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How Complementary Are Prudential Regulation and Monetary Policy?

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Could either monetary policy or financial prudential regulation be relied on individually to mitigate asset price cycles or their effects? If both ways are effective, monetary policy and prudential regulation could then be considered “substitutes,” in the sense that the individual use of either instrument leads to a reduction in the volatility of both corresponding targets. This note, however, argues in favor of complementarity—rather than substitution—in the use of monetary and macroprudential policies: the combined (articulate) use of both policies tends to be more effective than a standalone implementation of either.

Monetary Policy, Asset Prices, and Financial Stability

Asset price cycles had been a concern for many years prior to the recent global financial crisis, but were seen as a separate issue that was not a monetary policy concern. Even when the frequent appearance of asset price bubbles started to be acknowledged, the belief was—“the Greenspan-Bernanke approach”¹—that attempts to detect and prick them at an early stage would be impossible and potentially harmful. If necessary, mopping up after the bubble burst would be safer, using interest rate cuts to help economic recovery.²

Low, stable inflation was seen as a necessary and sufficient condition for stable growth with moderate unemployment. This condition could be pursued through an inflation targeting framework, using interest rates and clear communication rules to achieve a predefined inflation objective, as the single focus for monetary authorities. Stable inflation would also result in low-risk premia, which combined with competition in financial markets would help achieve financial stability. The “Great

Moderation” in developed economies, with relatively low inflation rates and small output fluctuations from the mid-1980s onward, seemed to vindicate this path.

As is now known, this world of presumed stable monetary and financial conditions was severely shaken by the recent global financial crisis. With the benefit of hindsight, it is easy to draw lessons. Asset price booms and busts were acknowledged to be both pervasive and harmful: real estate and stock market booms contributed to excess U.S. household debt and to fragile asset liability structures, the interconnectedness of financial firms’ balance sheets, and the danger of too-big-to-fail institutions. The rapid global transmission of an asset price bust pushed the world economy to the edge of quasi-collapse (Canuto 2009).

But was it lax monetary policy that led to the creation of these bubbles and then to financial instability? Some, such as Svensson (2010), say no. For them, the financial crisis was caused by factors other than monetary policy; monetary policy and financial stability policy are distinct—it was the latter that failed.³

But if financial stability is indeed a legitimate objective of a central bank, then should a “financial variable” (for example, an asset price indicator) be integrated into the monetary policy framework? More specifically, should policy makers incorporate indicators of financial stability into the central bank’s reaction function in a kind of augmented Taylor Rule? Should they react automatically to variations in asset prices—or some associated variable, such as credit expansion—as they do under inflation-targeting regimes in the case of variations in output gaps and inflation?

The best practitioners are divided. Blinder (2010) argues that “a distinction should be drawn between credit-fueled bubbles (such as the house price bubble) and equity-type bubbles in which credit plays only a minor role (such as the tech stock bubble).” In this view, the “mop-up-afterwards” approach is still appropriate for equity bubbles not fueled by borrowing, but the central bank should try to limit credit-based bubbles—probably more with regulatory instruments than interest rates. This attitude may eventually become the new consensus on how to deal with asset price bubbles; indeed, Bernanke (2010) comes close to endorsing it.

Others do not recommend treating asset prices on the same footing as the common components of Taylor Rules—irrespective of whether asset prices are credit fueled or not. After all, according to IMF (2009, 116):

Even the best leading indicators of asset price busts are imperfect—in the process of trying to reduce the probability of a dangerous bust, central banks may raise costly false alarms. Also, rigid reactions to indicators and inflexible use of policy tools will likely lead to policy mistakes. *Discretion is required* [emphasis added].

That cautious approach does not mean complacency. On the contrary, signs of rising macro-financial risks may demand a response from policy makers. But first it is necessary to properly identify the reasons behind the evolution of rising asset prices and credit—a task that is far from simple: for example, the present global context of excess liquidity makes most emerging economies the recipients of massive inflows of foreign capital. These flows have a structural component: they are related to the improvement of emerging market economies’ (EMEs) fundamentals and, if used for productive purposes, can contribute to increasing investment and productivity. However, these flows also have a more temporary component: portfolio flows and short-term deposits. In a context of high liquidity in international markets and an uncertain outlook for mature economies, the temporary component is seen by many as excessive.

