Towards an integrated inflation targeting framework in middle-income countries: a research agenda

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The damage inflicted by the recent Global Financial Crisis (GFC) changed the terms of the old debate about "leaning before" versus "cleaning up after" a financial crisis (Jeanne and Korinek (2013), Mishkin (2011)). Almost all minds shifted toward preventing financial crises, especially credit-driven excesses associated with asset price bubbles.[2] In that light, the discussion evolved in the direction of how to "lean against the wind" (LAW) (of asset and price bubbles) to achieve jointly macroeconomic (price) and financial stability objectives.

This seemingly obvious query brought a series of other (much more complex) related questions to centre stage for both researchers and policymakers. Should monetary policy incorporate a financial stability objective? Should LAW be conducted with monetary policy (MP) at all? Conversely, should it be done only with macroprudential policies (MaPs)? Alternatively, can it be constructed with a combination of both MP and MaP? Does this combination require MaP to incorporate also a macroeconomic objective beyond a financial stability mandate? If a combination of policies is optimal (in some sense) what type of coordination between these two policies is needed? Which agencies are necessary to do so? Should they work under a centralised arrangement or a dual one? What are the functioning details and the typology of MaPs, what is the role and the transmission mechanism for each type of MaP into the economy?

Then, more recently, we entered the era of unconventional monetary policy (UMP) tools, in particular ultra-low (even negative) policy rates. That brought more attention to the transmission of easy monetary conditions prevailing in advanced economies (AEs) into the financial markets of other countries. It was dubbed a "sudden flood" of capital as opposed to the traditional episodes of "sudden stops" (Agénor et al (2014)). But then, it also brought the question of how to LAW in a small open economy context with MP? Can (should) MP react to these external shocks in the textbook way? Tightening MP in such a context might exacerbate capital inflows and boost the local credit cycle, thus playing against the policymaker's initial stabilisation objective. Moreover, since global easy conditions also tend to affect asset prices in countries receiving large inflows, the question of FX interventions, capital flow management (CFMs) and exchange rate smoothing also came up more prominently. Therefore, an array of problems

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[2] "Cleaning up" the financial "mess" after a burst of a bubble has many important and difficult dimensions (eg resolution regimes, preventing "bailouts" using taxpayers' money, incentives and penalties etc) which we will leave aside here. The main point is that the GFC has clearly demonstrated that crises can be extremely costly and could turn out to be (because of the difficulties in deleveraging) extremely painful to "clean up". Hence, the case for "leaning" against potential crises instead of "cleaning up afterwards" became much stronger.

related to the cross-country coordination of policies between AEs and EMEs (for both MP and MaPs) emerged.

All these questions are indeed complex and difficult. I will try to address some of them in these remarks by proposing to engage deeper into a research agenda, many elements of which were indeed and are already present at the BIS but also elsewhere in other international institutions and in academia. It is worth remembering that these questions cannot be answered simply by intuition. They have already prompted a very large body of literature, but more is needed: a combination of ongoing academic research and practical exchanges with policymakers and other agents in the economy. Eventually, bringing closer together the "art" and "science" of monetary policy in this area will, hopefully, lead to an integrated inflation targeting (IIT) framework. This framework would encompass the coordination of MP and/or MaPs between AEs and emerging market economies (EMEs) or rather, to be more specific, middle-income countries (MICs)[3] that have chosen to implement an Inflation Targeting (IT) framework[4] (IT-MICs).

The focus on IT-MICs combines challenges of a research agenda on LAW where there are issues of domestic policy coordination and also policy dilemmas posed by real and financial spillovers and spillbacks between advanced economies (AEs) and these IT-MICs. This debate about LAW has also brought the inflation targeting (IT) regime under scrutiny since it has been the monetary regime of choice for many central banks, especially those in several relevant IT-MICs. One perennial debate about the shortcomings of IT (whether strict or flexible) has been that it may neglect important information about the build-up of financial imbalances, given that these developments do not materialise rapidly into consumer price pressures. By ignoring asset bubbles and other financial developments, IT could pose risks to economic stability. On the other hand, it has often been argued that, due to the extreme difficulties in identifying bubbles ex ante and at short horizons, linking monetary policy decisions to these elusive events could per se generate economic instability. In light of these difficulties, several researchers have argued that IT should continue to focus on price stability but, at the same time, policymakers could use macroprudential regulation and other policy tools to ensure financial stability. This is because it can be difficult to stabilise asset prices since the factors leading to changes in those prices combine fundamentals and cyclical effects and can be hard to disentangle and pin down. Under such conditions, it will therefore be more prudent for central banks to focus on the implications of asset price movements for credit growth and aggregate demand, and thus inflationary pressures. IT was adopted in many countries in response to the failure of other monetary policy regimes (eg exchange rate targeting or monetary targeting). Although IT has been successful in that MICs did achieve lower inflation rates, the framework continues to face several practical challenges: (a) fiscal imbalances, that can lead to an increase in the risk premium due to structural and cyclical factors; (b) commodity price shocks, affecting prices and inflation expectations, which are two key

