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Rethinking Macro Policy II: Getting Granular

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EXECUTIVE SUMMARY

The 2008–09 global economic and financial crisis shook the consensus on how to run macroeconomic policy. It reminded us of the dangers associated with financial sector imbalances; showed the limitations of monetary policy and cast doubt on some of the tenets of its intellectual foundations; and led to a reevaluation of what levels of public debt can be considered safe. This prompted a healthy reconsideration of what worked and what did not, and a debate on how to fix things, ranging from nitty-gritty technical points to broad-based institutional design questions. Five years from the beginning of the crisis, the contours of a new macroeconomic policy consensus remain unclear. But policies have been tried and progress has been made, both theoretical and empirical. This paper updates the status of the debate.

The crisis rekindled old debates and raised new questions about monetary policy and the role of central banks. The large costs of busts and doubts about the effectiveness of new regulatory tools reopened the "lean versus clean" debate on how to deal with asset-price and credit bubbles. The extension of liquidity to non-deposit-taking institutions, specific market segments, and (indirectly) sovereigns raised questions about what the scope of central banks' traditional lender-of-last-resort function should be. The recourse to unconventional measures in the face of the zero lower bound on interest rates brought about a discussion of the relative role of interest rate policy, forward guidance, and open market operations going forward. The increasing disconnect between activity and inflation triggered a reevaluation of the appropriate intermediate target of monetary policy.

On fiscal policy, the crisis in the euro area periphery (with the associated risk of self-fulfilling runs and multiple equilibria) raised new doubts about what levels of public debt are safe in advanced economies. The widespread need for major fiscal adjustment and the difficulties associated with austerity programs rekindled a debate on fiscal multipliers, the optimal speed of fiscal consolidation, and the design of medium-term adjustment programs to reassure market participants and the public at large. The simultaneous presence of fiscal needs and large asset-purchase programs by central banks led to a discussion about the role of financial repression in past consolidation episodes, set off concerns about a possible shift to fiscal dominance, and induced consideration of ways to support central bank independence.

Macroprudential tools may provide a new policy lever to curb dangerous booms and contain imbalances. But evidence about their effectiveness is mixed and we are a long way from knowing how to use them reliably. Their relation with other policies is not yet fully understood; they are fraught with complicated political economy issues; and there is little consensus on how to organize their governance.

I. INTRODUCTION

The 2008–09 global economic and financial crisis and its aftermath keep forcing policymakers to rethink macroeconomic policy. First was the Lehman crisis, which showed how much policymakers had underestimated the dangers posed by the financial system, and demonstrated the limits of monetary policy. Then it was the euro area crisis, which forced them to rethink the workings of currency unions, and fiscal policy. And, throughout, they have had to improvise, from the use of unconventional monetary policies, to the initial fiscal stimulus, to the speed of fiscal consolidation, to the use of macroprudential instruments.

We took a first look at the issues in 2010, both in a paper (Blanchard and others, 2010) and at an IMF conference in 2011 (Blanchard and others, 2012). There was a clear sense among both researchers and policymakers participating in the conference that we had entered a "brave new world" and that we had more questions than answers. Two years later, the contours of monetary, fiscal, and macroprudential policies remain unclear. But policies have been tried and progress has been made, both theoretical and empirical. This paper updates the status of the debate in preparation for a second conference to be hosted by the IMF on the same topic this spring.

A few observations on the scope of the analysis: The paper focuses on the design of macroeconomic policy after the global economy emerges from the crisis, rather than on current policy choices—such as the design of exit policies from quantitative easing, or the pros and cons of money-financed fiscal stimulus. The two sets of issues are obviously related, but our objective is to analyze the general principles to guide macroeconomic policy in the future, rather than the specific measures to be taken today. We also take a relatively narrow view of macroeconomic policy, leaving out a discussion of structural reforms and financial regulation. Although the border between financial regulation and macroprudential policies is fuzzy, we concentrate on the cyclical component of financial regulation rather than the overall design of the financial architecture.

The paper is organized in three main sections: monetary policy; fiscal policy; and, what may be emerging as the third leg of macroeconomic policy, macroprudential policies.

II. MONETARY POLICY

The monetary policy theme that emerged from the first conference was that central banks had to move from an approach based largely on one target and one instrument (the inflation rate and the policy rate, respectively) to an approach with more targets and more instruments. Two years later, the choice of both the set of targets and the set of instruments remains controversial.

A. Should Central Banks Explicitly Target Activity?

Although the focus of monetary policy discussions has been, rightly, on the role of the financial system and its implications for policy, macroeconomic developments during the crisis have led to new questions about an old issue—the relation between inflation and output—with direct implications for monetary policy.

One of the arguments for the focus on inflation by central banks was the "divine coincidence": the notion that, by keeping inflation stable, monetary policy would keep economic activity as close as possible (given frictions in the economy) to its potential. So, the argument went, even if policymakers cared about keeping output at potential, they could best achieve this by focusing on inflation and keeping it stable. Although no central bank believed that the divine coincidence held exactly, it looked like a sufficiently good approximation to justify a primary focus on inflation and to pursue inflation targeting.

Since the crisis began, however, the relation between inflation and output in advanced economies has been substantially different from what had been observed before the crisis. Given the large cumulative decline in output relative to trend, and the sharp increase in unemployment, most economists would have expected a fall in inflation, perhaps even turning into deflation. Yet, in most advanced economies (including some experiencing severe contractions in activity), inflation has remained close to the range observed before the crisis.

As a matter of logic, there are two interpretations of what is happening. Either potential output has declined nearly as much as actual output, so that the output gap (the difference between potential and actual output) is in fact small, thus putting little pressure on inflation; or the output gap is still substantial, but the relation between inflation and the output gap has changed in important ways.