Some of the excessive inflows to many EMEs have been absorbed by central banks’ accumulation of reserves. The reserve accumulation policy is usually implemented in conjunction with a sterilization policy to maintain an independent mone-

tary policy. However, the intensity and magnitude of present inflows make it difficult to sterilize them fully, and resources that remain available to market participants end up contributing to a significant expansion in credit. Low-cost external funding creates incentives to increase risk taking and can result in asset price distortions, including of the exchange rate. Hence, excessive capital inflows contribute to a brisk pace of domestic credit growth that fuels inflationary pressures and aggravates financial instability.⁴

The identification of a powerful transmission mechanism between global liquidity and EMEs’ credit markets does not necessitate a monetary policy reaction to reduce credit growth. The correlation between asset prices and core macroeconomic variables (output gaps, inflation) remains less than perfect, even assuming that financial fragility may be successfully mitigated by discretionary interest rate policy. After all, the whole point that monetary policy makers cannot be solely guided by conventional inflation-targeting rules in the presence of substantial fluctuations in asset prices derives from the experience that relevant macroeconomic dynamics associated with asset price fluctuations may not be captured by merely observing output and goods price fluctuations. Therefore, it seems likely that interest rate movements sparked by asset prices or their surrogates may well lead to less stability in output gaps and goods prices.

What about the alternative of trying to reduce financial instability without using monetary policy, but through prudential and regulatory rules (for example, those of bank capital or liquidity rules), thus avoiding the build-up of fragility in balance sheets? Would that be sufficient to guarantee both financial and macroeconomic (that is, price) stability? Before responding to these questions, let’s identify some distinctions between micro- and macroprudential regulation.

Macro- and Microprudential Regulation

A key distinction when considering threats to financial stability is between *microrisks*, which arise due to specific problems in individual financial institutions and *macrorisks*, which affect the financial system as a whole because of the interconnectedness of the institutions within the system.

Prior to the recent global financial crisis, financial stability was taken for granted provided that individual financial institutions adopted sound prudential rules and maintained adequate levels of capital commensurate with the types and levels of risks they faced.⁵

The crisis has shattered this view. Microprudential tools—concerned with ensuring the soundness of individual institutions and the protection of depositors—have not sufficed for financial stability and the avoidance of financial crises. Sound risk management of individual financial institutions is not enough to guarantee sound management of systemwide risk (De la Torre and Ize 2009).

Why? Despite well-designed microprudential rules, there might be spillovers and externalities across institutions that affect the financial system as a whole, for example, bank panics, fire sales of assets, and credit crunches. Either because of links between the balance sheets of financial institutions and/or because of contagion in terms of confidence, risks taken by single financial institutions may end up affecting the entire financial system.

These spillovers and externalities might come, for example, from the system's characteristics: a financial system composed of large, interconnected firms is likely to produce moral hazard in the face of the (now) standard too-big-to-fail dilemma for policy makers. Even if all firms are soundly regulated, the possibility of one failure in this interconnected system creates contagion and negative externalities to the whole system. But this can also happen in a very different context, say in a system composed of small, independent, perfectly regulated and unconnected financial firms. If all firms use an identical risk-assessment model that might be flawed by not considering a specific tail event, the whole system could collapse, regardless of its apparent robustness and lack of connectedness.

Other examples of why microprudential tools are insufficient can be found in the mortgage industry. Despite a number of consumer protection rules to limit overborrowing and industry guidelines to help scrutinize a borrower's willingness and ability to pay, the extension of mass lending for real estate has been an almost universal feature of credit booms in all countries.⁶

Asset price cycles—and the corresponding likelihood of full-blown financial crises—may well establish a feedback loop with pro-cyclical risk assessments present in traditional microprudential rules. Suppose, for example, that there is an increase in house prices due to a demand shock. The rise in the value of real estate as collateral tends to raise the repayment probability for housing loans, which reduces the lending rate charged by credit suppliers. Additionally, if financial institutions follow their own risk assessments when estimating appropriate ratios between capital and risk-weighted assets to be held, capital costs associated with such credits decline. Reduced borrowing costs stimulate borrowing for investment purposes in the economy at large, most likely leading to further bouts of house price hikes. If house price bubbles develop, there will be a whole network of larger interlinked balance sheets, dependent on overvalued collateral, although individually balance sheets (including those of individual homeowners) may look sound.