[3] The term emerging markets (EMEs) has in general become largely obsolete. It lumps together large and small countries (for instance, China and Romania), rich and poor countries, manufacturing and commodity-based exporters, and countries with large external deficits and large surpluses. For many substantive issues, this amalgam does not help to bring to the fore crucially different realities between these nations. In addition, international organisations (such as the International Monetary Fund and the United Nations) and private institutions involved in the publication of financial indexes (such as MSCI, JPMorgan Chase and FTSE) use a clutter of conflicting criteria to categorise countries included in the group of emerging markets. This creates confusion and inconsistencies when making comparisons across measures.

[4] Inflation targeting (IT) can be defined as a framework containing an explicit target for future inflation and a commitment to price stability as the primary long-run goal of monetary policy. IT also requires transparency, since this framework fosters increased communication with the public about the plans and objectives of the monetary authorities, and accountability because the central bank is also fully responsible for attaining the predefined inflation target. IT generally is characterised by (a) a public announcement of a medium-term target for inflation; (b) an explicit policy decision framework to achieve the stated objectives; and (c) a high degree of transparency concerning the course of action planned by the central bank. Credibility plays a key role in the IT regime because it can help to anchor inflationary expectations and therefore, more importantly, affects the yield curve. To build credibility, the central bank must effectively communicate its policy actions and intentions to the public. Finally, when inflation outcomes show a significant deviation from the inflation target, the central bank usually has to provide an explanation, detailing its contributory factors and indicating a corrective course of action.

variables an IT regime seeks to control; (c) inconsistent exchange rate regime (one of the usual conditions for IT is to have a floating exchange rate and yet IT central banks might be concerned with nominal exchange rate movements because this can affect inflation and financial stability and the real exchange rate due to competitiveness effects); and (d) finally, a key element – if not the very nature – of an IT regime is credibility, which anchors expectations and thus helps stabilise inflation. A key challenge to IT central banks in IT-MICs remains how to build and maintain credibility.

Finally, the debate needs to take into account the specificities of the financial system in IT-MICs. There, financial markets remain relatively underdeveloped vis-à-vis those of AEs, and commercial banks are the key intermediaries in the financial system. Therefore, commercial banks are the dominant source of credit to the private sector. Therefore, bank credit has grown significantly in IT-MICs, primarily owing to a more stable macroeconomic environment and an associated process of financial inclusion over the last decade. Moreover, over the past two decades, more integration with world capital markets has been associated with an increase in private capital flows into IT-MICs. Of these flows, foreign direct investment has been driven by longer-term growth prospects. By contrast, short-term capital flows (portfolio equity flows and debt flows) respond mainly to changes in asset prices, interest rate differentials, and/or shocks in general. In addition, the volatility of these short-term capital flows depends on domestic and international economic fundamentals, which can be magnified by domestic market distortions and the exceptional circumstances brought by the unconventional monetary policies implemented by developed countries. This volatility is important to IT-MICs because their financial systems are highly susceptible to small domestic or external disturbances. Hence, although benefits can be derived from a steady increase in capital flows, "sudden stops" have had adverse consequences for IT-MICs. Finally, bank-related capital flows can be detrimental because they can exacerbate the procyclicality of local credit markets. So taking those elements into account, let us move to the questions before us.

Should monetary policy incorporate a financial stability objective?

The short answer is yes, but then the big question is to "define a specific metric for" and how to include an explicit "financial stability objective" in IT? It is important to note that, in cases where the central bank lacks (or has low) credibility such as in IT-MICs, adding a financial stability objective to monetary policy can have implications for central bank credibility. The central bank may have problems in conveying the dual nature of its objective to the public. This may trigger mixed policy signals to the market that will weaken the perceived commitment to price stability and might destabilise expectations. Therefore, a stabilisation cost can be incurred if monetary policy is used in a proactive manner to achieve financial stability objectives and/or in combination with a set of MaPs.