With regard to the first interpretation, it is possible that the crisis itself led potential output to fall, or that output before the crisis was higher than potential—for instance, supported by unsustainable sectoral (housing) bubbles—so that the actual output gap is small. This could explain why inflation has remained stable. Empirically, however, it has been difficult to explain why the natural rate of unemployment should be much higher than before the crisis, or why the crisis would have led to a large decline in underlying productivity. And although there is a fair amount of uncertainty around potential output measures (especially in the wake of large shocks such as financial crises), by nearly all estimates, most advanced economies still suffer from a substantial output gap.

This leads to the second interpretation. Indeed, convincing evidence suggests that the relation between the output gap and inflation has changed. Recent work (e.g., WEO, 2013) attributes the change to the following two factors.

The first factor is more stable inflation expectations, reflecting in part the increasing credibility of monetary policy during the last two or three decades. By itself, this is a welcome development, and it explains why a large output gap now leads to lower (but stable) inflation rather than steadily decreasing inflation.

The second factor is a weaker relation (both in magnitude and in statistical significance) between the output gap and inflation for a given expected rate of inflation. This is more worrisome because it implies that fairly stable inflation may be consistent with large, undesirable variations in the output gap.

Looking forward, the main question for monetary policy is whether this weaker relation is due to the crisis itself, and thus will strengthen again when the crisis comes to an end, or whether it reflects a longer-term trend. The tentative evidence is that part of it may indeed reflect specific circumstances related to the crisis—in particular, the fact that downward nominal wage rigidities become more binding when inflation is very low. But part of the weaker relation seems to reflect as-yet-unidentified longer-term trends. (These actually seem to have been present before the crisis—see WEO, 2013.) Should the relation remain weak, and the divine coincidence become a really bad approximation, central banks would have to target activity more explicitly than they are doing today.

B. Should Central Banks Target Financial Stability?

The crisis has made it clear that inflation and output stability are not enough to guarantee sustained macroeconomic stability. Underneath the calm macroeconomic surface of the "Great Moderation," sectoral imbalances and financial risks were growing, and ultimately led to the crisis. The severity of the ensuing recession and the limited effectiveness of policy action challenged the precrisis "benign neglect" approach to bubbles. And they reignited the issue of whether monetary policy should include financial stability (proxied by, say, measures of leverage, credit aggregates, or asset prices) among its targets.

The policy rate is clearly not the ideal tool for dealing with the kind of imbalances that led to the crisis. Its reach is too broad to be cost effective. Instead, a consensus is emerging that more-targeted macroprudential tools should be used for that task.

There are, however, important caveats. Macroprudential tools are new and little is known about how effective they can be. They are exposed to circumvention and subject to thorny political economy constraints (more on these tools in a later section). Given these limitations, the issue of whether central banks should use the policy rate to lean against bubbles has made a comeback (see, for instance, Svensson, 2009; Mishkin, 2010; Bernanke, 2011; and King, 2012).

Should central banks choose to lean against bubbles, an old issue—evident both in this crisis and in many previous financial crises—is that bubbles are rarely identifiable with certainty in

real time. This uncertainty suggests that central banks may want to react to large enough movements in some asset prices, without having to decide whether such movements reflect fundamentals or bubbles. In other words, given what we have learned about the costs of inaction, higher type I errors (assuming that it is a bubble and acting accordingly, when in fact the increase reflects fundamentals) in exchange for lower type II errors (assuming the increase reflects fundamentals, when in fact it is a bubble) may well be justified. However, should that road be taken, setting appropriate thresholds will not be easy. One possibility would be to focus on certain types of asset-price booms, for instance, those funded through bank credit, which have proven particularly dangerous.

C. Should Central Banks Care about the Exchange Rate?

The crisis has shown once again that international capital flows can be very volatile. This volatility has not generally been a major problem in advanced economies (although the flow reversals within the euro area and the drying out of dollar liquidity in the European banking system during the early stages of the crisis are a reminder that vulnerabilities exist there as well). However, shallower financial markets, greater openness and reliance on foreign-denominated assets, and less-diversified real economies make emerging markets significantly vulnerable to swings in capital flows.

Volatility of capital flows can have adverse effects on macroeconomic stability, both directly (through its effects on the current account and aggregate demand) and indirectly (through its effects on domestic balance sheets and thus financial stability). When the exchange rate strengthens on the back of strong inflows, the traded goods sector loses competitiveness, potentially leading to an allocation of capital and labor that may be costly to undo if capital flows and the exchange rate swing back. Capital inflows can also lead to balance sheet structures that are vulnerable to reversals to the extent that the inflows promote credit booms (and hence leverage) and increase the use of foreign-denominated liabilities. (There is ample evidence, for instance, that the credit booms and widespread reliance on foreign currency borrowing in Eastern Europe in the first decade of the 2000s was associated with strong capital inflows (Dell'Ariccia and others, 2012).

The problems with capital flow volatility have led to a reassessment of the potential role for capital controls (which the IMF calls "capital flow management tools"). But, just as in the case of macroprudential tools and financial stability, capital controls may not work well enough, raising the issue of whether monetary policy should have an additional objective (Ostry, Ghosh, and Chamon, 2012).

Could central banks have two targets, the inflation rate and the exchange rate, and two instruments, the policy rate and foreign exchange intervention? (Inflation targeting central banks have argued that they care about the exchange rate to the extent that it affects inflation, but it is worth asking whether this should be the only effect of the exchange rate they ought

to consider.) Adding exchange rates to the mix raises issues of both feasibility and desirability.

The answer to the feasibility question is probably no for economies with highly integrated financial markets (and almost certainly no for small, very open, advanced economies—say, New Zealand). Under those conditions, sterilized intervention is unlikely to be effective because capital flows react immediately to interest rate differentials. But the answer is probably yes (and the evidence points in this direction) for economies with greater financial frictions and more highly segmented markets. Under those circumstances, one could thus consider an extended inflation targeting framework, with the policy rate aimed at inflation, and foreign exchange intervention aimed at the exchange rate.

