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Editorial

International dimensions of conventional and unconventional monetary policy

1. Introduction

At the risk of oversimplification, following the initial phase of the Global Financial Crisis (GFC), advanced economies can be characterized as experiencing subpar economic growth with high public debts restraining fiscal stimulus. Facing very low inflation, monetary authorities in many countries have seen the need to introduce extraordinary measures. One visible manifestation of the unprecedented monetary policy responses is the sharp increase in the size of the balance sheets of the Federal Reserve, Bank of England, Bank of Japan and the ECB. The international repercussions of these unconventional monetary policies are not yet well understood. What are the international effects? Through what specific channels do the spillovers arise? Are the spillovers beneficial or harmful? Would there be benefits from international coordination of monetary policy?

The papers in this special issue explore these and other issues related to international dimensions of conventional and unconventional monetary policy. The seven papers were selected from those presented at the ECB-IMF Conference “International dimensions of conventional and unconventional monetary policy” held in Frankfurt am Main in April 2014.

2. Monetary policy coordination: perhaps desirable. . .but complicated

The GFC prompted a rethinking of monetary policy, spillovers and international coordination. In three keynote articles, [Coeuré \(2015\)](#), [Engel \(2015\)](#), and [Ostry and Ghosh \(2015\)](#) cover a range of theoretical and empirical issues while presenting insights on monetary policy coordination. The three keynote contributions highlight the roles of financial and uncertainty shocks and frictions that were previously not emphasized.

2.1. Theoretical insights

The issue of monetary policy spillovers has been analyzed for quite some time. As [Coeuré](#) notes, the question was mentioned in the 18th century by David Hume in *Essays, Moral, Political, and Literary*. Since the mid-1980s, theoretical models have rigorously analyzed the international spillovers of monetary policy and reviewed the case for (and against) monetary policy coordination. In the more applied world, many multi-country models have addressed this issue over the last few decades (see [Taylor, 2013](#) for a recent review in the context of the basic Mundell–Fleming model and the empirical

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findings of recent multi-country models). More recently, however, new elements have been introduced in analytical models of monetary policy, the implications of which have yet to be extended to international settings and incorporated in empirical analyses, let alone in policy-making.

As Engel reviews, the theoretical New Keynesian literature has long identified the role of real factors in driving monetary policy spillovers. Distortions typically included in New-Keynesian models are price stickiness, monopolistic competition, and pricing to market (see further the [Corsetti et al., 2010](#) review and [Engel, 2011](#)). All three keynote contributions highlight, however, that when one calibrates these types of models to real world circumstances, spillovers from countries pursuing national macroeconomic stability tend to be small, suggesting limited scope for international cooperation.

Engel notes that the limited spillovers identified in the literature may have been due in part to the type of shocks considered, which, consistent with the modeling approach, were mostly cost push and productivity shocks. Recent models have included shocks to investment or preferences, as well as news and uncertainty shocks. While recent models can in principle lead to greater spillovers, few have been calibrated meaningfully, let alone used to consider the implications for policy coordination.

Another set of recent theoretical papers, inspired largely by the GFC, focuses on the effects of the zero lower bound (ZLB) and related unconventional monetary policy actions, such as Quantitative Easing (QE). In the presence of the ZLB, spillovers can be larger than in normal times and the gains from monetary policy coordination possibly greater ([Cook and Devereux, 2013](#)). A related hypothesis is a greater need of coordination when monetary policies are constrained by the ZLB (as well as some additional value from using macro-prudential policies; see [Jeanne, 2014](#)).

Both Cœuré and Engel note that important theoretical challenges remain, especially related to the role of financial globalization. Earlier papers on monetary policy spillovers largely assumed complete and perfect international financial markets. The GFC made abundantly clear, however, that international financial markets do not always operate as perfectly as assumed in many models. More recently, papers have modeled various forms of financial market incompleteness and integration. With the financial integration that has occurred over the past decades, both in terms of more countries being financially integrated and a larger flow and stock of international claims/assets, questions on how these deficiencies and developments affect spillovers are very relevant. Here, the analytical literature points to opposing effects.

Traditional models assume that increased financial integration improves market completeness and risk-sharing. If that enables greater diversification and insurance opportunities, adverse spillovers from monetary policy are less likely and the need for international coordination is correspondingly smaller. But theory also makes clear that in the presence of imperfections there can be offsetting effects of (increased) financial globalization. Depending on the exact form of incompleteness, results on the nature, degree and effects of international spillovers vary. Clearly, countries in financial autarky are less impacted by foreign monetary policy changes through direct financial channels, while financially open countries are more exposed. The form of financial integration, whether through equity markets or bond markets alone, or through both, can also matter. Finally, regarding the economic cost and benefits, the more general principle applies: if there is more than one distortion, removing or lessening only one does not necessarily lead to an improvement.