In addition, the GFC confirmed the suspicion that an IT regime is incapable of addressing financial stability issues. Naturally, in order to develop and strengthen the financial system in IT-MICs, banks should practise prudent lending at all times; especially when economic conditions are favourable and the banking system is highly liquid. But in the light of the more complex international environment with unprecedented level of liquidity and associated capital flows that exacerbate procyclicality, the traditional microprudential tools (MiPs) are insufficient and, for example, MaPs such as capital requirements and/or other instruments should be put in place in a countercyclical manner to smooth credit cycles. In so doing, regulators can adopt a proactive and prudent approach by preventing asset price bubbles before a crisis develops. Under a new regulatory framework with countercyclical features, the perceived cost of risk (eg capital, reserves, provisions etc) is expected to increase in good times and to be able to absorb unexpected losses in bad times, therefore responding to credit market fluctuations in a less procyclical way.

But is that macroprudential response enough to reduce the likelihood of financial crises and contain their costs? In the GFC context, the issue of using monetary policy and/or macroprudential policy to address financial stability has re-emerged and captured the attention of many academics and policymakers that could be expressed in two main questions. First, would adding countercyclical

components (eg capital buffers, reserves requirements, dynamic (or cyclically adjusted) provisioning) to macroprudential regulation increase financial stability? And second, how aggressively (and on which time line) should monetary policy be used to achieve financial stability?

Should LAW be conducted with monetary policy at all? Conversely, should it be done with macroprudential policies only?

For some (eg Svensson (2015)), there is little justification for LAW with MP. The main assumption is that the policy response does not affect the cost of a financial crisis, that these crises occur with a given frequency and that they do not result in permanent output losses. This tends to underestimate the cost of crises and limit the potential benefit of a LAW policy. A higher policy rate is too blunt an instrument and produces more costs (eg lower output, higher unemployment and lower inflation) than benefits (eg measured as a lower probability/depth of future crisis). The so-called trade-off, ie accepting lower short-term output for higher output in the longer term, is a weak argument. If LAW with MP does not significantly affect the probability of a crisis, it would unnecessarily weaken the economy and make things worse (not unlike, perhaps, undergoing preventive chemotherapy without knowing if one has cancer). LAW thus has an additional cost in the form of the higher cost of a crisis when a crisis does occur. Provided the likelihood of a crisis cannot be sufficiently altered by MP, a cost-benefit analysis of LAW shows that costs exceed benefits. A central question in LAW policies concerns the information that policymakers have both regarding the transmission channels as well as regarding the likelihood of financial crises. Some papers (eg Ajello et al (2016)) suggest that, in the light of uncertainty, the case for LAW could be stronger.

Indeed and conversely, others argue that applying LAW preventively with MP should be an integral part of a macro-financial stability framework designed to smooth the cumulative effects of financial booms and busts systematically and reduce the perverse effects of large financial cycles (Borio (2016), Juselius et al (2016)). The idea is that the benefits cannot be measured only if crises occur. Financial fluctuations create allocative distortions that damage the whole economy. Therefore the issue is not necessarily to reduce the probability of a crisis and/or its cost. Actually, the bigger the ongoing imbalance caused by resource misallocations, excessive debt etc, the larger the costs will be in a downturn. So, LAW with MP can control the build-up of vulnerabilities and help to make the economy hover around a "financial equilibrium". It is therefore (Filardo and Rungcharoenkitkul (2016)) desirable to lean against financial booms; and the larger the bubble, the greater the benefit from LAW (as the contractionary balance sheet effect of the crisis will be longer and deeper).

The major difference between the two approaches (Filardo and Rungcharoenkitkul versus Svensson or Ajello et al) is a different understanding of the dynamics of the economy. In particular, in the second approach, the economy is characterised by typical models where deviations will revert back to a trend that is exogenously given. Hence, high imbalances – however measured – are reverting quickly back to a steady state. Instead, according to the first approach, high imbalances today are likely to lead to even higher imbalances tomorrow. If this is the case, the argument for leaning is much stronger and you come to the conclusion that leaning early is optimal. Similarly, Juselius et al (2016) highlight that inflation is not a good signal as to whether the economy is on an unsustainable path, as the positive effect of high credit growth due to rapidly rising asset prices can be offset by negative demand externalities because of high debt service burdens. Hence, the output gap (and inflation) can be roughly closed whilst the credit dynamics will at some point lead to a state where the negative effects outweigh the positive ones so that the economy enters a financial crisis. The impact of financial imbalances on the trend growth have also to be highlighted as there are evidence on resources misallocation due to the fact that financial imbalances will negatively affect the growth trend.

The case for LAW using only MaPs derives from a narrow[5] interpretation of Tinbergen's principle: central banks have two objectives (say, macroeconomic stability and financial stability), then they must have two separate policy instruments – the policy interest rate and a macroprudential tool. Some argue that the policy interest rate, which is traditionally used to achieve macroeconomic (price) stability, may not be successful in containing financial instability. For instance, under the IT regime, if there is a negative demand shock, the central bank will respond by lowering its policy interest rate. But, at the same time, if the central bank is also interested in containing excessively rapid credit growth, then lowering interest rates in response to the demand shock could further stimulate credit growth beyond prudent levels. How long interest rates should remain low would depend on the degree of persistence of the shock. This course of action will therefore entail a trade-off between macroeconomic (price) stability and financial stability.