But what about desirability? The consensus that has emerged regarding the use and the limitations of capital controls is directly relevant. The issues and conclusions are very much the same. Intervention is typically not desirable when it is aimed at resisting a trend appreciation driven by steady capital flows rather than by temporary swings (that is when the movement in the exchange rate reflects a change in underlying fundamentals rather than, for example, temporary swings between risk off and risk on). Nor is it likely to be acceptable from a multilateral perspective (for more, see Ostry, Ghosh, and Korinek, 2012).

D. How Should Central Banks Deal with the Zero Bound?

What may be most striking about the crisis is the way in which central banks have experimented with unconventional policies, from quantitative easing, to targeted easing, to new forms of liquidity provision. Will these instruments become part of the standard toolkit, or are they specific to the crisis? To answer this question, one needs to distinguish between two characteristics of the crisis.

The first is the liquidity trap, which constrains the use of the policy rate. The second is the segmentation of some financial markets or financial institutions. Although both characteristics have played a central role in determining policy, they are conceptually separate. One can think of sufficiently adverse, but nonfinancial, shocks such that central banks would like to decrease the policy rate further but find themselves constrained by the zero bound. And one can think instead of financial shocks that trigger segmentation in some financial markets while the policy rate is still positive. We consider the implications of each, in turn.

The crisis has shown that economies can hit the zero lower bound on nominal interest rates and lose their ability to use their primary instrument—the policy rate—with higher probability than was earlier believed. This raises two questions:

The first question is what steps can be taken to minimize the probability of falling into liquidity traps in the future. We will not elaborate on the discussion in our earlier paper

regarding the optimal level of inflation in this context, although the argument in that paper and the counterarguments brought up in the ensuing debate still deserve a non-ideological discussion both in academia and in policy forums (e.g., see Ball, 2013).

The second question is what to do in the liquidity trap. When the crisis hit, most central banks reacted by cutting interest rates aggressively. In several cases, interest rates rapidly hit the zero lower bound. Central banks then moved to unconventional policies, which have taken many forms, with an alphabet soup of acronyms. It is useful to distinguish between targeted easing (a more accurate name than credit easing) measures, that is, purchases of specific financial assets without a change in the money supply, and quantitative easing measures, which are not sterilized and thus lead to an increase in the money supply.

Available empirical evidence suggests that some targeted easing policies have had a substantial impact on the prices of the assets acquired by the central bank. Much of the impact, however, seems to have come from the unusual segmentation of financial markets associated with this crisis—as seen, for example, in the case of mortgage-backed-securities markets in the United States in 2008 and 2009 (see Gagnon and others, 2011). Although assets with different risk characteristics are always imperfect substitutes and thus relative demand always matters, the ability of the central bank to affect relative returns is likely to be much more limited in normal times than it was during the crisis.

Quantitative easing can be thought of as the combination of targeted easing (the purchase of some assets, such as long-term Treasury bonds, financed by the sale of short-term assets) and a conventional monetary expansion (the purchase of short-term assets with central bank money). The question is whether, at the zero bound, the monetary expansion component has an effect, per se. The issue is particularly clear in Japan, where the central bank just announced its intention to double the monetary base. If it has an effect, it has to be through expectations of either low future nominal rates or of higher future inflation. (In the Alice in Wonderland, upside-down world of the liquidity trap, higher expected inflation is welcome, because it is the only way to obtain a decrease in expected real rates.) Empirical evidence is mixed. The evidence is a bit stronger for another measure with a similar intent, namely "forward guidance." Announcements consistent with forward guidance (such as the intention or commitment to keep short-term rates low for a specific period, or for as long as some economic conditions prevail) appear to have had a significant and economically sizable impact on long-term rates both in Canada and in the United States. Similar announcements, however, appear to have been less effective for Sweden's Riksbank (Woodford, 2012). With regard to future monetary policy, away from the zero bound, forward guidance may well be here to stay.

The crisis has also led to new discussions of a number of old ideas, including a shift to price-level targeting or nominal-GDP targeting. Support for these rules may be partly opportunistic: A common feature of level-based approaches (i.e., rules that target the price level rather than the inflation rate, or nominal income rather than nominal income growth) is

that, at this juncture, they would allow for higher inflation rates without undermining central bank credibility in the long run. Potential loss of credibility has been a major concern for central banks throughout the crisis, as evidenced by the reaffirmation by central banks of their commitment to remain vigilant against inflation with every round of unconventional policies. But these level-dependent rules have several shortcomings. An important one is that temporary price shocks are not treated as bygones and have to be absorbed through inflation, or worse, deflation.

E. To Whom Should Central Banks Provide Liquidity?

When some investors are highly specialized (have strong "preferred habitats," to use an old expression) and, for some reason, reduce their demand, outsiders may not have the specialized knowledge needed to assess whether the lack of demand comes from higher risk or from the fact that the usual buyers are unable to buy. Outsiders may then decide to stay out. When this happens, market prices may collapse, or some borrowers may lose funding. Illiquidity may then lead to insolvency. Multiple equilibria may also arise, with the expectation of insolvency leading to high interest rates and becoming self fulfilling.

From its early stages, the crisis showed that the classical multiple-equilibrium framework that provided a rationale for providing banks with deposit insurance and access to a lender of last resort now also applied to wholesale funding and nonbank intermediaries. The situation in Europe later showed the same framework could also extend to sovereigns, even in advanced economies. Indeed, sovereigns are even more exposed than financial intermediaries to liquidity problems, because their assets consist mostly of future tax revenues, which are hard to collateralize. The expectation that other investors may not roll over debt in the future might lead current investors to not want to roll over, leading to a liquidity crisis.

