-making process based on a risk-management framework</li> <li>5) Offering more research on financial linkages and financial stability</li> </ol> <p>This may look like an ‘erosion’ of accountability, but is designed to inject more realism about uncertainty into the narrative.<sup>cv</sup></p>
3	<b>Financial Policy</b>	

3.a	<b>Are macro-prudential tools housed in the CB?</b>	<p>There are some macro-prudential tools but responsibility for them does not lie formally with the Bank of Canada. The BoC doesn't have a statutory responsibility for financial stability, although it does have a responsibility for providing liquidity; overseeing key domestic payment, clearing and settlement systems (per the Payment, Clearing and Settlement Act); and participating in the development of financial system policies in Canada.</p>	<p>There are a range of macro-prudential tools within the Canadian system (primarily related to the housing market and bank capital), but no clear and unified mandate for the BoC or another agency to be in charge of macro-prudential policy.</p> <p>The Finance Ministry uses macro-prudential tools in the housing sector, particularly by changing the rules on amortization and LTV ratios which regulate access to mortgage loan insurance from CMHC. (Mortgage loan insurance is mandatory for homebuyers with a downpayment of 20 percent or less)<sup>cvii</sup>.</p> <p>The Office of the Superintendent of Financial Institutions (OSFI), Canada's financial regulatory body, is responsible for adjusting the counter-cyclical capital buffer<sup>cvii</sup>.</p> <p>Since the financial crisis, the BoC has been doing "a lot of thinking and research to improve our understanding of the nexus between monetary policy and financial stability" – this has led to a spate of research under the BoC's 2016-17 medium-term plan.<sup>cviii</sup> In December 2014 and June 2015, during the semi-annual Financial System Review, the BoC looked at risk associated with elevated levels of household financial stress, and used this to recommend rate changes. However, under the current risk management approach to monetary policy,<sup>cix</sup> there has been little use of macroprudential policy.<sup>cx</sup></p>
3.b	<b>Are macro-prudential tools limited to banks?</b>	The Bank Act 1991 (section 418) conditions mortgage access including LTV and TDS constraints.	No. Since 2008, a range of Canadian authorities have taken macroprudential measures to support stability in the housing and mortgage markets. For example the OSFI works to strengthen mortgage underwriting standards, and the government has restricted guarantees under the National Housing Act Mortgage-Backed Securities program. <sup>cxii</sup>
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	<p>Somewhat. Canada has fora in which senior officials from the BOC, OSFI, DOF, the Canada Deposit Insurance Corporation (CIDC), and the Financial Consumer Agency of Canada (FCAC) meet – the Financial Institutions Supervisory Committee (FISC), the Senior Advisory Committee (SAC), and the board of the CDIC. The FISC serves as a consultative body and its existence doesn't appear to have impinged on the authority assigned to the OSFI<sup>cxii</sup></p>	No change.



		<p>The OSFI, BOC, DOF, FCAC and CDIC all meet and work together on a regular basis.</p> <p>These are consultative, not decision-making, bodies that are not established in legislation. There is no single body which has a complete mandate for macroprudential oversight. Moreover, none of the executive committees have a broad enough membership to allow for a comprehensive view of the systemic risk across all of Canada's financial institutions and markets.<sup>cxiii</sup></p>	
3.d	<b>Does the CB have supervisory responsibilities?</b>	<p>No. Although the BoC has some supervisory responsibility for financial market infrastructure, the Office of the Superintendent of Financial Institutions (OSFI) is the prudential regulator. The OSFI supervises all banks and federally regulated life, and property and casualty insurers.</p> <p>The CDIC board of directors (including the BoC as an SAC member) can conduct special examinations into the health of depository institutions.</p> <p>The OSFI act requires every member of the FISC to share information relating to financial institution supervision, insurance and bank holding companies.</p>	No change.
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	<p>Not specifically. There is no formal coordination mechanism between monetary and fiscal policy. Co-operation between the BoC and the DoF occurs on a number of levels in the form of sharing information and analysis, including frequent meetings between directors at the BoC and ministers. The aim of these meetings is to ensure that institutions understand the frameworks within which the other organization is pursuing its objectives.<sup>cxiv</sup></p>	<p>Not specifically. The BoC has issued a framework for conducting monetary policy at the ZLB,<sup>cxv</sup> including large-scale asset purchases, funding for credit, and negative policy rates. The BoC have stated that there is no "predetermined bias regarding the order in which the policy measures identified are used". Under such circumstances, the BOC would explain the broad objectives behind the specific extraordinary measure being deployed.</p>
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	N/A	N/A

5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	<p>Somewhat. Oversight of the financial sector is shared by federal and provincial authorities, and the safety net is organised at the federal and provincial levels. The federal safety net is comprised of the DoF, the BoC, the OSFI, the CDIC and the FCAC.</p> <p>The MoF is charged with the “supervision, control and direction of all matters relating to the financial affairs of Canada not by law assigned to the Treasury Board or to any other minister” (<i>The Financial Administration Act, Article 15</i>), and therefore the MoF is the gatekeeper of financial stability for federally regulated entities.</p> <p>The SAC has members that include the BoC, FCAC and CDIC. The SAC is chaired by the Deputy Minister of Finance and acts as a discussion forum for policy issues in the financial sector, including systemic vulnerabilities and financial stability.</p> <p>However, there is a lack of mandate in some specific areas – for example, the BOC conducts regular assessments of the stability of the financial sector, but there are data gaps and a lack of access to information, as no single institution has a mandate to collect information for the system as a whole – federally and provincially regulated entities, unregulated entities and markets. Moreover, the SAC is only a consultative committee that doesn’t have its own mandate grounded in legislation.</p>	<p>No change in the inter-agency mechanism.</p> <p>The BoC has increased its monitoring and reporting of vulnerabilities in the Canadian financial system including the (i) degree of leverage, (ii) funding and liquidity issues (iii) risk pricing and (iv) opacity. They publish this assessment in the Financial System Review.</p> <p>To achieve this the BoC has created the Macro Financial Risk Assessment Framework (MFRAF) to measure risks in the Canadian banking system – one of a suite of macro-stress testing models that incorporates the impact of funding liquidity risk, credit risk and the spillover effects of interbank exposures.<sup>cxvi</sup> MFRAF is part of a goal to accumulate a set of tools that can provide a comprehensive measure of vulnerability in all sectors and all measures of vulnerability.<sup>cxvii</sup></p>
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes, the OSFI has expertise in analyzing financial risks.	Since the crisis, the OSFI has been able to increase its supervisory capacity by increasing its head count by approximately 50 percent between 2007 and 2012. <sup>cxviii</sup>
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No	N/A
6	<b>Crisis Management</b>		