Should LAW be conducted with a combination of MP and MaP? Towards an integrated inflation targeting (ITT) framework

The obvious way out of this narrow application of Tinbergen's principle is to consider that monetary policy could play a more active role in addressing financial stability because macroprudential policy alone may not be sufficient.[6] Whether this is true obviously depends on the relationship between the two policies. Put differently, it depends on whether macroprudential policy and monetary policy are complements or substitutes in achieving overall objectives of policy. A growing body of literature seems to suggest that monetary policy alone – using one instrument – cannot successfully achieve both macroeconomic stability and financial stability. Therefore it builds the case for utilising also macroprudential tools in combination. The actual mix of the two instruments will ultimately depend on their cost-effectiveness balance.

It is very important to explore further, with more analytical and empirical work, the assumption of MP and MaP being complementary. For policymakers in particular, it is critical that rigorous analytical and empirical work demonstrates that MaP tools and MP could be viewed as complements in achieving financial stability and under what circumstances. For example, to fully evaluate the welfare implications of combining both policies, they need to be analysed in a general equilibrium and open economy framework. Why so? Because MICs are highly vulnerable to external shocks. It is perhaps under this specific angle that a macro-financial stability framework needs to be articulated and the benefits of MP/MaP coordination could be fully assessed. It is in that perspective that some (Agénor and Pereira da Silva (2013)) proposed an "integrated inflation targeting" (IIT) framework from a developing country perspective. IIT could be defined as a flexible inflation targeting regime where the central bank's mandate is explicitly extended to include a financial stability objective, the policy interest rate is set to respond directly to a (well defined) measure of excessively rapid credit expansion, and MP and MaP policies are calibrated jointly to achieve macroeconomic (price) and financial stability.

Indeed, under the IIT regime, since multiple instruments will be used to achieve macroeconomic and financial stability, policymakers need to ensure that they understand the interaction of macroeconomic and financial stability in the context of the transmission process of monetary and real shocks. It is also important to investigate the transmission process in the context of imperfections and frictions that account for the economic environment of IT-MICs. Once these precautions are taken, an IIT with an augmented Taylor-type rule could be explored. In the real world, migrating across different policy regimes could endanger the credibility of the policy institutions, so that clarity and transparency are of

[5] "Narrow" because Tinbergen rule actually suggests simply an association between targets and instruments. It says that (if there is a trade-off) between instruments one should have at least as many instruments as targets to successfully achieve them (furthermore as a necessary but insufficient condition).

[6] See Agénor et al (2012) for a discussion on the role of monetary policy in addressing financial stability.

utmost importance, especially in the introduction of a modified reaction function, if its objectives are not communicated properly to and not well understood by the public.

The debate of these issues put together is not trivial and is complex to say the least. There are still difficult analytical challenges and practical implementation problems. The outstanding discussions on how to LAW for MICs or AEs, provide no unanimous mindset among academics and policymakers. The "pragmatic" approach applied so far in some IT-MICs (Pereira da Silva (2013)) has consisted of combining a flexible inflation targeting MP framework with macroprudential tools to reduce temporarily excessive cross-border credit flows (using eg reserve and capital requirements, FX interventions and, in some cases, CFM measures). Those policies have proved effective in moderating capital inflows and leaning against excessive financial exuberance when applied consistently with other demand management tools. As we know, these conditions demand also a local reasonable political economy setup and an external global environment that is reasonably calm – hardly conditions that have been fully and permanently met.

When LAW combines MP and MaP, what type of coordination is needed? Which agencies are necessary to do so, under a centralised one or a dual arrangement?

If we opt indeed for a LAW policy that combines MP and MaP, what type of coordination is needed to reach an optimal mix of these two policies? And, more importantly, should the same agency (eg the monetary authority or central bank) be responsible for implementing both policies? Or should there be a division of tasks between two committees sitting in two distinct agencies, the Monetary Policy Committee (MPC) at the central bank defining the policy rate and the Financial Stability Committee (FSC) sitting "elsewhere" (quite possibly even at the central bank itself) and defining how, when and with what intensity MaPs are deployed?

This is not simply an issue of location and institutional power. It is a key issue regarding the effectiveness of the policy framework as a whole since it would undermine the credibility of both committees if they provide conflicting signals about their reading of where the economy is standing regarding macroeconomic and financial stability (eg if MP and MaPs pull in completely opposite directions as if the analysis of the MPC and FSC on macroeconomic and financial stability presents a considerable divergence). The need for stricter interaction among MP and MaP policymakers is strengthened to the extent that simple mechanical rules cannot be implemented. Whenever conjunctural assessments are the prerequisite for policy intervention, a close collaboration among policymakers is warranted.