Central banks ended up providing liquidity not only to banks, but also to non-deposit-taking institutions, and (directly and indirectly) to sovereigns. From a theoretical standpoint, the logic is largely the same. Nevertheless, the extension to nonbanks raises a number of issues:

First, just as with banks, the issue of distinguishing illiquidity from insolvency arises. But for nonbanks this issue happens in the context of potentially unregulated entities about which central banks possess limited information. Second, again as for banks, is the issue of moral hazard. The promise (or expectation) of liquidity provision will induce the accumulation of even less liquid portfolios beforehand, thereby increasing the risk of a liquidity crisis (Farhi and Tirole, 2012). The problem is exacerbated in the case of indirect support (through market purchases of sovereign bonds, for example) because, unlike with direct support to banks, it is difficult (or impossible) to administer any punishment. Haircuts (for discount window access) and conditionality (for direct purchases) can partly allay, but not eliminate, these concerns. And haircuts run counter to the notion of providing the "unlimited liquidity, no matter what happens" necessary to eliminate the risk of a run. During a systemic crisis, these

are second-order shortcomings relative to the need to stabilize the economy. But the case for intervention appears harder to make during tranquil times.

III. FISCAL POLICY

Early in the crisis, with monetary policy facing the liquidity trap and financial intermediation still in limbo, governments turned to fiscal stimulus to sustain demand and to avoid what they felt could become another Great Depression. However, when the acute danger appeared to have subsided, governments found themselves with much higher levels of public debt (not so much because of the fiscal stimulus, but because of the large decline in revenues caused by the recession). Since then, the focus of fiscal policy discussions has been on fiscal consolidation.

In the earlier conference, we converged on two main conclusions. First, what appeared to be safe levels of public debt before the crisis were, in fact, not so safe. Second, a strong case emerged for revisiting the precrisis consensus that fiscal policy had a limited cyclical role to play.

The questions are much the same today, with a few twists. Given the high debt levels, a significant policy issue that will remain with us beyond the crisis is that of the proper speed of fiscal consolidation. The answer depends on two main factors:

First, how harmful or dangerous are current debt levels? The crisis has added one more issue to the usual list of the adverse effects of high debt—multiple equilibria in which vicious cycles of high interest rates, low growth, and a rising probability of default may lead to a fiscal crisis.

Second, and to the extent that fiscal consolidation is necessary, what are its effects on growth in the short run, given the state of the economy and the path and composition of the fiscal adjustment?

We take up each of these issues in turn.

A. What Are the Dangers of High Public Debt?

At the start of the crisis, the median debt-to-GDP ratio in advanced economies was about 60 percent. This ratio was in line with the level considered prudent for advanced economies, as reflected, for example, in the European Union's Stability and Growth Pact. (Somewhat ironically, the prudent level for emerging markets was considered to be lower, about 40 percent. The actual median ratio was less than 40 percent, which has given these countries more room for countercyclical fiscal policy than in previous crises.)
By the end of 2012, the median debt-to-GDP ratio in advanced economies was close to 100 percent and was still increasing. For the most part, the increase stemmed from the sharp

fall in revenues caused by the crisis itself. To a lesser extent, it was attributable to the fiscal stimulus undertaken early in the crisis. And, for some countries, it was due to the realization of contingent liabilities (see Box 2 in IMF, 2012a). In Ireland and Iceland, for example, the need to rescue their oversized banking systems led to unexpected increases in their debt ratios of 25 and 43 percentage points, respectively. In Portugal, to take a less well-known example, as the crisis progressed, state-owned enterprises incurred losses and, under Eurostat rules, had to be included within the general government, the deficit and debts of which increased as a result. Moreover, guarantees started being called on public-private partnerships (which were more sizable than in other countries), thereby adding to the general government's burden. Between those issues and financial sector interventions, the overall result was an increase in the Portuguese debt ratio of about 15 percentage points.

The lessons are clear. Macroeconomic shocks and the budget deficits they induce can be sizable—larger than was considered possible before the crisis. And the ratio of official debt to GDP can hide significant contingent liabilities, unknown not only to investors but also sometimes to the government itself (Irwin, 2012). This suggests the need for both a more comprehensive approach to measures of public debt and lower values for what constitutes "prudent" official debt-to-GDP ratios. Unfortunately, given the extent to which actual ratios have increased, it will take a long time to attain those prudent ratios again.

The costs of high public debt, from higher equilibrium real interest rates to the distortions associated with the taxes needed to service the debt, have long been recognized. The crisis has brought to light another potential cost: the risk of multiple equilibria associated with high levels of debt. If investors, worried about a higher risk of default, require higher risk premiums and thus higher interest rates, they make it more difficult for governments to service the debt, thereby increasing the risk of default and potentially making their worries self fulfilling.

In principle, such multiple equilibria can exist even at low levels of debt. A very high interest rate can make even a low level of debt unsustainable and thus be self fulfilling. But multiple equilibria are more likely when debt is high; then, even a small increase in the interest rate can move the government from solvency to insolvency. They are also more likely when the maturity of the debt is short and rollover needs are greater: if most of the debt has to be rolled over soon, it is more likely that current investors will worry about future rollovers, leading them to be reluctant to roll over today.

Also in principle, central banks can eliminate the bad equilibrium by providing—or simply by committing to provide—liquidity to the government if needed. However, as noted in the section on monetary policy, providing this liquidity is not straightforward. The intervention may need to be very large. And given the usual difficulty of distinguishing between illiquidity and insolvency, and the fact that the state, as distinct from banks, cannot provide collateral, the risks to the central bank may be considerable.

The experience of the crisis suggests that the issue of multiple equilibria is relevant. The evolution of Spanish and Italian sovereign bond yields can be seen in this light, with the European Central Bank's (ECB's) commitment to intervene in their sovereign bond markets having reduced the risk of a bad equilibrium. Some other euro area members, such as Belgium, have benefited from low rates despite still-high levels of debt and political challenges; how much of the difference between, say, Belgium and Italy can be explained by fundamentals or by multiple equilibria is an open question. The relatively benign perception of both the United States and Japan may be seen as an example in the opposite direction. Despite high levels of debt, particularly in Japan, both countries have been so far perceived as "safe havens," and benefited from very low rates, containing their debt-service burdens. However, the issue is the strength of their safe haven status and whether the situation might change quickly, leading to bad equilibrium outcomes in these countries too.