6.a	<b>Do crisis management mechanisms exist?</b>	Yes. FISC plays a key role in crisis management. The intervention framework is well articulated and shared between the OSFI, CDIC and BOC. The BOC has a strong emergency liquidity framework.	<p>The FISC is chaired by the OSFI superintendent – and it is designed to serve as a consultative body rather than impinging on the authority assigned to the OSFI.</p> <p>The routine meetings of those involved in the FISC, OSFI and the CDIC ensure that government officials do not give contradictory messages.</p>
6.b	<b>What is role of MoF?</b>	<p>The MoF is considered a close partner and plays a role on the FISC, SAC and on the board on the CDIC.</p> <p>FISC is chaired by the MoF, and the MoF can direct regulators in a crisis.</p> <p>The OSFI-CDIC have transparently communicated to the industry crisis management mechanisms through the <i>“Guide to Intervention”</i> – the CDIC has a broad resolution toolkit through the Financial Institution Restructuring Provisions<sup>cxix</sup>.</p> <p>This can only be activated based on a decision taken by the Governor in Council following a recommendation from the MoF.</p>	No change.
6.c	<b>Can the CB extend liquidity to non-banks?</b>	Yes, the BoC can lend to both non-banks and on a market-wide basis.	Yes. The BoC updated its Emergency Lending Assistance policy in 2015, replacing the requirement for a recipient institution’s solvency with a credible recovery and resolution framework, expanding the range of eligible collateral to include mortgages and clarifying the scope of the program <sup>cxx</sup> .

## CHINA

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	<p>The People's Bank of China (PBoC) performs 14 major functions, as specified by the Law of the People's Republic of China (PRC) on the PBoC. The PBoC's official monetary policy objective is "to maintain the stability of the value of the currency and thereby promote economic growth".<sup>cxxi</sup> The PBoC also has a financial stability objective in "preventing and mitigating systemic financial risks to safeguard financial stability". Other major functions include: issuing the Renminbi and administering its circulation; regulating financial markets; managing the State treasury as fiscal agent; and providing guidance to anti-money laundering work in the financial sector.</p> <p>Unlike other central banks that target policy interest rates or inflation, the PBoC has targeted broad monetary aggregates such as M2 since 1998, relying mainly on managing the quantity of base money supply and credit growth.<sup>cxxii</sup></p>	No change. The amended Law of the PRC on the PBoC was adopted by the 6 <sup>th</sup> meeting of the Politburo Standing Committee of the 10 <sup>th</sup> National People's Congress on December 27, 2003. <sup>cxxiii</sup>
1.b	<b>How are these objectives set?</b>	The Politburo Standing Committee of the National People's Congress, which has seven members, stipulates the PBoC's main objectives annually. <sup>cxxiv</sup> Since 1998 these have targeted the growth of the money supply, usually M2. <sup>cxxv</sup>	No change.
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	The Monetary Policy Committee (MPC), established by Article 12 of the Law of the PRC on the PBoC, is a "consultative body for the making of monetary policy by the PBoC, whose responsibility is to advise on the formulation and adjustment of monetary policy targets for a certain period". The MPC therefore only has an advisory role.	No change.

		<p>The MPC includes four members of the PBoC, eight members of the government, the chairman of the China Securities Regulatory Commission (CSRC), the chairman of China Insurance Regulatory Commission (CIRC), the finance institute director of the Development Research Center of the State Council), and three representatives from state owned enterprises and academic area.<sup>cxvvi</sup></p> <p>The MPC performs its functions through regular quarterly meetings. The MPC's monetary policy proposals are reported to the State Council for approval. The Premier of the PRC can appoint and remove members of the MPC. The Premier's nomination of the candidate for PBoC Governor is subject to confirmation by the National People's Congress (or its Standing Committee).<sup>cxvii</sup></p>	
2.b	<b>How is CB held to account?</b>	<p>There are few explicit transparency procedures because the PBoC is not operationally independent of the State Council. The committee presents short meeting minutes on the PBoC webpage after the meeting, if two-thirds of the members of the MPC approve the minutes<sup>cxviii</sup>.</p> <p>The external members of the MPC in China come from other institutions, for example commercial banks have their own representatives on the MPC.</p>	No change.
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	<p>Yes, some. The PBoC used macroprudential tools such as variations in reserve requirement ratios to control credit growth, as well as caps on real estate LTV ratios and rules on mortgages to control real estate price growth<sup>cxix</sup>.</p>	<p>Yes, most. A formal macroprudential policy framework was officially introduced at the 2010 Central Economic Work Conference. From 2011, the PBoC introduced dynamic adjustment mechanisms for the differentiated reserve ratios. Additional instruments include dynamic LTV requirements for first and second homes, a countercyclical bank capital buffer and capital surcharges for SIFIs.</p>

			<p>Several macroprudential tools, however, are housed in the China Banking Regulatory Commission, including specifying dynamic provisioning requirements, capital conservation buffers, leverage ratios and liquidity surcharges<sup>CXXX</sup>.</p> <p>The Law on the PBoC identifies the PBoC as responsible for guarding against systemic financial risks and maintaining of macro-financial stability. The Macroprudential Assessment (MPA) framework released by the PBoC in late 2015 contains seven indicators, including capital and leverage, assets and liabilities, liquidity, risk and implementation of credit policy. According to Governor Zhou Xiaochuan, the MPA has covered some of the prominent existing concerns, but may prove inadequate for future development.<sup>CXXXI</sup> Since Q1 2017, the MPA has included off-balance sheet wealth management products (WMPs) in assessing banks' capital adequacy.<sup>CXXXII</sup> The PBoC also plans to remove an intermediary category in its evaluation of capital adequacy.<sup>CXXXIII</sup></p> <p>The 2016 Q4 China Monetary Policy Implementation Report stated that the PBoC would explore a financial control framework consisting of the two pillars of monetary and macroprudential policy.</p>
3.b	<b>Are macro-prudential tools limited to banks?</b>	Yes. Most pre-crisis macroprudential tools, such as differentiated reserve requirement ratios, only applied to banks.	Guo Shuqing, the new CBRC Chairman, has announced a unified system to oversee asset management products across different financial sectors. The system aims to reduce the risk of shadow banking and inject more capital into the real economy. <sup>CXXXIV</sup> These Unified Regulations, along with the MPA, will provide the PBoC with powers to influence the demand for and use of financial instruments by both banks and non-bank financial institutions. <sup>CXXXV</sup>
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	No.	Partially. The MPA could act as a coordination mechanism for financial regulators, but its ultimate effectiveness remains unclear. The <i>Deposit Insurance Act 2015</i> and macro-prudential policy framework are both implemented by the PBoC. <sup>CXXXVI</sup>
3.d	<b>Does the CB have supervisory responsibilities?</b>	No. The CBRC is the prudential regulator of commercial banks and other banking FIs, the CSRS regulates the securities and futures markets, and the CIRC regulates the insurance industry. <sup>CXXXVII</sup>	No change.