Another important dimension to consider in the effectiveness of MaPs is that sectoral instruments may be better suited to preventing financial imbalances. Under the IT regime, if the central bank increases the policy interest rate to address financial stability concerns emanating from an overheating of the housing market, mortgage rates are expected to increase. But other lending rates will increase as well. Higher lending rates are likely to lead to a contraction in supply, given the importance of bank credit in financing working capital needs in MICs. Although credit growth is positively and directly related to house price inflation, using the central bank's policy rate in this case imposes a cost on the whole economy and can lead to costly macroeconomic volatility. Furthermore, it is likely that the effectiveness of policy hikes on "exuberant" sectors be weaker than on "normal" sector, engendering excess contraction where it is not needed. Put differently, if macroprudential tools are sufficiently effective, the policy interest rate may be too "aggressive" an instrument to address financial stability concerns, which often have a sectoral dimension. Therefore, sectoral prudential tools, such as changes in sectoral loan-to-value ratios (LTV), debt-to-income (DTI) ratios and countercyclical capital buffers/requirements (CCB) on real estate lenders, may be more appropriate.

To complement sectoral tools, overarching macroprudential tools can also be used to maintain financial stability. This requires a combination of "old" MiPs tools such as these LTVs and DTIs, perhaps extended to several sectors or even the whole economy, and "new" tools such as countercyclical capital buffers mentioned above which are adjusted in response to excess credit growth. Last but not the least,

one can also use dynamic (cyclically adjusted) provisioning to slow down the pace of credit origination. All these instruments can help to mitigate excessive risk-taking and strengthen the financial sector.

When LAW combines MP and MaP, what is the role and the transmission mechanism for each type of MaP into the economy?

When LAW combines MP and MaP, since multiple instruments will be used to achieve macroeconomic and financial stability, policymakers need to ensure that they understand the interaction of macroeconomic and financial stability in the context of the transmission process of monetary and real shocks. To investigate the transmission process in this context, macroeconomic models that account for the economic environment of IT-MICs must be used. Since in MICs commercial banks dominate the financial system, the importance of banks and bank credit must be explicitly present and reflected in policy-based models to account for their macroeconomic role in the transmission of policy and exogenous shocks. Hence, the use of macroeconomic models that account for credit market imperfections is required to examine the effectiveness of monetary and macroprudential policies and how they interact.

Moreover, there is a large variety (see Table 1) of MaPs. They might impinge upon individual banks, depositors, the whole banking system, non-banks, the securities market and/or the whole financial infrastructure. They might have very different transmission channels depending on the way they affect costs of borrowing/lending, the perception of risk etc. They might also be more or less effective depending on their capacity to enforce these rules. Therefore, it is important to understand how they might transmit into the economy and also to realise that they might operate in counterintuitive ways (Agénor et al (2014)). For example, imposing countercyclical capital requirements might increase banks' lending rates through the cost (of funding) channel but it might also be less effective and expeditious to implement than an increase in reserves requirements (eg if there are regulatory rules to announce with some advance notice of the obligation to put a buffer in place).

A typology of the most frequent macroprudential instruments — Table 1

		Financial system component				
		Individual bank or deposit-taker		Non-bank investor	Securities market	Financial infra-structure
		Balance sheet	Lending contract			
Vulnerability	**Leverage**	Capital ratio Risk weights Provisioning Profit distribution restrictions Credit growth cap	LTV cap Debt service/income cap Maturity cap Margin/haircut limit			
	Liquidity or market risk	Liquidity/reserve requirement FX lending restriction Currency mismatch limit Open FX position limit	Valuation rules (eg MMMFs)	LC or FX reserve require-ment	Central bank balance sheet operations	Exchange trading
	Interconnected-ness	Concentration limits Systemic capital surcharge Subsidiarisation				Central counter-parties (CCPs)

Source: CGFS (2010).

Another interesting comparison is between cyclically adjusted provisions (more commonly known as dynamic) provisioning and reserve requirements (Agénor and Pereira da Silva (2016)). Alternative

loan loss provisioning regimes can be highly effective in terms of mitigating procyclicality and financial instability, measured in terms of the volatility of the credit-output ratio and real house prices, in response to financial shocks. There might even be an optimal combination of simple cyclically adjusted provisioning and countercyclical reserve requirements rules or not, making these instruments partial substitutes rather than complements.