Therefore, there is a need for macroprudential regulation concerned with ensuring the stability of the financial system as a whole and the mitigation of risks to the real economy. Macroprudential regulation should aim to make the overall incentive structure for financial firms coherent and consistent so that the above mentioned externalities are internalized by the system. The idea is to design a set of principles and rules that can reduce

each institution's contribution to systemic risk and that smooth the financial cycle, that is, reduce the systemic risk that inherently builds up in booms and has damaging consequences in slumps, since leverage, risk-taking, and credit and asset prices are pro-cyclical and crises typically follow booms.

Macroprudential Policy as Countercyclical Regulation Rules

The objective of macroprudential regulation is not to eliminate the financial cycle, but to reduce its magnitude and associated systemic risk. Pro-cyclicality is linked to all business cycles and goes *pari passu* with most fundamentals and behavior (for example, investment and “animal spirits”). What macroprudential rules can do is reduce pro-cyclicality and control the externalities that amplify fluctuations. By doing this, macroprudential regulation can ensure that the financial system operates with lower potential systemic risk and can enhance the resilience of the system in downturns.

Naturally, one of the first suitable macroprudential ideas that emerged after the 2008 crisis was to enhance capital and liquidity regulations, since both problems were at the origin of the quasi-meltdown of the global financial industry after the Lehman Brothers' collapse. The idea was that a more robust banking system (in terms of capital and liquidity) would be less subject to crises, or at least would not require the scale of taxpayer transfers to banks that occurred in 2008. Tighter regulatory standards might also contribute to smaller output fluctuations and to higher welfare gains even apart from banking crises. There are a number of studies (see for example BCBS [2010]) that point out that better capitalization and increased bank liquidity reduce the likelihood and the severity of crises, and that regulatory reforms can reduce the amplitude of business cycles, especially using countercyclical capital buffers.

Thus the Bank for International Settlements (BIS) and the Basel Committee on Banking Supervision (BCBS) have been advocating the adoption of countercyclical capital standards. The idea is to have banks build up capital buffers in upturns and to draw them down in downturns. Buffers need not be part of the prudential minimum capital requirement and would be capital in excess of that minimum, so that it is available to absorb losses in bad times. Countercyclical capital buffers would limit (a) the risk of large-scale accidents in the banking system and (b) the amplification of macroeconomic fluctuations during crises.⁷ The macroprudential rationale for the idea is the time-inconsistency argument that risks tend to build up in good times, but their negative consequences materialize only with a lag. This feature reveals the limitations of current risk-measurement practices as well as distortions in the microprudential incentives of individual firms.

On the one hand, there is a perception that risk-sensitive minimum capital requirements embedded in Basel II could lead to excessive pro-cyclicality.⁸ On the other hand, several ob-

servers have argued that by raising capital requirements in a countercyclical way, regulators could help choke off asset price bubbles—such as the one that developed in the U.S. housing market—before a crisis develops. The *Turner Review* (see Financial Services Authority [2009]), for instance, favors countercyclical capital requirements, as does Brunnermeier et al. (2009), who propose to adjust capital adequacy requirements over the cycle by two multiples—the first related to above average growth of credit expansion and leverage, and the second related to the mismatch in the maturity of assets and liabilities.

At the international level, there has been significant progress toward establishing new standards in this area; BCBS has developed a countercyclical framework that involves adjusting bank capital in response to excess growth in credit to the private sector, which it views as a good indicator of systemic risk. In a proposal released in September 2010, BCBS suggested the implementation of a countercyclical capital buffer ranging from 0 to 2.5 percent of risk-weighted assets (table 1). Overall, total capital requirements would rise from a minimum of 8 percent of risk-weighted assets today under Basel II up to 13 percent when the maximum value for the countercyclical capital buffer is taken into account.⁹

It needs to be acknowledged that macroprudential rules have been in place previously and are numerous. For example, at the end of 2009, the Committee on the Global Financial System (CGFS) surveyed central banks on the use of macroprudential tools. The survey covered the definition of macroprudential instruments, their categorization, and objectives for their use. These rules range from measures aimed at controlling credit growth (for example, caps on loan-to-value [LTVs] linked either to borrowers' characteristics or to overall market conditions), measures to limit interconnectedness of banks, or reducing pro-cyclical bank lending. The responses of 33 central banks are summarized in table 2. In particular, the systemic risk that can arise from a highly interconnected financial system with large, systemically important financial institutions (SIFIs) has been recognized as an issue that macroprudential regulation ought to address through additional capital requirements and/or specific levies related to the size of balance sheets.