4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	To some extent, since the State Council has final say over fiscal decisions and, formally, must approve monetary policy decisions. The PBoC does not have explicit authority to coordinate on fiscal policy, but the MPC can advise the State Council on coordination between monetary and fiscal policy. The State Council ultimately determines the most appropriate course of action. <sup>cxxxviii</sup>	No change yet, although China plans to better coordinate its fiscal and monetary policies to help counter a slowdown in the economy. Again, however, these efforts will be led by the State Council rather than the PBoC. <sup>cxix</sup>
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No.	No change.
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	No. There are only informal mechanisms such as cross-agency information sharing aimed at reducing the scope for regulatory arbitrage. <sup>cxl</sup>	Yes. The Financial Regulatory Coordination Joint Ministerial Committee (JMC) was established in 2013 to enhance inter-agency coordination on financial regulation. Members include the PBoC, CBRC, China Securities Regulatory Commission (CSRC) and China Insurance Regulatory Commission (CIRC). The JMC is led by the PBoC Governor and is expected to meet at least quarterly. <sup>cxli</sup>
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes. The CBRC has full supervisory responsibility over banks and has meaningful decision-making authority. <sup>cxlii</sup>	No change.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	N/A	Partially. While the JMC does not itself have the authority to issue binding recommendations, the MoF – in its role as a national executive agency of the Central People's Government – can compel regulators to act if needed. <sup>cxliii</sup>
6	<b>Crisis Management</b>		

6.a	<b>Do crisis management mechanisms exist?</b>	Partially. An ad hoc committee was formed in 2008 at the onset of the crisis.	Yes. The Financial Crisis Response Group (FCRG) was established in 2008 under the direction of the State Council. It is chaired by the Vice Premier of the State Council and meets regularly to discuss new trends in the financial system and significant potential risks, as well as to coordinate and resolve cross-agency issues. <sup>cxliv</sup>
6.b	<b>What is role of MoF?</b>	Although the PBoC chaired the ad hoc committee, the MoF and government retained the dominant decision-making role. MoF's explicit responsibilities include debt management, management of state-owned asset and the state administration of foreign reserves. These agencies provided a "financial backstop" in times of financial stress <sup>cxlv</sup>	The MoF now leads the FCRG, following the crisis.
6.c	<b>Can the CB extend liquidity to non-banks?</b>	Yes.	No change.



## INDIA

		<b>BEFORE CRISIS</b>	<b>AFTER CRISIS</b>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	<p>The Reserve Bank of India Act (1934) specifies the mandate as: “to regulate the issue of Bank notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage; to have a modern monetary policy framework to meet the challenge of an increasingly complex economy, to maintain price stability while keeping in mind the objective of growth.”</p> <p>While the law does not explicitly outline financial stability as an objective, the RBI takes financial stability into account when making policy<sup>cxlvi</sup>.</p>	In 2015, the RBI announced that it would set an inflation target of 4% (+/- 2%), effective from 2017.
1.b	<b>How are these objectives set?</b>	The objectives are set by the Government of India in consultation with the RBI.	No change.
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	The RBI governor controls monetary policy and decides interest rates, in consultation with a board of advisers. There is no formal committee structure. Since the RBI is not operationally independent, the Government has the power to issue policy directions to the RBI.	<p>As per the provisions of the RBI act 2016, a Monetary Policy Committee has been formed which is responsible for fixing the benchmark policy rate to contain inflation within the specified target level. Three members of the Monetary Policy Committee (MPC) are from the RBI and the other three members are appointed by Central Government. Members hold office for four years, or until further orders.<sup>cxlvii</sup></p> <p>The Monetary Policy meeting is held at least four times a year, and decisions are published after each meeting.</p>

2.b	<b>How is CB held to account?</b>	No formal accountability mechanisms are specified in statute, but the RBI Governor can be summoned before parliament and holds quarterly press conferences. The RBI Governor is appointed by the government for 5 year terms.	The RBI bi-monthly monetary policy statements, assessing the current and evolving macroeconomic situation. <sup>cxlviii</sup> The MPC issues minutes after each monetary policy meeting, where each member explains her/his decision. If inflation is outside the tolerance band for three consecutive quarters, it is considered that the inflation target has failed to be met, and the RBI must send a report to the government explaining why this occurred and what remedial actions will be taken <sup>cxlix</sup> .
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	RBI has long-standing experience in the use of macroprudential instruments to counter credit cycles, particularly since 2004. The preferred policy tools were time-varying risk weights and dynamic provisioning on various asset classes held by banks <sup>clci</sup> .	Additional tools have been used by RBI since the crisis, including a differentiated cap on LTV ratios introduced in 2010.  Overall, the Indian macroprudential framework relies on inter-agency coordination with tools housed in the RBI as well as in financial regulators. The FSDC, founded in 2010, has an express mandate to supervise macroprudential policies and ensure inter-regulatory coordination. It is chaired by the Finance Minister and includes the Governor of the RBI, the heads of the financial regulators, and other Finance Ministry policymakers <sup>clii</sup> .
3.b	<b>Are macro-prudential tools limited to banks?</b>	The RBI has the power to develop non-bank macro-prudential tools.	No. In practice, macro-prudential actions have been directed almost exclusively at banks, which account for 2/3 of assets and 80% of loans in the Indian financial system <sup>cliii</sup> .
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	No, there is no separate decision-making process for macro-prudential policy.	No: apart from the CCCB and additional capital requirements, there isn't a formal process to review whether changes in the macro-prudential policy stance are required <sup>cliv</sup> . The FSDC has responsibility to oversee the macroprudential policies implemented by the RBI and regulatory agencies.
3.d	<b>Does the CB have supervisory responsibilities?</b>	Yes	Yes, the RBI has responsibility for Non-Banking finance companies; but not for HFCs.
4	<b>Fiscal Coordination</b>		