B. How to Deal with the Risk of Fiscal Dominance?

Given the magnitude of the required fiscal consolidation in so many advanced economies, the issue of whether to reduce the real value of the debt through debt restructuring or inflation is unlikely to go away.

We shall limit ourselves to two brief remarks on debt restructuring. First, at least in the current international financial architecture, debt restructuring remains a costly and cumbersome process. (How to improve this will continue to be an important topic for research and policy analysis.) Second, in contrast to the emerging market experiences of the past, a sizable share of the debt in most advanced economies is held by domestic residents (more than 90 percent in Japan), often financial intermediaries, or by residents of neighboring or highly connected countries (including through the financial system). Thus, the scope for debt restructuring is very limited. And, in any case, it would call for extreme care to minimize potentially disruptive redistribution of wealth between domestic bond holders and taxpayers, and strong adverse effects on the financial system.

Against that background, governments facing the need for difficult fiscal adjustment might well put pressure on central banks to help limit borrowing costs, which raises the issue of fiscal dominance. In principle, monetary policy can help reduce the public debt burden in a number of ways. Central banks can slow down the exit from quantitative easing policies and keep sovereign bonds on their books longer. They can also delay the increase in nominal interest rates warranted by macroeconomic conditions and let inflation increase, leading, on both counts, to low real interest rates for a more prolonged period than would otherwise be optimal.

Indeed, historically, debt has often been reduced through rapid inflation—extreme examples include the well-known episodes of hyperinflation that wiped out debt in the aftermath of major wars (e.g., Germany, Japan). Less extreme cases have recently attracted renewed attention—notably the United States in the second half of the 1940s, when inflation resulted

in significantly negative real interest rates and, over time, lower debt ratios (see Reinhart and Sbrancia, 2011, who suggest that a return to financial repression is a potential concern).

How much difference could such monetary policies make? The answer depends largely on how long central banks can maintain low or even negative real interest rates. Under the assumption that nominal interest rates reflect one-for-one increases in inflation, so that the real interest rate remains constant (a full and immediate Fisher effect applying to all newly issued or rolled-over debt), the decrease depends on the ability to erode the value of outstanding (long-maturity) nominal debt, and is rather small. IMF staff simulations suggest that, for the G7 economies, if inflation were to increase from the current average projected pace of less than 2 percent to, say, 6 percent, the net debt ratio would decline, after five years, by about 10 percent of GDP on average (Akitoby, Komatsuzaki, and Binder, forthcoming). The effect would be larger if central banks could maintain lower real interest rates for some time. (It is sometimes argued that this would require financial repression, i.e., the ability to force banks to hold government bonds. This seems incorrect: as the current evidence shows, central banks can maintain negative real interest rates for some time if they want to. But these negative rates may lead to overheating and inflation. They may also induce investors to shift to foreign assets, leading to depreciation and further inflation. However, if central banks accept these inflation consequences, they can maintain lower real interest rates for some time, even absent financial repression).

In short, if regular fiscal consolidation, through higher revenues or lower spending, proved infeasible, low or negative real interest rates could, in principle and within limits, help maintain debt sustainability. However, this path would have sizable costs: increases in inflation and reductions in real interest rates are, in effect, a smoother, less visible, version of debt restructuring, with some of the burden of adjustment shifted from taxpayers to bondholders, and would thus face similarly significant distributional, social, and political issues.

In light of these considerations, it is essential that monetary policy decisions continue to be under the sole purview of the central bank, unencumbered by political interference. The central bank, in turn, should base its decision on the way the debt situation and fiscal adjustment (or lack thereof) would impact inflation, output, and financial stability. Indeed, central bank purchases of government bonds during the crisis have occurred against the background of large output gaps and often as part of an effort to avoid deflation or a self-fulfilling debt crisis. More generally, the central bank should be mindful of the risk that such policy could be viewed as slipping into fiscal dominance, particularly given the difficulties of assessing the effects on output of various possible strategies to keep public debt in check. The risk of fiscal dominance seems relatively limited in the euro area, where no single government can force the ECB to change its monetary policy. It is more relevant elsewhere, and may remain an issue for years to come.

C. At What Rate Should Public Debt Be Reduced?

Given the need to decrease the ratio of public debt to GDP, the fiscal policy debate has focused on the optimal speed and the modalities of fiscal consolidation. Many of the issues consolidation raises are relevant not only for now, but more generally for fiscal policy in the future.

Identifying the dynamic effects of fiscal policy on output is difficult. It suffers from identification problems—the effects are likely to differ depending on the state of the economy, the composition of the fiscal adjustment, the temporary or permanent nature of the measures, and the response of monetary policy.

Largely as a result of these difficulties, empirical estimates of fiscal multipliers ranged widely before the crisis (e.g., see Spilimbergo, Symansky, and Schindler, 2009). Early in the crisis, some researchers and policymakers argued that positive confidence effects could dominate the adverse, mechanical, effects of cuts in spending or increases in revenues, and lead to "expansionary fiscal consolidations." Others argued that, given impaired financial intermediation and thus tighter borrowing constraints for firms and households, together with the fact that monetary policy was facing the liquidity trap, multipliers were instead likely to be larger than in more normal times.

The wide range of fiscal policy responses to the crisis and its aftermath have stimulated new research (see, for example, the articles in *American Economic Journal: Economic Policy*, Vol. 4, No. 2, 2012). Although still a subject of some debate, the evidence shows that the multipliers have been larger than in normal times, especially at the start of the crisis (Blanchard and Leigh, 2013), with little evidence of confidence effects (Perotti, 2011). Beyond this conclusion, however, many questions remain unanswered—in particular, the differential effects, if any, of consolidations based on spending cuts rather than on revenue increases.