In sum, macroprudential rules—potentially including countercyclical capital rules—are needed because of the perceived risks to financial stability that these externalities produce. On the other hand, there is nothing in prudential regulation to encourage anyone to expect it to be a self-sufficient tool to address simultaneously both financial and macroeconomic instability issues.

How Should Monetary and Regulatory Policies Be Combined?

One important message emerging from this discussion is that monetary policy and regulation are complementary instru-

Table 1. Calibration of the Capital Framework: Capital Requirements and Buffers (all numbers in percent)

	Common equity (after deductions)	Tier 1 capital	Total capital
Minimum	4.5	6.0	8.0
Conservation buffer	2.5		
Minimum plus conservation buffer	7.0	8.5	10.5
Countercyclical buffer range ^a	0–2.5		

Source: BCBS (2010).

ments aiming at macroeconomic and financial stability. A prudent approach should try to avoid “corner solutions,” that is, putting the entire weight of ensuring price and financial stability on only one instrument.¹⁰

As an illustration of questionable policy directions, there are two extremes that need to be avoided. Monetary policy should not be used as a standalone method to prevent bubbles (even if occasionally being part of the policy reaction to asset prices), but it does need to be used to treat the general equilibrium effects of such bubbles. Similarly, using prudential regulations exclusively to contain inflationary pressure arising from general equilibrium effects of aggregate demand growth above potential would be inappropriate (in addition to running the risk of undermining the credibility of any inflation-targeting regime), but it should be a useful complement to contain the risks arising from excessive overall credit growth.

A pragmatic approach that combines the use of tools and skills from both monetary policy and prudential regulation has begun to emerge with some common policy practices:

1. Monitor closely the local market characteristics of financial stability and the various indicators that can be associated with it: rapid credit growth beyond past historical trend (after controlling for financial deepening and for how small the initial base is); stock market developments; rapid asset price growth (beyond what fundamentals would suggest, including changes in the price of specific assets such as the exchange rate or real house valuation).
2. Identify precisely the dynamics and determinants of these indicators: permanent structural changes in credit markets (for example, better institutions, accumulated credibility of macroeconomic policies, improvements in legal procedures for disputes, and so forth) and/or cycle-related causes (for example, expansionary macro stance, growth in income and employment, and so forth).
3. Look for ad hoc special shocks that might be contributing further to the observed credit and asset price booms (for example, currently, for many emerging markets, the presence of high levels of global liquidity, growth, and interest rate differential make pull and push factors favor large

Table 2. Macroprudential Instruments Cited by CGFS Survey Respondents

Type of instrument	Examples	Economies that have used the instrument	
		Advanced	EME
Measures targeting credit growth			
Limits calibrated to borrower risk characteristics	LTV caps, DTI limits, foreign currency lending limits	2	9
Absolute limits	Aggregate or sectoral credit growth ceilings, limits on exposures by instrument		4
Measures targeting size and composition of bank balance sheets			
<i>Measures to limit interconnectedness</i>			
Limits on leverage	Size-dependent leverage limits or asset risk weights, capital surcharges for systemically important institutions	2	2
Financial system concentration limits	Limits on interbank exposures	1	2
<i>Measures to limit pro-cyclicality</i>			
Capital	Time varying capital requirements, restrictions on profit distribution	1	1
Provisioning	Countercyclical/dynamic provisioning	1	5
<i>Measures to address specific financial risks</i>			
Liquidity risk	Loan-to-deposit limits, core funding ratios, reserve requirements	1	8
Currency risk	Limits on open currency positions or on derivatives transactions		8

Source: CGFS (2010).

capital inflows into emerging markets) with potential consequences for banks' balance sheets (for example, currency mismatches).