4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	Somewhat. RBI is the government debt manager so it can coordinate debt management and monetary policy. There is no explicit framework for coordination between monetary policy and fiscal stimulus.	<p>No coordination mechanism.</p> <p>Close to the Monetary Policy decisions, the Governor meets with the PM and Finance minister to provide a macroeconomic assessment. This consultation, particularly with the Finance Minister, has been stated in RBI bulletins as being an “avenue for fiscal-monetary coordination”<sup>clv</sup></p> <p>In addition, there is a proposal for debt management to be shifted to the Debt Management Office (DMO), in order to resolve conflicts of interests and reduce the cost of debt.<sup>clvi</sup></p>
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No	No
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	Yes. The high-level coordination committee on financial markets (HLCCFM) under the chairmanship of the RBI governor.	<p>The Financial Stability and Development Council (FSDC) was set up in December 2010. The FSDC mandate covers systemic oversight, regulatory coordination, and financial sector development, literacy, and inclusion. It is chaired by the MoF and includes RBI governor and heads of other regulators. A subcommittee chaired by the RBI Governor acts as the operational arm of the FSDC and replaces the HLCCFM.</p> <p>However, while the FSDC provides a forum for enhancing inter-agency coordination for financial stability, it does not have legal underpinnings and has a broader mandate that also covers financial sector development and inclusion.<sup>clvii</sup></p>
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes, the securities, pensions and deposit insurance agencies have some analytical capacity.	No change.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No.	No. The FSDC was set up as a body to ensure inter-regulatory coordination: the autonomy of existing regulators and the RBI was preserved.
6	<b>Crisis Management</b>		

6.a	<b>Do crisis management mechanisms exist?</b>	The Financial Markets Committee and Crisis Management Group within the RBI respond to financial institution failures and financial crises <sup>clviii</sup> . The HLCCFM formally has a role in crisis management and coordination.	A crisis management group has been set up inside the RBI, with representation from the national government, state governments, and several major financial regulators and industry groups <sup>clix</sup> . Crisis arrangements for the payments system have been tested. <sup>clx</sup>
6.b	<b>What is role of MoF?</b>		An Early Warning Group (EWG) was set up in June 2012 under the auspices of the FSDC, to coordinate government and regulator response to a crisis situation and detect early warning signals. <sup>clxi</sup>
6.c	<b>Can the CB extend liquidity to non-banks?</b>	No	Yes, from 2008 the RBI extended its facility for banks to onlend to mutual funds, non-bank financial corporations and housing finance companies from June to September 2009. <sup>clxii</sup>

## JAPAN

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1		<b>Central Bank Policy Targets</b>	
1.a	<b>What are the Objectives?</b>	<p>The Bank of Japan Act defines the objective of the Bank of Japan's monetary policy as "aimed at achieving price stability, and thereby contributing to the sound development of the national economy"<sup>clxiii</sup> within a timeframe that allows for the target to be maintained "in a stable manner".</p> <p>There is a partial financial stability mandate: the BoJ must ensure "the smooth settlement of funds".</p>	In 2013 the BoJ set a symmetric inflation target of 2% as measured by the consumer price index (CPI), and has made a commitment to achieving this target at the earliest possible time. <sup>clxiv</sup>
1.b	<b>How are these objectives set?</b>	The BoJ interprets the broad mandate outlined above.	No change.
2		<b>Monetary Policy</b>	
2.a	<b>How are MP decisions taken?</b>	Monetary Policy Meetings, held by the Bank's Policy Board, take place once or twice a month. <sup>clxv</sup> Each member of the policy board, including the governor, serves for five years. <sup>clxvi</sup> This includes 3 Bank of Japan Governors and six other members. Decisions are made by a majority vote of nine members of the policy board. Members of the MPB are appointed by the MoF and the Governor is nominated by the Prime Minister.	No change.
2.b	<b>How is CB held to account?</b>	<p>Accountability: Minutes of discussions (without names) and voting records (with names) are disclosed with a one-month delay. Transcripts are released after 10 years.</p> <p>BoJ prepares and submits the semi-annual report on currency and monetary control to the Diet (legislative assembly) twice annually, and the Governor and other executives appear before committees in both houses of the Diet to answer questions.</p>	No change.

		Regular press conferences are held by the governor and the chairman of the monetary policy board to explain details of MP decisions. <sup>clxvii</sup>	
		There is a MoF observer on the MPB.	
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	<p>Historically the BoJ has used certain macroprudential measures: in the 1990s for example, quantitative ceilings on banks' real estate loans were set. Although it wasn't categorised as such, it can now be considered as a macro prudential measure.<sup>clxviii</sup></p> <p>The Financial Services Agency (FSA) was created after an amendment of the Bank of Japan Act. The FSA is the authority legally authorized to conduct industry-wide supervision and inspection. Macroprudential powers were not officially held by either FSA or BoJ.</p> <p>Since 2004 BoJ has released the semi-annual <i>Financial System Report</i>, which analyses the stability and functioning of the financial system as a whole<sup>clxix</sup>.</p>	<p>Mostly no. The new counter-cyclical capital buffer is controlled by FSA. The BoJ considers its system-wide identification of financial risk factors – and conventionally microprudential supervisory responses to these – to form part of its macroprudential strategy<sup>clxx</sup>.</p> <p>BoJ controls the Financial Activity Indexes (FAIXs) that aim to detect, as early as possible, overheating in financial activity that could lead to systemic risk.<sup>clxxi</sup> They are a selection of 14 financial indicators.</p>
3.b	<b>Are macro-prudential tools limited to banks?</b>	Yes in practice: past macro-prudential experience was limited to banks, e.g. limits on real estate lending in 1990.	Yes.
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	No. Japan relied on informal coordination between regulators.	Somewhat. The BoJ is responsible for taking “the initiative for macroprudential policy” <sup>clxxii</sup> . FSA and BoJ established a task force to hold regular joint meetings. Participants include the FSA commissioner and the Bank's Deputy Governor. However, there is no dedicated council/committee with MoF involvement for macro-prudential policy.
3.d	<b>Does the CB have supervisory responsibilities?</b>	No. The FSA supervises financial institutions (banks, insurers and securities), but the BoJ may conduct its own examinations of institutions that hold accounts with it. The bank “endeavours to identify actual business conditions by conducting on-site examinations and off-site monitoring to improve their business	No change.

		activities if necessary”. <sup>clxxiii</sup> The Bank formulates a different on-site examination board yearly dependent on the decision of the Policy Board, in accordance with the BoJ Act 1997.	
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	<p>To ensure the BoJ’s monetary policy and government economic policy, the BoJ Act stipulates that the Bank shall “always maintain close contact with the government and exchange views sufficiently” (Article 4 of the Act).</p> <p>The Act also allows for representatives of the government to attend Monetary Policy Board meetings to express their opinions, submit proposals, and request that the Board postpone a vote on proposals until the next Board meeting (Article 19 of the Act).</p>	No new formal mechanisms, but there has been some coordination in practice, for example the 2013 joint statement by the Government and the BoJ on overcoming deflation <sup>clxxiv</sup> .
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No	No
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	No.	<p>Yes.</p> <p>The FSA and BoJ have a joint task force for information sharing on systemic risk issues, although the use of regulatory prudential tools and decision on when these should be activate ultimately reside with the FSA as the financial regulator. Assessments of systemic risk are discussed within the BoJ, e.g. by the Policy Board.<sup>clxxv</sup></p> <p>The Council for Cooperation on Financial Stability (CCFS) was set up in 2014 to exchange views on the financial system to strengthen macro prudential policy coordination. However, it has no formal mandate, and there is limited clarity about the contribution that needs to be made by different members.</p>