In essence, much more modelling and analytical work has to be complemented by more empirical work (Gambacorta and Murcia (2016)), testing the various instruments with their respective credit cycles. Fortunately, there is a new large cross-country database (Cerutti et al (2016)) that contains the changes in the intensity in the usage of several prudential tools, both MaPs and MiPs. The database covers 64 countries, with quarterly data for the period Q1 2000 through Q4 2014. The availability of these data will hopefully contribute to more empirical research on the effectiveness of macroprudential tools.

How to LAW in a small open economy? Can monetary policy be effective in reacting to external shocks?

One of the specific questions that research at the BIS has been addressing is how to LAW in a small open economy (SOE) context with MP. In the SOE context, with a typical floating exchange rate regime of IT frameworks, MP has limited effectiveness in response to external shocks (resulting from changes in external financial conditions), such as a sudden flood of private capital. Why? Traditional monetary policy intervention can at times have unintended perverse collateral effects that adversely affect economic activity (Agénor et al (2014), (2016)). Sudden floods have led to macroeconomic instability in MICs by creating rapid credit growth and exacerbating asset price and inflationary pressures, among other things (Bruno and Shin (2015)). The textbook response, consisting in increasing interest rates to restrain credit growth and reduce inflationary pressures, can be less effective and in some cases self-defeating. Why? This course of action will, by design, increase domestic interest rates, but tightening MP in such a context might exacerbate capital inflows and boost the local credit cycle, thus obviously going against the policymaker's intention and objective. In such a case, a timely and more aggressive use of macroprudential tools as a complement to a well calibrated monetary policy response can help to manage capital flows, smooth asset price movements and reduce inflationary pressure. Furthermore, it has also been suggested that under such conditions capital flow management (CFM) measures (such as imposing taxes on capital flows) can be used on a temporary basis (Agénor and Jia (2015)). In that line, how would international policy coordination through MP and/or MaP policies play a possible role? Could it set (special) capital requirements for "excessive" cross-border lending above a certain threshold? Would that have prevented the excesses between the core and the periphery of the euro area? It is hard to say. This type of international coordination through MaP policy could be an interesting avenue for policymakers to explore further.[7]

The current status of the debate on LAW therefore seems to suggest that macroprudential policy and monetary policy should be viewed as complements in achieving financial stability. However, as stated previously, the effectiveness of the new macroprudential tools has to be further investigated both

[7] While the research about the merits of international cooperation is indeed a topic of great interest, especially at the BIS, one should be cautious about excessive reliance on the intuition that coordination of MPs and/or MaPs is globally welfare-enhancing (Banerjee, Devereux and Lombardo (2015)). Using interconnected DSGE two-country models, and without financial frictions, international spillovers are small, and a "selfish" IT rule represents an effective policy for an EME. When there are financial frictions, indeed, spillover effects are substantially magnified, and an IT rule has only a limited advantage over an exchange rate peg. However, an optimal monetary policy that explicitly takes into account real and financial interconnections markedly improves on the performance of both types of rules. What is somehow disappointing is that there is only a marginal improvement brought by coordinated optimal policies across countries, a non-cooperative, self-oriented optimal policy gives results very similar to those of a global cooperative optimal policy. Nevertheless, the call for some form of "coordination" is strong if not on monetary policy perhaps on macroprudential policies.

analytically and empirically. More importantly, it seems that macroprudential and traditional monetary policy tools should be implemented in a closely coordinated way. In this vein, IT-MICs' policymakers could reflect on a research agenda around what I have called a "pragmatic" regime, an integrated inflation targeting (IIT). IIT could be defined as a flexible IT regime in which the central bank's mandate is explicitly extended to include a financial stability objective, the policy interest rate is set to respond directly to a (well defined) measure of excessively rapid credit expansion and monetary and macroprudential policies are calibrated jointly to achieve macroeconomic (price) and financial stability.

A research agenda toward designing and implementing Integrated Inflation Targeting

From the discussion above, it seems clear that a vast research agenda of careful and well vetted products is needed for the design and implementation of the IIT regime. As stated above, the first issue is the importance of understanding how the monetary transmission mechanism works in the IIT context. Then, the research should focus on the possible formulation and implementation of a "credit-augmented Taylor rule".[8] Formulating such a rule has been discussed but requires a very detailed and rigorous analysis. Let us walk through some of the difficulties.

For example, to implement an IIT with an augmented Taylor rule, MP would have, in addition to reacting to the inflation gap (I) and the output gap (O), also to respond to (some measure of) "financial (in)stability". But this "metric" – the one measuring financial stability – is a complicated one. Some are working toward defining measurements of the "financial cycle" (Borio (2016)), others toward composite indicators of components of credit cycles, asset prices etc. Given the recognised role of credit excesses in financial crashes, one possibility would be to use a (private sector) credit growth gap ((C), defined as the difference between the actual growth rate of that variable and a "reference" growth rate). This variable would act therefore as an intermediate target, related to the ultimate goal of financial stability.