Theoretical advances to shed light on these trade-offs have focused on various financial frictions, which also help to clarify the channels through which spillovers may occur. Notably the roles of balance sheets and currency mismatches have received much attention. Here most work has focused on the small open economy case (Ostry and Ghosh as well as Engel review some key papers) and thus addressed mostly spillovers, but less so the issue of international coordination. A related strand of models analyzes how international shocks, including from changes in monetary policy in key financial centers, can lead to adverse effects because of externalities arising in financial markets, mainly related to asset prices and large capital flows.¹ While again rarely analyzing the issue of international cooperation versus non-cooperation, these sets of papers do highlight that countries are not likely able to manage their economies optimally using just monetary policy and fiscal policy in the face of changes in global monetary policy conditions, suggesting roles for macro-prudential and capital flow management policies.

¹ Somewhat related is the literature on the real effects of currency movements, i.e., Dutch disease and infant industry arguments.

2.2. Empirical work

The empirical literature has studied the magnitude and direction of global monetary policy spillovers, focusing on real variables and typically on US monetary policy (Bluedorn and Bowdler, 2011; Canova, 2005; Faust and Rogers, 2003; Faust et al., 2003; Kim, 2001; Kim and Roubini, 2000; Mackowiak, 2007; Nobili and Neri, 2006). Much less is known, however, about the determinants of the magnitude of these spillovers and the role of particular country characteristics, such as trade and financial integration. Many papers have studied monetary policy spillovers to global financial markets (Craine and Martin, 2008; Ehrmann and Fratzscher, 2009; Fratzscher et al., 2013; Hausman and Wongswan, 2011; Moore et al., 2013; Neely, 2010; Rogers et al., 2014; Wongswan, 2009). Another strand of the literature has investigated spillovers from global to local interest rates and asset prices, considering in particular the role of the exchange rate regime and capital account openness for the magnitude of these spillovers (Frankel et al., 2004; Miniane and Rogers, 2007; Philippon et al., 2001; Shambaugh, 2004).

Related empirical work has recently focused on the so called global financial cycle. As the keynote papers note, Rey (2013) and Bruno and Shin (2015) highlight how the conduct of monetary policy in the US can interact with balance sheets and other conditions of commercial banks and other financial institutions in key financial centers and affect capital flows, in particular banking flows. Cerutti et al. (2014) draw attention to how monetary policy and other financial conditions in the US, the UK, the euro area and Japan can (differentially) affect capital flows to other countries. This literature has highlighted the role of financial frictions and imperfections, such as the use of value at risk models in commercial banks, compensation arrangements, and benchmarking practices in banks and asset management industries, in affecting, in combination with changes in monetary policy in key advanced countries, the behavior of lenders and investors, thereby leading to international spillovers.

Many recent papers have used event studies to identify whether and how monetary policy changes or announcements affect other countries. For example, Fratzscher et al. (2013) find that quantitative easing policies increased the pro-cyclicality of portfolio flows to emerging markets. Therefore, this literature suggests that spillovers related in part to monetary policy can adversely affect recipient countries.

2.3. Coordination in practice

There are still many questions that require more theoretical and empirical research. Reflecting this ambiguity, there has been a lively debate on the international spillovers of advanced countries' (unconventional) monetary policy, especially on emerging markets, and the possible usefulness of coordination. At the same time, international diversification, which has its own benefits, has increased over the last few decades. While the debate is not settled, as Cœuré also highlights, it is clear that the intensity of some of the financial channels through which monetary policy may have international repercussions—movements in asset prices and changes in capital flows and exchange rates—likely increased in the last decades. The balance between the benefits and risk of financial globalization is unclear. Consequently, as Engel notes, there is a need for more and better research on the effect of financial globalization and the role of financial and other frictions.

Not surprising, in part given the ambiguity of research findings, the three keynote papers end with similar discussions on the challenges of coordinating in practice. All agree that ad-hoc coordination on monetary policy has happened de-facto and that such coordination—such as the Plaza and Louvre accords that focused on coordinated foreign exchange interventions—has been useful. The three keynote contributors also tend to agree that there has been much coordination and cooperation in financial regulation and supervision and, more generally, regarding international financial stability during and after the global financial crisis. Examples are the extension of large swap lines and liquidity facilities in the middle of the financial crisis and the many new international rules (e.g., Basel III) promulgated since. To the extent that adverse spillovers have arisen because of differences in financial regulation and supervision, this coordination and cooperation are welcome developments. (Note also that there has been some coordination on fiscal policy since the global financial crisis; see Fischer, 1988's earlier review of the case for international policy coordination which had a focus on fiscal policy.)