5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes, the FSA.	Yes, but little coordination in a range of areas – such as stress-tests and system risk assessment frameworks.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No.	No, but FSB suggested that CCFS could be given explicit powers to issue workings or made “comply-or-explain” policy recommendations.
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	Yes, Financial Crisis Response Council (FCRC) coordinates crisis management.	In March 2014, the revised Deposit Insurance Act was enforced, with aim of allowing the PM to “recognize the necessity of implementing measures for orderly resolution of assets and liabilities of financial institutions subject to a resolution by the Financial Crisis Response Council” <sup>clxxvi</sup>
6.b	<b>What is role of MoF?</b>	FCRC chaired by Prime Minister. Other members include the Chief Cabinet Secretary, the Minister for Financial Services, the FSA Commissioner, the Commissioner, the MoF, and the Governor of the Bank of Japan. The government can recommend that the BoJ supports troubled institutions.	The Ministry of Finance (MOF)’s role involves ensuring healthy fiscal conditions, maintaining trust in the currency, and ensuring a stable foreign exchange (FX) market.
6.c	<b>Can the CB extend liquidity to non-banks?</b>	No.	Yes, but this needs government approval: the BoJ developed a “special funds supplying operation to facilitate corporate financing” for extending loans to the counterparties of the operations, (2) outright purchases of CP3 and corporate bonds directly from the counterparties of the operations. This operation expired at the end of March 2010.



## MALAYSIA

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1		<b>Central Bank Policy Targets</b>	
1.a	<b>What are the Objectives?</b>	<p>The principal objectives of the Bank are:</p> <ul style="list-style-type: none"> <li>(a) to issue currency in Malaysia and to keep reserves safeguarding the value of the currency;</li> <li>(b) to act as a banker and a financial adviser to the Government;</li> <li>(c) to promote monetary stability and a sound financial structure; to promote the reliable, efficient and smooth operation of national payment and settlement systems; to ensure that the national payment and settlement systems policy is directed to the advantage of Malaysia; and</li> <li>(d) to influence the credit situation to the advantage of Malaysia.</li> </ul>	<p>Objective of monetary policy has been articulated with greater clarity with the Central Bank of Malaysia Act (2009):</p> <p>“In promoting monetary stability, the Bank shall pursue a monetary policy which serves the interests of the country with the primary objective of maintaining price stability giving due regard to the developments in the economy.”</p> <p>There is a clearly defined financial stability mandate. Establishes the Bank as the financial stability authority for Malaysia, ensuring the efficient functioning of the conventional and Islamic interbank money market.</p>
1.b	<b>How are these objectives set?</b>	<p>Exchange rate regime determined by the Monetary Policy Committee (MPC) on the recommendation of the Bank.</p> <p>The Governor is the Chief Executive Officer of the Bank, and at the MPC they are assisted by two Deputy Governors and seven Assistant governors.</p>	<p>The Central Bank of Malaysia Act (2009) institutionalises the monetary policy formulation procedures and independence that have been established since 2004 and since the Bank’s existence, respectively.</p>
2		<b>Monetary Policy</b>	
2.a	<b>How are MP decisions taken?</b>	<p>Central Bank of Malaysia Act (1958) specified that:</p> <ul style="list-style-type: none"> <li>▪ The Board keeps the Minister informed of monetary and banking policy;</li> <li>▪ The Minister may, if he disagrees with the Board, issue binding directives;</li> <li>▪ If Board objects to any such directive, the Board may submit its objections to the Minister, and be laid before the House of Representatives</li> </ul>	<p>Same as pre-crisis, but now legally recognises the Monetary Policy Committee as the body responsible for formulating MP:</p> <p>“MP...shall be formulated and implemented autonomously by the Bank, without any external influence” MPC consists of no fewer than 7 but no more than 11 members. Governor is Chairman.</p> <p><u>Meetings</u></p> <ul style="list-style-type: none"> <li>▪ Required to hold 6 regularly scheduled meetings per year, and additional meetings may be convened if necessary.</li> </ul>

			<ul style="list-style-type: none"> <li>Adopts a <u>collegial approach to decision-making</u>. Therefore, the Chairman has a crucial role in leading the discussion and deliberation process, as well as in building a consensus decision amongst members.</li> <li>A Monetary Policy Statement is released after each meeting to announce MP decision and rationale.</li> </ul> <p>Appointments: term of 3 years; reappointment subject to assessment of members' performance by Board Governance Committee (BGC). The Gov and DGs remain as members for as long as they hold office. Other members appointed by BoD from amongst senior officials at the Bank with relevant expertise, on the recommendation of the BGC. BGC may recommend external members to MoF for appointment. There is no requirement for a Treasury observer.</p>
2.b	<b>How is CB held to account?</b>	<p>Governance of the MPC meetings and the accountability of the members are guided by the MPC by-laws, which have been approved by the Board.</p> <p>The Bank is accountable to the Parliament and Minister of Finance, and is required to submit its financial statements annually to the Parliament and Public Accounts Committee and its statement of assets and liabilities fortnightly to the Minister of Finance<sup>clxxvii</sup>.</p> <p>Monetary policy statements have been published since 2004. MPC statements are released after all monetary policy decisions, which include the rationale for coming to the decision.</p>	<p>Mostly the same. In the recent Central Bank of Malaysia Act 2009, the Sharia Advisory Council (SAC) was given sole responsibility of matters pertaining to Islamic banking and finance. These rulings prevail over those of any other Sharia body or committee.</p>
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	Yes: CB had a role in both micro- and macroprudential policy.	Yes: the Financial Stability Committee within the BNM has a number of macro-prudential powers. A number of macro-prudential measures have been used included LTV ratios, a cap of 10 years on the tenure of financing for personal use, and 35 years on house financing introduced in 2013. These measures are applied to the Islamic and conventional financial systems, as both have exposures to the housing market and household debt. <sup>clxxviii</sup>