Augmenting the policy interest rate rule to react to such a credit gap measure can be beneficial to IT-MICs. IT frameworks have already evolved in the post-crisis policy world, as suggested in Table 2, from a standard IT to post-GFC IT (with some degree of policy intervention vis-à-vis exchange rate volatility and the effects of capital flows). Under this research agenda, the IIT framework will be able to estimate, monitor, react and mitigate the usual accelerator mechanism that, when left unchecked, can lead to excessive rapid credit growth and inflate asset prices, which are common manifestations of financial imbalances. Since credit booms, in most cases, are well documented leading indicators of financial crises, it is of the essence of an IIT to react with its policy interest rate rule to any unsustainable private sector credit growth gap. IT-MICs can also benefit in other ways from a measure of the private sector credit growth gap which will act as an intermediate target as mentioned earlier. Since in these countries there is a high degree of uncertainty about real-time estimates of the output gap, an adequate measure of the credit growth gap may also produce a more reliable and timely measure of excess demand.

However, as is well known, the "devil is in the details". There are two key and complex pre-conditions that must be fulfilled before an IIT with an augmented inflation gap (I) – output gap (O) – credit growth (C) policy rule is implemented. The monetary authority or central bank needs to:

First, knowing the characteristics of credit markets in IT-MICs, decide on the credit gap measure to be used in the rule. That requires choosing whether considering a real or a nominal credit gap, and whether using a broad measure of aggregate credit or only a component of total credit (say, private sector

[8] Or a "financial imbalance indicator-augmented" to be more generic.

credit). However, in many IT-MICs where the role of public banks is important, the measure obviously has to take it into account.

Second, decide how the "reference" growth rate will be measured. This "reference" rate can obviously be calculated using statistical filters and/or as a trend. But given IT-MICs' process of financial deepening, the preferred way should be on the basis of an equilibrium credit-to-GDP ratio that is related to some fundamental determinants.[9] So that "reference" will need to be carefully formulated because in IT-MICs a "filtered" time series seldom is a proxy for the "sustainable growth path" that would be the adequate reference for balancing credit exuberance against the needed process of financial deepening in these countries. There has been some encouraging work in that area (Buncic and Melecky (2014)).

Finally and perhaps more importantly, the research agenda will have to also deal with the issue of credibility and expectations, which can both be affected by the introduction of the new policy regime. Put differently, the introduction of a modified reaction function can have implications for central bank credibility if its objectives are not communicated properly to the public and well understood. Not paying due attention to that can affect inflationary expectations.

The evolution of the components of the research agenda of an integrated inflation targeting Table 2

Institutional location	**Macroeconomic issue**	**IT(1): Flexible inflation targeting (before GFC)**	**IT(2): Flexible inflation targeting (during GFC)**	**IIT: Integrated inflation targeting (after GFC)**
Monetary Policy Committee	Inflation gap (I) Output gap (O)	Taylor-type rule on I and O	Taylor-type rule on I, O with FX smoothing factor	Augmented new CB rule on I, O and carefully defined C
Financial Stability Committee or Authority	Credit gap (C) to be carefully defined	Microprudential tools (MiP) enough	Tinbergen separation; MP + Micro & macro prudential tools (MiP + MaP)	Timely coordinated – jointly calibrated micro & macroprudential tools (MiP + MaP)
Forex intervention by CB or specific entity	Exchange rate volatility (FX vol)	Pure floating with (some) FX interventions	Administered floating with (regular) FX interventions	Administered floating with smoothing FX interventions & capital flow management (CFM)

Source: Author.

And therefore, as we can see, if the "reference" credit gap is not well defined, augmenting the policy interest rate rule to react to such a credit gap measure can be detrimental to IT-MICs. It could unduly restrain the process of financial deepening and result in the lower-than-necessary level of output, credit and inflation. Welfare can be improved with MaPs instead of using interest rate policy especially when dealing with excessive leverage (Korinek and Simsek (2016)).

Conclusion: some partial answers and a research agenda

The questions that researchers and policy-makers are trying to address are difficult. We should neither minimise their complexity nor shy away from them: should monetary policy incorporate a financial stability objective? Can a combination of both MP and MaP achieve both macroeconomic (price) and financial stability? If so, what type of coordination of these two policies is needed? Can we understand precisely the

[9] There have been exercises conducted to validate the credit gap for Basel III that looked into different measures and found no additional significant statistical information in the level of the debt-to-GDP ratio (see also Drehmann and Tsatsaronis (2014)).

role of MaPs and the transmission mechanism for each type of MaP into the economy? How to LAW in a small open economy context with MP and/or with a combination of MP and MaPs?