Underlying the debate about multipliers has been the question of the optimal speed of fiscal consolidation (with some in the United States actually arguing for further fiscal stimulus). In reality, for many countries severely affected by the crisis, the speed of consolidation has not been a matter of free choice; rather, it has largely been imposed upon them by market pressures. Indeed, cross-country variation in the speed of adjustment has been explained in good part by differences in sovereign bond yields.

For countries that have some fiscal room, conceptually, the issue is how to trade off first moments for second moments, that is, how to trade off the adverse short-run effects on growth of faster consolidation against the decrease in risks coming from lower debt levels over time. (The argument that fiscal stimulus can more than pay for itself, and thus decrease debt levels, seems to be as weak as the earlier argument that fiscal consolidation could increase output in the short run). However, given the relevance of multiple equilibria, and our

poor understanding of the behavior of investors in this context, these risks are difficult to assess with any degree of precision. Thus, while fiscal consolidation is needed, the speed at which it should take place will continue to be the subject of strong disagreement.

Within this context, a few broad principles should still apply, as were articulated in various IMF publications (IMF, 2010, Blanchard and Cottarelli, 2010; Cottarelli and Viñals, 2009; Mauro, 2011; IMF *World Economic Outlook*, various issues; IMF *Fiscal Monitor*, various issues). Given the distance to be covered before debt is down to prudent levels and the need to reassure investors and the public at large about the sustainability of public finances, fiscal consolidation should be embedded in a credible medium-term plan. The plan should include the early introduction of some reforms—such as increases in the retirement age—that have the advantage of tackling the major pressures from age-related expenditures while not reducing aggregate demand in the near term.

The need to control debt has also attracted renewed interest in fiscal rules. Many countries, especially in the euro area, have introduced medium-term fiscal adjustment plans and have strengthened their commitment to fiscal rules. For example, Germany, Italy, and Spain have recently amended their constitutions to enshrine a commitment to reducing the structural deficit to zero or nearly zero by specific dates, all within a few years. More generally, many new fiscal rules have been adopted and existing ones strengthened in response to the crisis, in both advanced economies and emerging market economies (Schaechter and others, 2012). The evidence on medium-term fiscal adjustment plans shows that a wide range of shocks—especially those to economic growth—have the potential to derail implementation (Mauro, 2011; Mauro and Villafuerte, forthcoming). This potential highlights the importance of explicitly including mechanisms to deal with such shocks, thus permitting some flexibility while credibly preserving the medium-term consolidation objectives. Examples of helpful mechanisms include multiyear spending limits; the exclusion of items that are cyclical (for example, unemployment benefits), nondiscretionary (for example, interest payments), or fiscally neutral (for example, EU-funded projects); or cyclically adjusted targets that let the automatic stabilizers operate in response to cyclical fluctuations.

D. Can We Do Better Than Automatic Stabilizers?

Other things equal, if the concern is output growth in the short run, weaker private demand (whether domestic or foreign) should call for slower fiscal consolidation. This argument has led several countries to shift from nominal fiscal targets to structural targets, so as to let automatic stabilizers function.

This leads to a question raised in our earlier paper. Although letting automatic stabilizers work is better than not doing so, stabilizers are unlikely to deliver the optimal cyclical fiscal policy response. First, the usual argument that the effect of automatic stabilizers on debt cancels out over time applies only to the extent that movements in output are temporary. This may not be the case: as discussed in the previous section of this paper, it is not clear, for

example, how much of the recent declines in output (relative to trend) is temporary or permanent. Second, the overall strength of automatic stabilizers varies from country to country and depends on societal choices—on the size of the government as well as tax and expenditure structures—that were made on the basis of objectives other than cyclical fiscal policy. Thus, the strength of the automatic stabilizers could be insufficient, or it could be excessive.

Thus, our earlier paper asked: Why not design better stabilizers? For instance, for countries in which existing automatic stabilizers were considered too weak, proposals for automatic changes in tax or expenditure policies are appealing. Examples include cyclical investment tax credits, or pre-legislated tax cuts that would become effective if, say, job creation fell below a certain threshold for a few consecutive quarters. Perhaps because the policy focus has been on consolidation rather than on active use of fiscal policy, there has been, as far as we know, little analytical exploration (an exception is McKay and Reis, 2012) and essentially no operational uptake of such mechanisms.

IV. MACROPRUDENTIAL INSTRUMENTS

One of the unambiguous lessons from the crisis is that dangerous imbalances can build underneath a seemingly tranquil macroeconomic surface. Inflation can be stable, output can appear to be at potential, but things may still not be quite right. Sectoral booms may lead to an unsustainable composition of output—for example, too much housing investment. Or financial risks may build up because of the way real activity is funded (for instance, excessively leveraged financial institutions, excess household indebtedness, excess maturity mismatches in the banking system, recourse to off-balance-sheet products entailing large tail risks). Critically, the effects of these imbalances can be highly nonlinear. Long and gradual buildups can be followed by abrupt and sharp busts with major welfare consequences.

Beyond a desirable strengthening of prudential supervision over the financial sector, what else can be done to prevent such problems from reoccurring or to cushion their blow? Monetary and fiscal policies are not the best tools for addressing these imbalances (at least as a first line of defense). Monetary policy has too broad a reach to deal cost effectively with sectoral booms or financial risks. Fiscal measures can be more targeted, but time lags and political economy problems limit their usefulness. These shortcomings have led to increasing interest in more targeted "macroprudential instruments" (see Borio and Shim, 2007, for an early discussion). The potential use of these instruments was a major theme of our first conference, and it has been an active field of research since the start of the crisis (e.g., ECB, 2012). Now that some of these tools have been adopted in practice, we better understand their effects and their limitations. But, as we shall argue, we are still a long way from knowing how to use them reliably. Empirical evidence on the effectiveness of these measures is scant and the way they work and interact with other policies is likely to depend on a country's specific financial sector structure and institutions.