3.b	<b>Are macro-prudential tools limited to banks?</b>	No.	No.
3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	<p>Yes.</p> <p><u>Financial Stability Committee (FSC)</u></p> <ul style="list-style-type: none"> <li>Internal BNM high-level forum responsible for monitoring and averting risks to systemic stability.</li> <li>Implements macro prudential measures or imposes specific actions to resolve problems within individual institutions.</li> <li>Makes specific recommendations to FSEC on the appropriate intervention and resolution actions.</li> </ul>	<p>Yes: the Financial Stability Executive Committee and Joint Policy Committee were introduced in 2010. The three committees divide responsibility as follows. The Financial Stability Committee (FSC) within the BNM has primary responsibility for macro-prudential policy. The Joint Policy Committee (JPC) within the BNM is a coordination committee between financial stability and monetary policy. The FSEC which brings together BNM with MoF and other regulators reviews and decides on the BNM's recommendation for entities outside the BNM's regulatory perimeter.</p> <p><u>Financial Stability Executive Committee (FSEC)</u></p> <ul style="list-style-type: none"> <li>Decide on proposed actions by the Bank to: <ul style="list-style-type: none"> <li>Issue orders to entities not regulated by the Bank or other supervisory authority;</li> <li>Extend liquidity assistance to:(i) entities not regulated by the Bank; (ii) subsidiaries or branches of Malaysian FIs abroad;</li> <li>Provide capital support to a FI for the purpose of averting or reducing risks to FS</li> </ul> </li> <li>Membership: Governor, one Dep Gov and 3-5 other members appointed by the MoF on recommendation of BoD</li> <li>Sec-Gen of Treasury invited to all meetings involving non-regulatees</li> </ul> <p><u>Joint Policy Committee (JPC)</u></p> <ul style="list-style-type: none"> <li>Activated when either the MPC or FSC escalates an issue that has implications on monetary and fin stability</li> <li>The joint forum framework facilitates broader surveillance and a more comprehensive risk assessment of issues by combining macroeconomic surveillance with micro-level analysis of the financial sector.</li> <li>Membership: Governor, all Deputy Governors and Assistant Governors<sup>clxxxix</sup></li> </ul>

3.d	<b>Does the CB have supervisory responsibilities?</b>	Yes, the BNM is the regulator and supervisor of the banking system, insurance companies, payments systems policy and the development financial institutions. In addition, the BNM has a specialist risk unit providing prompt advice on emerging risks. Furthermore, the BNM co-regulates capital markets.	No change.
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	No. There is some space for informal coordination. The BNM gives a twice yearly presentation to the MoF including proposals for the upcoming Budget. The BNM governor sits on the Economic Council.	Somewhat. The Fiscal Policy Committee (FPC) provides advice and oversight of fiscal policy in order to ensure fiscal sustainability and long-term macroeconomic stability. CB Governor is a member.
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No	No change.
5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	No.	<p>Somewhat: the FSEC (established in 2010) brings together the BNM with the MoF and other relevant agencies including chairman of the securities commission, and a representative from the deposit insurance fund.</p> <p>The Financial Services Act 2013 (FSA 2013) and Islamic Financial Services Act 2013 (IFSA 2013) build upon the Bank's financial stability mandate. This includes oversight of non-regulated entities, on issues falling under the purview of the competition authority and has an expanded remit around Securities, including a strengthened set of protocols for overseeing cooperation and exchange of information.</p>

5.b	<b>Do other agencies have resources to challenge CB view?</b>	No .	No.
5.c	<b>Can the monitoring body issue binding recommendations?</b>	No	Power to obtain information from non-regulated entities and intervene and manage resolution. BNM exchanges information with the Audit Oversight Board established under the Securities Commission, around issues relating to external audits of financial institutions.
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	<p>No power over non-regulated entities.</p> <p>Corporate Debt Restructuring Committee (CDRC) is a pre-emptive measure by the Malaysian Government to provide a platform for corporate borrowers.</p>	Malaysia established the EMEAP Monetary and Financial Stability committee in 2008 to enhance regional cooperation during crises and strengthen cross-border collateral arrangements <sup>clxxx</sup> .
6.b	<b>What is role of MoF?</b>	Finance Ministry and National Economic Action Council (in the Prime Minister's Office, established in 1998 crisis) shared responsibilities for crisis response.	The CDRC includes representatives from the Ministry of Finance under a code made effective from July 2009. <sup>clxxxi</sup>
6.c	<b>Can the CB extend liquidity to non-banks?</b>	May extend liquidity assistance to entities not regulated by the Bank, but that are regarded as systemically important. This includes development financial institutions.	A decision from the FSEC is required to extend liquidity assistance to entities not regulated by the BNM.

## SWEDEN

		<i><b>BEFORE CRISIS</b></i>	<i><b>AFTER CRISIS</b></i>
1	<b>Central Bank Policy Targets</b>		
1.a	<b>What are the Objectives?</b>	<p>The objective of monetary policy is to “maintain price stability”. The Riksbank has interpreted this objective to mean a low, stable rate of 2% annual inflation, as measured by the CPI.<sup>clxxxii</sup> Until 2010, the Riksbank used a symmetric tolerance band around the inflation target of 1%.<sup>clxxxiii</sup></p> <p>The Riksbank also has a secondary monetary policy objective to “support the objectives of general economic policy for the purpose of attaining sustainable growth and a high level of employment”.<sup>clxxxiv</sup> According to the Sveriges Riksbank Act: “The objective of the Riksbank’s activities shall be to maintain price stability. The Riksbank shall also promote a safe and efficient payments system.” In practice, this latter objective includes financial stability, although the Riksbank in fact has no statutory mandate.<sup>clxxxv</sup></p>	The 1% tolerance band was abolished in 2010.
1.b	<b>How are these objectives set?</b>	The Riksbank’s general objectives are stipulated in the Sveriges Riksbank Act, while the actual inflation target is determined by the Riksbank. <sup>clxxxvi</sup>	No change.
2	<b>Monetary Policy</b>		
2.a	<b>How are MP decisions taken?</b>	The Riksbank Executive Board, comprised of six members (Governor, First Deputy Governor and four other Deputy Governors), holds six scheduled monetary policy meetings annually. The members of the Executive Board are appointed by the General Council, which in turn is appointed by the Riksdag, the Swedish parliament, for a period of five or six years. <sup>clxxxvii</sup> At monetary policy meetings, the Executive Board establishes its majority view of a well-balanced monetary policy, considering the rate of inflation and developments in the real economy over the forecast horizon. The Board then reaches a decision on the repo	No change.