We need to continue working on this ambitious research agenda but we do have already some partial answers to propose as working hypothesis. In order to achieve macroeconomic and financial stability, it is possible to use monetary policy and macroprudential policy as complements. One possible route to explore is to use monetary policy with an interest rate rule that responds to deviations in inflation, output and (a carefully crafted measure of sustainable) financial imbalances, especially excessive credit growth. This possible route can be dubbed an integrated IT (IIT) framework. The difficulty for this IIT route is that monetary and macroprudential policies need to be calibrated jointly to achieve macroeconomic and financial stability.

It goes without saying that a research proposal on how to improve the performance of an IIT regime should not forget that IT-MICs must have a strong fiscal position that maintains stable and low risk premia. Since public debt level and composition have improved in MICs, the remaining risk factor, as mentioned previously, is population ageing and pension financing needs as well as the short-term effects of the financial crisis on MICs' fiscal position. All of those may put considerable pressure on fiscal accounts in many MICs in the coming years. Therefore, in addition to a strong medium-term fiscal framework, reforms should be implemented to mitigate the fiscal burden associated with these liabilities and reduce concerns about public debt sustainability. Also, strong public sector accounts that are capable of countercyclical accumulation of precautionary resources may provide some fiscal space for policymakers to act countercyclically without losing credibility and mitigate the risks associated with large and volatile capital flows when needed.

There are also several other practical operational issues that the research agenda needs to investigate.

First, what would be the communication and transparency requirements of such an IIT for IT-MICs? Naturally, it requires a careful examination of the communication ritual and rules associated with this approach and needs to address the specific credibility issues that might be present in some IT-MICs with consequences for inflation expectations.

Second, what would be the proper methodology for estimating the very important issue of the sustainable (private?) reference credit growth, in order to extract a relevant gap measure for policy? It would be essential to address that point to make an IIT regime operational.

Third, what would be the macroprudential tools would be used in coordination with monetary policy? Given the array of instruments at hand (see Table 1), an important task is to understand how each of them interact with other policies.

Fourth, what would be the institutional setup that would best promote the coordination between monetary and macroprudential policies? It has been pointed out that if monetary and macroprudential policies must indeed be determined jointly, there must be very close coordination between the central bank and the macroprudential authority; they might operate under separated institutions or inside the same framework but in two distinct committees (eg a traditional IT's Monetary Policy Committee, and a newly created Financial Stability Policy Committee).

Fifth, what would be the target horizon for price or macroeconomic stability, on the one hand, and financial stability, on the other? This is also important since, in several IT-MICs, inflation targets are set on an annual basis, and there is a temporal dimension which provides some flexibility to the central bank to react to anticipated changes in the process driving inflation or the nature of shocks that may affect it. However, since financial stability is a continuous target, a critical question is whether such a dichotomy should be maintained in an IIT regime, and, if not, how costly would be the loss of flexibility that countries would face by moving to two continuous targets.

The sixth issue relates to how credibility should be measured in an IIT framework? In a standard IT regime, credibility is measured based on the volatility of inflation expectations and the degree of persistence in (actual and expected) inflation over time. However, if financial stability is also an objective of the central bank, an adequate measure of credibility should involve also a measure of progress (or lack thereof) with respect to financial stability. In addition, if the financial stability objective is hierarchical as opposed to concurrent with the objective of macroeconomic stability, a proper set of weights should be developed to measure overall credibility.

Overall, the research agenda seems to point to a comprehensive framework that comprises monetary, fiscal and macroprudential policies as the policy framework best suited to achieve price and financial stability in IT-MICs. Apart from a strict inflation targeting regime – where only inflation appears as target (nowhere to be seen) – and a flexible inflation target, where other objectives, intermediate or not, are conceived (basically, the current practical version across the world), the GFC has accelerated policymakers' natural tendency to consider that financial stability considerations should belong to the framework to the extent that there is a link between financial stability and the targets. Since this is increasingly recognised, we seem to be moving to the practical issues of *how* to do it. But we need to be cautious about being over-ambitious in trying to reach a perfect synthetic framework: the emphasis should be on *trade-offs*. Since the link between finance, financial stability and the ultimate targets is elusive, establishing a clear, transparent and credible strategy is extremely difficult. As we hinted above, abandoning a simple strategy for a more complex and complex one is likely to engender more volatility, akin to that arising from more arbitrary policies.

The research effort should thus be in reducing the theoretical uncertainty surrounding the links highlighted above. Let us hope that this could be further developed in the next few years by all interested parties in academia and policymaking. The task is immense but we have already some elements of a roadmap.

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