Among the conceptual issues that need to be solved are the articulations between macroprudential and microprudential regulations, and between macroprudential policies and monetary policy. We take them in turn.

A. How to Combine Macroprudential Policy and Microprudential Regulation?

Traditional microprudential regulation is partial equilibrium in nature. As a result, it does not sufficiently take into account the interactions among financial institutions and between the financial sector and the real economy. The same bank balance sheet can have very different implications for systemic risk depending on the balance sheets (and the interconnections) of other institutions and the state of the economy as a whole. Thus, prudential regulation has to add a systemic and macro dimension to its traditional institution-based focus. Regulatory ratios must reflect risk not in isolation but in the context of the interconnections in the financial sector and must also reflect the state of the economy.

These considerations suggest that micro- and macroprudential functions should be under the same roof. However, political economy considerations may favor keeping the two functions under two different agencies. Several aspects of regulation (for example, the degree of bank competition, policies to foster credit access, or those determining foreign bank participation) may be politically too difficult to delegate to an independent agency. On the contrary, the macroprudential function is more akin to monetary policy (with some caveats outlined below): unpopular tasks such as leaning against the wind during a credit boom are likely best performed by an independent agency. If that is the case, an alternative design could have the macroprudential authority in charge of the cyclical management of certain prudential measures, leaving the rest to the microprudential regulator. (This is the approach followed in the United Kingdom, where the Financial Policy Committee of the Bank of England will be able to vary the capital ratios to be applied by microprudential regulators.)

B. What Macroprudential Tools Do We Have and How Do They Work?

One can think of macroprudential tools as falling roughly into three categories: (1) tools seeking to influence lenders' behavior, such as cyclical capital requirements, leverage ratios, or dynamic provisioning; (2) tools focusing on borrowers' behavior, such as ceilings on loan-to-value ratios (LTVs) or on debt-to-income ratios (DTIs); and (3) capital flow management tools.

Cyclical capital ratios and dynamic provisioning

The logic of cyclical capital ratio requirements is simple: they force banks to hold more capital in good times (especially during booms) so as to build buffers against losses in bad times. In principle, cyclical requirements can smooth a boom or limit credit growth beforehand, as well as limit the adverse effects of a bust afterward. Dynamic provisioning

can do the same, by forcing banks to build an extra buffer of provisions in good times to help cope with losses if and when bad times come.

In practice, however, implementation is not so easy. First is the issue of the regulatory perimeter. Requirements imposed on banks may be circumvented through recourse to nonbank intermediaries, foreign banks, and off-balance-sheet activities. Regulators might find themselves incrementally extending the regulatory perimeter as market participants devise ever more innovative ways to circumvent it. Second is the practical question of what measures the cyclicality of requirements should be based on: the economic cycle, credit growth (as suggested under Basel III), asset-price dynamics (typically real estate)? Third, procyclicality is not effective if banks hold capital well in excess of regulatory minimums (as often happens during booms). Finally, time consistency is likely to be an issue: regulators may find it politically difficult to allow banks to reduce risk weights during a bust (when borrowers become less creditworthy and bank balance sheets are more fragile). In the past, regulators have achieved this, to some extent, through informal forbearance. A more transparent approach may be more difficult to sell to the public (recall the outcry against excessively leveraged banks in the wake of the crisis). This calls for a rules-based approach and an independent policymaker. (However, given the problems just described and the political economy issues discussed in a later paragraph, rules-based approaches present their own difficulties.)

Do these tools work? Evidence is mixed (see Saurina, 2009; Crowe and others, 2011; and Dell'Ariccia and others, 2012). Tighter capital requirements and dynamic provisioning have typically not stopped credit and real estate booms. But in a number of cases, they appear to have curbed the growth of particular groups of loans (such as foreign exchange–denominated loans), suggesting that these episodes would have been even more pronounced had action not been taken. In addition, in some cases, these measures provided for larger buffers against bank losses and helped to contain the fiscal costs of the crisis (Saurina, 2009).

Loan-to-value and debt-to-income ratios

Limits on LTV and DTI are aimed at preventing the buildup of vulnerabilities on the borrower side. After the fact, they can potentially reduce bankruptcies and foreclosures, leading to smaller macroeconomic busts.

Again, implementation is challenging. First, these measures are difficult to apply beyond the household sector. Second, attempts to circumvent them may entail significant costs. In particular, they may result in liability structures that complicate debt resolution during busts (for instance, LTV limits may lead to widespread use of second lien mortgages, which become a major obstacle to debt restructuring if a bust occurs). Circumvention may involve a shifting of risks not only across mortgage loan products but also to outside the regulatory perimeter through expansion of credit by nonbanks, less-regulated financial institutions, and foreign banks (which may result in increased currency mismatches as the proportion of

foreign exchange–denominated loans rises). Undesired side effects can also occur to the extent that housing wealth is used as collateral in commercial loans (for example, by small business owners).

However, the limited existing empirical evidence suggests that these are promising measures. For instance, during episodes of quickly rising real estate prices, LTV and DTI limits appear to reduce the incidence of credit booms and to decrease the probability of financial distress and below par growth following the boom (see Crowe and others, 2011; and Dell'Ariccia and others, 2012).

Capital controls

Capital controls (which the IMF refers to as "capital flow management tools") are aimed at risks coming from volatile capital flows. Although they have a long history, their use has been controversial. In recent years, the IMF has argued that, if macro policies are appropriate, and if the flows are having an adverse impact on financial or macroeconomic stability, the use of these tools can be appropriate, typically in combination with other macroprudential tools (Ostry and others, 2010; IMF, 2012b). The arguments are similar to those developed in the earlier discussion of the rationale for foreign exchange intervention. Capital controls and foreign exchange intervention are both complements and substitutes: complements because capital controls decrease the elasticity of flows with respect to relative rates of return, thereby making foreign exchange intervention more powerful; substitutes because both can be used to affect the exchange rate. An advantage of capital controls, compared with foreign exchange intervention, is that they can be targeted at specific flows; but, precisely because controls are targeted, they are also more exposed to circumvention (for example, when flows are opportunistically relabeled to that end).