		rate and its future path by majority vote, with the Governor having a casting vote. <sup>clxxxviii</sup>	
2.b	<b>How is CB held to account?</b>	<p>After each monetary policy meeting, the Executive Board publishes a press release reporting the monetary policy decision, the Riksbank's views on economic activity and inflation, and the future monetary policy the Board considers to be well-balanced. A Monetary Policy Report is also published, describing the Riksbank's view of economic prospects in greater detail.<sup>clxxxix</sup> Monetary policy minutes are published around two weeks after meetings.<sup>cxc</sup></p> <p>Pursuant to Chapter 9, Article 13 of the Instrument of Government, the Executive Board is appointed by the General Council of the Riksbank, typically for five or six-year terms on a rolling schedule. There is no observer present from the Ministry of Finance (MoF) at monetary policy meetings.<sup>cxc</sup></p>	No change.
3	<b>Financial Policy</b>		
3.a	<b>Are macro-prudential tools housed in the CB?</b>	No. The Finansinspektionen (FI) – the Swedish Financial Supervisory Authority – regulates all financial companies and marketplaces. It has a statutory mandate for both financial stability and consumer protection. <sup>cxcii</sup>	No change. The FI is the designated authority for macroprudential policy. <sup>cxciii</sup>
3.b	<b>Are macro-prudential tools limited to banks?</b>	N/A. There were no macroprudential tools before the crisis.	Partially. The FI was first given authority for formal macroprudential policy in 2013, effective from 2014, through an amendment to its government instruction ordinance. The ordinance added a third task of “taking measures to counteract financial imbalances with a view to stabilising the credit market”. <sup>cxciv</sup> The FI introduced an LTV ratio on mortgages in 2010, which is the closest it has come to regulating nonbanks. All other existing macroprudential tools (capital requirements, LCR, CCyB) are clearly limited to banks. <sup>cxcv</sup>

3.c	<b>Is there a clear decision-making structure in place for macro-prudential tools?</b>	N/A	Partially. In 2011, the government formed a Financial Crisis Committee (FCC) to propose improvements in the regulatory framework. In an interim report in 2013, the FCC proposed the creation of a macroprudential council chaired by the governor of the Riksbank and including the Director General of the FI, one additional official each from the Riksbank and FI, and two independent members appointed by the government. However, both the Riksbank and the FI disagreed with the FCC proposal. In 2013, the government decided that the FI would be responsible for macroprudential policy. <sup>cxcvi</sup> The Financial Stability Council (FSC) was established to act as a forum in which representatives of the government, the FI, the Swedish National Debt Office and the Riksbank meet regularly to discuss issues of financial stability and how macroprudential policies can be used to counteract financial imbalances. That said, the FSC is not itself a decision-making body. <sup>cxcvii</sup> On issues directly relating to influencing commercial bank behaviour the SFSA has all the powers and houses the financial tools, but the Riksbank can influence decisions where the SFSA doesn't act either by appealing to the relevant Minister or going public in the press at the risk of damaging relationships.
3.d	<b>Does the CB have supervisory responsibilities?</b>	No. The FI authorises, supervises and monitors all companies operating in Swedish financial markets, and is accountable to the MoF. <sup>cxcviii</sup>	No change.
4	<b>Fiscal Coordination</b>		
4.a	<b>Are there mechanisms for fiscal-monetary policy coordination (at the zero lower bound)?</b>	No.	Some. While it has no formal role in monetary-fiscal coordination, the FSC – which includes the MoF, the FI, the Swedish National Debt Office and the Riksbank – could potentially facilitate it.
4.b	<b>Is there a procedure for CB/independent body to recommend coordination?</b>	No.	Yes. Both the MoF and the Riksbank are members of the FSC. If necessary, the Riksbank can request that the MoF use public funds for certain fiscal schemes, in coordination with its own monetary policy.



5	<b>Systemic Risk Monitoring</b>		
5.a	<b>Is there an inter-agency monitoring and coordination mechanism?</b>	No. The Riksbank produced Financial Stability Reports (and the SFSA).	Yes. The FSC meets regularly to discuss issues of financial stability and how financial imbalances can be counteracted. It is comprised of representatives of the MoF, the FI, the Debt Office and the Riksbank, and normally meets twice annually. The agenda for the coming meetings is posed on the FSC's website one week before the meeting, and minutes are published no later than two weeks after the meeting. <sup>ccix</sup> A clear and comprehensive definition of financial stability mandates for the Riksbank and the SFSA still haven't been given, as there is no formal mechanism for coordination other than a MoU which has little force should disagreements develop. <sup>cc</sup>
5.b	<b>Do other agencies have resources to challenge CB view?</b>	Yes. The FI authorises, supervises and monitors all companies operating in Swedish financial markets, and is accountable to the MoF.	Yes. Moreover, since 2013, the FI has also been responsible for macroprudential policy.
5.c	<b>Can the monitoring body issue binding recommendations?</b>		Yes, the SFSA can use its powers to require both banks and financial intermediaries to alter their activities to achieve financial stability – but it is doubtful whether this extends to macro-prudential purposes. <sup>ccj</sup> However, the Riksbank has no binding statutory tools available to influence financial market participants. <sup>ccii</sup>
6	<b>Crisis Management</b>		
6.a	<b>Do crisis management mechanisms exist?</b>	No. There were no explicit crisis management mechanisms before the crisis, other than liquidity provision and clear communication by the Riksbank.	Yes. In addition to the Riksbank's role in supplying liquidity and providing clear communication in a crisis <sup>cciii</sup> , the FSC is expected to function as a forum for discussing possible measures for handling a crisis, should one arise. <sup>cciv</sup>
6.b	<b>What is role of MoF?</b>	There were no explicit crisis management mechanisms before the crisis, and meetings were organised on an ad hoc basis as the "MoF, Riksbank, Swedish FSA and SNDO knew each other well" <sup>ccv</sup> .	The MoF has a leading position on the FSC and controls the disbursement of public funds (e.g. through the Debt Office's Stability Fund). <sup>ccvi</sup>
6.c	<b>Can the CB extend liquidity to non-banks?</b>	Yes. The Riksbank is authorised to provide liquidity assistance to single institutions or general measures to strengthen systemic liquidity.	Yes. For instance, during the financial crisis, the Riksbank increased access to credit by accepting more forms of collateral and allowing more institutions to borrow. <sup>ccvii</sup>

## Annex D: A scoring system for the new model central bank structure

As we have argued, there are good reasons for the expansion in central bank responsibilities and powers that has happened over the last few years. The existing literature on central bank independence – primarily written pre-crisis – needs to be expanded to reflect this.

Traditional indices of central bank independence such as Grilli, Masciandaro and Tabellini (1991) and Cukierman, Neyapti and Webb (1992) are designed to rate a central bank's ability to meet its price stability mandate. Not only do these indices ignore central banks' increasingly important financial stability mandates, they actually penalise central banks for taking on financial stability objectives and the tools required to meet them. What's more, they do not measure the frameworks that are required to effectively coordinate financial stability policy between different entities. As a result, these indices are an increasingly poor guide to modern central bank effectiveness.