At the same time, the three keynotes differ on the degree to which ex-ante mechanisms for coordination are useful and feasible. Cœuré, and Engel to some degree, are more hesitant in advocating coordination, while Ostry and Ghosh argue for it. The first two highlight the responsibilities of central banks toward their domestic constituencies as major constraints, while Ostry and Ghosh highlight the role of uncertainty in cooperation. Nonetheless, all acknowledge gaps in understanding. One gap in the literature highlighted by Engel (as well as by Taylor, 2013) is in the modeling of the international distortions that can arise from “poor” monetary policy making (as when countries deviate from what is optimal from their own country self-interest). This can arise for a number of reasons, such as lack of information about the true model, lack of political independence, and inability to commit to certain policies. Model uncertainty has (again) become clear with the global financial crisis. Cœuré, for example, highlights that there continues to be a debate on the role of whether demand or supply shocks are more relevant, on the degree of price and wage rigidities, on the slope of the Phillips curve, and on the presence and relevance of balance sheet effects. Finally, Ostry and Ghosh highlight the uncertainty about some of the international effects of monetary policies.

What this uncertainty does for the case for international coordination is not clear, however, as the opposing contributions of Cœuré, Engel, and Ostry and Ghosh highlight. Cœuré argues that in principle “the lack of consensus on a model can hinder both the establishment of *ex ante* cooperative agreements and the implementation of coordinated interventions *ex post*.” Engel highlights, however, that in some settings, adding international dimensions *reduces* the impact of domestic policy failures (or makes it easier for policy makers to deviate from optimal domestic policy) and gets one closer to the global optimal. In other settings, however, the international dimensions worsen the impact of domestic policy mistakes (see Woodford (2011) for a review of the consequences of (financial) globalization for the conduct of monetary policy from a domestic perspective). These aspects could thus decrease or (further) increase international spillovers and the scope for beneficial coordination. Ostry and Ghosh highlight how uncertainty about the international effects of monetary policies can affect the bargaining needed to reach a coordinated solution. They argue, also based on analytical results in their paper, that in general uncertainty raises the scope for fruitful cooperation, contrary to what is argued by Cœuré. As these differing views show, the debate is clearly not settled. During the global financial crisis, however, most central banks acted decisively and similarly in response to the slump in demand, even though not cooperating. The non-cooperative solution may thus have been quite similar to the cooperative solution, suggesting that the gains from more coordination would have been quite small.

In addition to the role of uncertainty, Ostry and Ghosh draw attention to the fact that most models of monetary policy spillovers address large, two-country cases. Small countries may suffer the most from lack of coordination—they are arguably more exposed to capital flow volatility induced by changes in large countries’ monetary policy—but they are not well covered in these models and, being small, are also unlikely parties to any coordination. Yet, collectively, as Ostry and Ghosh argue, there can be large global welfare losses from not considering asymmetries in country size. This indeed appears an issue often overseen by models, but with the rise of emerging markets this is becoming a more pronounced gap. Cœuré elaborates on the “political economy of coordination”, where it is not clear that a coordinated solution would be Pareto improving for all participating countries even if global welfare is increased.

All three keynotes agree though that more (informal) dialogue among central bankers can be useful, regardless of whether more binding forms of cooperation are desirable or feasible. Ostry and Ghosh go further and argue that there needs to be at least some “rules of the road” regarding the international dimensions of monetary policy and possibly an international technically competent assessor, presumably the IMF, to present alternative strategies and the resulting trade-offs. The need for formal institutions for international coordination and their design more generally remains, however, a hotly debated issue. There are well-established mechanisms for regulation and supervision as well as for some elements of the global financial safety net, but none exists formally for monetary policy. This, as Ostry and Ghosh argue, is puzzling. The fact that central banks seem on the one hand willing to cooperate in the sphere of financial stability but less so on monetary policy raises questions of consistency, especially given the links between monetary policy and financial stability.

Some, notably Rajan (2014), question though whether the IMF would be an appropriate neutral assessor. In his view, the IMF has strongly advocated the case for expansionary monetary policy interventions in response to the crisis, thereby facilitating a consensus among at least advanced countries

in favor of such policies. However, as a number of contributors have pointed out, there have been adverse impacts of global monetary policies on macroeconomic and financial stability in emerging markets. As further discussed in [Rajan \(2014\)](#), the sizable spillover effects of US monetary policies may in particular have endangered the achievement of domestic objectives in emerging markets. Having thus advocated such expansionary monetary policies without sufficient concern for emerging markets may make the IMF a less obvious candidate as a coordinator.