Because capital controls have been used many times in the past, evidence on their effects is more abundant but still surprisingly inconclusive (Ostry and others, 2010). An often stated conclusion is that controls affect the composition of flows but not their level; this, however, seems unlikely, given the specialization of the different types of investors. If capital controls decrease short-term flows, it is unlikely they will be replaced by long-term flows, one for one. First readings of the experience of Brazil, which has used taxes on capital inflows during the current crisis, varying both the tax rate and the perimeter of the tax over time, are mixed: despite some circumvention, they appear to have slowed down portfolio inflows and limited exchange rate appreciation (for two views, see Chamon and Garcia, 2013; and Jinjarak, Noy, and Zheng, 2012).

C. How to Combine Monetary and Macroprudential Policies?

If macroprudential tools are to play an important role in the future, a central issue is the way in which macroprudential and monetary policies interact: On the one hand, low policy rates affect behavior in financial markets, leading to potentially excessive risk taking.

Macroprudential tools, on the other hand, affect aggregate demand through their effects on the cost of credit.

In theory, if both policies worked perfectly—that is, if they could be used to achieve full macroeconomic and financial stability—then macroeconomic stability could be allocated to the monetary authority, and financial stability to the macroprudential authority. If a change in the monetary policy stance led to an excessive increase or decrease in risk taking, macroprudential tools could be adjusted accordingly. Similarly, monetary policy could offset any decline in aggregate demand associated with a tightening in macroprudential conditions.

In practice, however, both tools work far less than perfectly. Therefore, one policy cannot be blind to the limitations of the other. To the extent that macroprudential tools work poorly, monetary policy must take into account financial stability—as discussed in the section on monetary policy. Similarly, when monetary policy is unavailable to deal with an individual country's cycle (as under a currency union or an exchange rate peg), macroprudential tools have to contribute to the management of aggregate demand (for a discussion, see IMF, 2012c).

In principle, coordination between the two authorities can solve this problem; however, it is likely that each policymaker cares primarily about his or her own objective. If this is the case, separate agencies with different powers and mandates (a central bank, much like those we have now, in charge of monetary policy and tasked with price and output stability; and a financial authority in charge of macroprudential policy and tasked with macrofinancial stability) independently setting monetary and macroprudential policy will typically not end up coordinating on the first-best solution. For example, in a recession, the central bank may cut the policy rate aggressively to stimulate demand. Worried about the effects of a relaxed monetary stance on risk taking, the financial authority may react by tightening macroprudential regulation. Anticipating this response and its contractionary effect on demand, the central bank may cut rates even more aggressively. And so on. The outcome is a policy mix with interest rates that are too low and macroprudential measures that are too tight relative to what a coordinated solution would deliver.

The obvious solution, on paper, to this problem is consolidation: put everything under one roof, which is probably the preferable design. Indeed, beyond the arguments just given, putting the central bank in charge of micro- and macroprudential tools gives it information useful to the conduct of monetary policy (e.g., see Coeure, 2013, and Jácome, Nier, and Imam, 2012, for a discussion of institutional arrangements in Latin America). Yet, just as for the consolidation of micro- and macroprudential policies, there are also costs associated with this arrangement.

First, to the extent that macroprudential tools work imperfectly, a central bank with a dual mandate will have a harder time convincing the public that it will fight inflation (and thus anchor expectations) if and when inflation fighting conflicts with the other objective. (This

was one of the arguments used earlier for moving prudential supervision out of central banks and giving it to financial stability authorities).

Second (and perhaps more critical), consolidation raises political economy issues. Central bank independence (achieved through the outsourcing of operational targets to nonelected technocrats) was facilitated by a clear objective (inflation) and relatively simple operational tools (open market operations and a policy rate). The measurable nature of the objective allowed for easy accountability, which, in turn, made operational independence politically acceptable. The objectives of macroprudential policy are murkier and more difficult to measure, for several reasons. First, there are multidimensional intermediate targets: credit growth, leverage, asset price growth, and so on. Second is the issue of understanding the relationship of the macroprudential objectives to the financial stability objective. Third, defining financial stability and identifying its desirable level is difficult: a policy rate hike can be defended after the fact by showing that inflation is close to the target and arguably would have exceeded it if tightening had not occurred, whereas a tightening of macroprudential measures that prevents a financial crisis could be attacked afterward as unnecessary. Fourth, the very fact that the macroprudential tool is targeted implies that its use may raise strong, focused, political opposition. For example, young households may strongly object to a decrease in the maximum LTV. Because of these features, the independence of macroprudential policy is on weaker ground. And opponents of the idea of a centralized authority worry that political interference with macroprudential policy will undermine the independence of monetary policy. (Again, the United Kingdom may be showing the way, by having a monetary stability and a financial stability committee, both within the Bank of England).

V. CONCLUSIONS

To go back to the issue raised in the introduction: despite significant research progress and policy experimentation in the last two years, the contours of future macroeconomic policy remain vague. The relative roles of monetary policy, fiscal policy, and macroprudential policy are still evolving. We can see two alternative structures developing: at a less ambitious extreme, a return to flexible inflation targeting could be foreseen, with little use of fiscal policy for macroeconomic stability purposes, and limited use of macroprudential instruments as they prove difficult or politically costly to use. At a more ambitious extreme, central banks could be envisaged to have a broad macroeconomic and financial stability mandate, using many monetary and macroprudential instruments, and more actively using fiscal policy tools. Where we end up is likely to be the result of experimentation, with learning pains but with the expectation of more successful outcomes.

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