We need a more nuanced measure of an effective central bank institutional structure that recognizes the post-crisis expansion in central bank powers and that evaluates how well central banks have protected their independence in light of these developments.

In the tradition of Eijffinger & Geraats (2006), we have constructed an index that measures countries against the ideal template for a central bank. Our index is designed to measure central banks' ability to fulfil their new post-crisis functions. We have constructed an institutional template that manages the trade-off between:

- Maximising the central bank's ability to tackle risks to financial stability
- Internalising tensions with monetary policy goals
- Minimising political threats to central bank autonomy

Our index measures different countries' institutional set-up against this template.

As discussed in section 5, our recommendations primarily apply to the advanced economy context. We believe more work needs to be done to understand the trade-offs between closer central bank-government coordination and political independence, before we can make similar recommendations for emerging economies. So our metric will initially only relate to advanced economies (though we present comparable scores for some emerging economies in Table 5).

The index is constructed by asking 12 questions over 5 categories. The index puts equal weight (3/12) on systemic risk monitoring, macro-prudential policy and crisis management, less weight (2/12) on monetary-fiscal coordination because of its relevance only in abnormal times at the zero lower bound, and less weight still (1/12) on coordination between monetary policy and debt management because we do not judge this to be as crucial to economic management.

The overall score is the sum of scores for the answers to these 12 questions.

**Scoring Breakdown:****1/ Macro-prudential tools**

*A. Are these tools housed within central bank? 1=YES, 0=NO*

*B. Is there a clear decision-making structure to account for tensions and complementarities between financial stability and monetary policy objectives? 1=Different committees; 0.5=some differentiation; 0=No differentiation*

*C. Is macro-prudential toolkit limited to banking sector? 1=NO, 0=YES*

**Systemic risk monitoring**

*A. Is there a mechanism to coordinate all the relevant agencies? 1=YES; 0=NO*

*B. Do other agencies have the analytical firepower to challenge the central bank's view? 1=YES; 0=NO*

*C. Can the monitoring body issue binding recommendations? 1=YES; 0=NO*

**Crisis management**

*A. Do crisis management mechanisms exist? 1=YES; 0=NO*

*B. Does the Ministry of Finance play a leading role? 1=YES; 0=NO*

*C. Can the central bank extend liquidity to non-banks in a crisis? 1=YES; 0=NO*

**Monetary-debt management coordination**

*A. Do coordination mechanisms exist which are led by the central bank? 1=YES; 0.5=SOMEWHAT; 0=NO*

**Monetary-fiscal coordination**

*A. Do coordination mechanisms exist? 1=YES; 0.5= Put in place on an ad hoc basis; 0=NO*

*B. Is there a procedure for the central bank or an independent body to initiate/recommend monetary-fiscal coordination? 1=YES, 0=NO*

**Our scoring system for financial stability**

This scoring system is inherently subjective. The justification for the scores in Table 5 overleaf are laid out in the cases studies in Appendix F.

While this index is currently only intended for advanced economies, we include three emerging economies – China, India and Malaysia – in the table below for illustrative purposes. As the first part of this paper argued, political independence is likely to be more important in emerging markets because political institutions may be less stable. As such, our scores for emerging market economies should be interpreted with caution.

**Table. 5 How do countries measure up? An index for scoring new functions of modern central banks**

		Systemic Risk Monitoring			Macro-prudential			Crisis Management			Monetary-debt management coordination	Monetary-fiscal coordination	
	Score /12	<b>A:</b> Is there an inter-agency coordination mechanism?  <b>B:</b> Do other agencies have resources to challenge CB view?  <b>C:</b> Can the monitoring body issue binding recommendations?			<b>A:</b> Is macro-pru housed in the CB?  <b>B:</b> Is there a clear decision-making structure?  <b>C:</b> Does the macro-pru toolkit cover non- banks?			<b>A:</b> Do crisis management mechanisms exist?  <b>B:</b> Does the MoF play a leading role?  <b>C:</b> Can the CB extend liquidity to non-banks in a crisis?			<b>A:</b> Do coordination mechanisms exist which are led by the CB?	<b>A:</b> Do coordination mechanisms exist led by the CB?  <b>B:</b> Is there a procedure for CB/independent body to recommend coordination?	
		A	B	C	A	B	C	A	B	C	A	A	B
US	5.5	1	1	0.5	0.5	0.5	0	1	0.5	0.5	0	0	0
Eurozone	5.5	1	1	0.5	1	0.5	0	0.5	0.5	0.5	0	0	0
Japan	5	0.5	1	0	0	0.5	0	1	1	1	0	0	0
UK	7	0.5	0.5	1	1	1	0.5	0.5	0.5	1	0.5	0	0
Canada	6.5	0.5	1	0	0	0.5	1	1	1	1	0.5	0	0
Australia	5.5	1	1	0	0	0	1	1	0.5	1	0	0	0
Sweden	7.5	1	1	0	0	0.5	0.5	1	1	1	0.5	0	1
<b>Some emerging economies</b> <i>(Note that this scoring system is designed for advanced economies. Given that political independence may be more important in emerging economies, these scores may not be directly comparable to those above)</i>													
China	7.5	1	1	0.5	0.5	0.5	1	1	1	1	0	0	0
India	8	1	1	0	1	0	1	1	1	1	1	0	0
Malaysia	7	1	0	1	1	1	0.5	1	0	1	0.5	0	0

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- <sup>i</sup> <https://www.federalreserve.gov/aboutthefed/section2a.htm>
- <sup>ii</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010), Section 113 (a)(1).
- <sup>iii</sup> Dodd-Frank Act, Section 165.
- <sup>iv</sup> [https://www.federalreserve.gov/faqs/economy\\_14424.htm](https://www.federalreserve.gov/faqs/economy_14424.htm)
- <sup>v</sup> [https://www.federalreserve.gov/faqs/economy\\_14400.htm](https://www.federalreserve.gov/faqs/economy_14400.htm)
- <sup>vi</sup> <https://www.federalreserve.gov/monetarypolicy/fomc.htm>
- <sup>vii</sup> <https://www.federalreserve.gov/aboutthefed/bios/board/>
- <sup>viii</sup> <https://www.federalreserve.gov/faqs/how-is-a-federal-reserve-bank-president-selected.htm>
- <sup>ix</sup> [https://www.federalreserve.gov/monetarypolicy/bst\\_crisisresponse.htm](https://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm)
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