In the conference, there was wide agreement that the limits regarding stronger international monetary policy coordination should lead one to encourage countries to strengthen the resilience of their own economy, and thereby the global economy, via other means. Enhanced macro-prudential and capital flow management could be a way forward, and indeed countries are exploring new ways to find protection from the booms and busts cycles in capital flows. Cœuré argues that in addition it is critical to strengthen global financial safety nets to better address global and regional liquidity crises, while reducing the inefficient solution of self-insurance by countries. Improved international liquidity assistance is clearly a fundamental problem. While multilateral official sector facilities have increased somewhat over time, the question remains to what extent they are adequate in a world with much stronger financial linkages and spillovers. He also argues that swap arrangements among central banks that enable emergency liquidity to flow to major financial hubs and—through these hubs—to other markets should play a key role in enhancing global financial stability.

3. New evidence on monetary policy spillovers

While the three keynotes highlighted the many questions left open, the conference did provide new insights into some of the more vexing ones. Two papers included in this issue examine spillovers of US monetary policy. Another focuses on the impact of international spillovers of monetary policy on an emerging market, Brazil. Finally, this special issue includes an article on the possible consequences of shifts in reserves composition.

[Georgiadis \(2015\)](#) assesses the magnitude and determinants of global spillovers of conventional US monetary policy on real activity. Using a global VAR model, the paper finds that US monetary policy generates sizable output spillovers to the rest of the world. The paper identifies trade and financial integration, de jure financial openness, exchange rate regime, financial market development, labor market rigidities, industry structure, and participation in global value chains as important determinants of the magnitudes of monetary policy spillovers. The paper also finds that economies that experience larger spillovers also displayed larger downward revisions of their growth forecasts in spring 2013, when discussions about tapering of US quantitative easing started. Regarding policy implications, the results of the paper suggest that economies' vulnerability to US monetary policy would be reduced by fostering both trade integration and domestic financial market development, increasing the flexibility of exchange rates, and reducing frictions in labor markets. In contrast, for some other policies the implications are less straightforward: While inhibiting financial integration, industrialization and participation in global value chains would mitigate spillovers from US monetary policy, existing empirical evidence suggests that doing so would reduce long-run growth; the paper thus argues that in these cases policymakers should carefully consider the trade-offs.

[Zhu et al. \(2015\)](#) study spillovers of non-standard monetary policy, specifically US quantitative easing (QE), and find that benefits and costs varied across economies. They find that by reducing the US corporate spread and, to a lesser extent, the US term spread, US QE programs (especially LSAP1) had sizable effects on financial conditions and economic activity both in the US and in the rest of the world. This suggests that US QE programs were important counter-cyclical measures that may have helped prevent the US and other advanced economies from prolonged recession and deflation. For emerging economies, the effects of US QE are generally larger and more diverse. The authors note that the strength of the effects likely depends on how each economy reacts to the US policy shocks, and also on the distinct economic and financial structures, policy frameworks and exchange rate arrangements. Their estimates suggest that US QE measures contributed to overheating in Brazil, China and some other emerging economies in 2010 and 2011, but supported recovery in these economies in 2009 and 2012.

[Barroso et al. \(2015\)](#) examine the impact of US QE on a particular emerging market (Brazil). QE is measured in this paper through the term spread on US Treasury bonds. The authors find that QE affects

Brazil through capital inflows, exchange rate appreciation, stock market boom, and credit growth. It also increases domestic activity. The authors interpret these results as QE having on average positive spillovers but with collateral effects on financial variables and possible implications for financial stability. Capital inflows appear to be the most important propagation channel.

Pagano et al. (2015) take a different perspective and look at the international implications of reserves accumulation. Their contribution focuses on the macroeconomic implications for the global economy of different strategies of official reserve management. Their model is calibrated to the euro area, the United States, China and the rest of the world. An increase in the global demand for euros would boost euro area aggregate demand because of the reduction in euro area interest rates (the main benefit associated with the privilege of being a global currency). If the higher demand for euros is associated with lower demand for US dollars, then US aggregate demand falls because of higher interest rates, while the external balance improves; countries accumulating reserves continue to run a trade surplus, as exports to the euro area increase.

4. Conclusions

There is by now a relatively large literature measuring the cross border effects of conventional and unconventional monetary policies. This special issue contains some additional contributions to this literature, and in addition focuses on the implications for monetary policy cooperation.

One key conclusion is that the desirability of cooperation is highly model specific and some potentially important shocks and propagation channels are still poorly understood. Given the state of our knowledge, it is better to be cautious before drawing policy conclusions. More research is thus needed.

The special issue also touches upon the political economy and practical dimension of cooperation that are typically glossed over in the academic literature but in practice are important factors in determining whether cooperation arises or not. The complexity of cooperation from a legal and institutional point of view and differences in the understanding of the economy and propagation channels are likely to prevent cooperation outside of crisis times. In this respect, investigating simple forms of cooperation, for example through simple cooperative rules (Benigno and Benigno, 2006), seems a useful avenue for future research.

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