4. Look at other forms of balance sheet mismatches arising from the boom, that is, its financing side, making a distinction between credit-fueled bubbles (such as a house price bubble) and equity-type bubbles, in which credit plays only a minor role (such as the Internet-technology-stock bubble in the United States).¹¹
5. Assess the maturity structure of credit extension and its usage, discerning whether it is of a more long-term nature (and thus supposedly favoring investment) or of a more short-term nature (and thus most likely directed toward consumption).

After going in detail through these analytical elements, a central bank would be in a better position to pragmatically determine—without discarding its main policy tool (that is, its base rate adjustment)—how to combine macroprudential regulation with standard monetary policy.

When this is established in the present context, the credibility of a pure inflation-targeting framework is not affected when the central bank has also a financial stability goal and when there is a clear separation of goals and instruments, and communication of price and financial stability objectives.

One of the objectives of central banks is to provide to their economies, mature and emerging, with an environment of price and financial stability, making sure that short-term inflationary pressures do not carry over to longer-term planning horizons for households and firms. To fulfill their mission, central banks use a broad array of monetary and regulatory instruments. These instruments should be used with timeliness, perseverance, and good judgment. The recent crisis has shown that ensuring financial stability in a globalized financial world adds more challenges for policy makers, especially for those in emerging markets. These challenges are accompanied by new practices and new analytical reflections about policy, building on the achievements of past years in terms of institutions and commitment to macroeconomic stability. The global economy and society will benefit from progress in these areas, even if there are difficult times ahead in a world of more uncertainty and complexity.

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Endnotes

1. See, for example, Bernanke (2002). More recently, Chairman Bernanke seems to have evolved slightly from this position; see the closing section of Bernanke (2010).
2. “The past 10 years have been the decade of inflation targeting. (...) Narrowly defined, inflation targeting commits central banks to annual inflation goals, invariably measured by the consumer price index (CPI), and to being judged on their ability to hit those targets. Flexible inflation targeting allows central banks to aim at both output and inflation, as enshrined in the famous Taylor Rule. The orthodoxy says that central banks should essentially pay no attention to asset prices, the exchange rate, or export prices, except to the extent that they are harbingers of inflation” (Frankel 2009).
3. Financial stability policy failed due to distorted incentives for excessive leverage, lack of due diligence, lax regulation and supervision, rapid growth of securitization, myopic and asymmetric remuneration contracts, idiosyncratic features of the U.S. housing policy (the GSEs [government sponsored enterprises]), information problems, hidden risk in complex securities, and underestimation of correlated systemic risks. These causes had little to do with monetary policy (Svensson 2010).
4. Garcia (2011) shows how sterilized interventions by the central bank in an inflation-targeting regime tend to have an expansionary effect on aggregate demand, such as when capital inflows correspond to a strong demand for domestic private assets.
5. The combination of those two views implies regarding financial regulation and monetary policy as entirely separable. It led even to the unbundling of financial regulatory and monetary policy functions among different institutions in some countries (England and Australia). Conversely, financial stability is now increasingly considered to be a policy objective for monetary authorities (Blinder 2010).
6. It is also true that this particular segment of the credit market is heavily affected by the country’s political economy that usually pushes in the direction of rapid credit expansion and erosion of criteria for responsible lending. So it could be unfair to say that microprudential rules do not apply to mortgages in the absence of a control for local politics.
7. Any effective scheme would need to have a number of features. First, it should be able to identify correct timing for the accumulation and release of the capital buffer, that is, correctly identifying good and bad times. Second, the scheme should ensure that the size of the buffer built up in good times is sufficiently large to absorb losses without triggering serious strains. Third, the scheme should be able to withstand regulatory arbitrage, including manipulation. Fourth, it should be internationally enforceable. Fifth, it should be as rule-based as possible,

acting as an automatic stabilizer. In particular, this would ease the pressure on prudential authorities to refrain from taking restrictive measures in good times. Sixth, it should be inexpensive to implement. Finally, the scheme should be simple and transparent (see BIS [2010]).

8. A series of quantitative exercises conducted by the BCBS assessed the impact of the cyclicity of capital requirement regimes taking risk sensitivity into account. One of the methodologies used adjusted for the compression of probability of default (PD) estimates in the internal ratings–based approach during benign credit conditions by using PD estimates for a bank’s portfolios in downturns. Using higher PD (for risk) during upturns would provide—by subtraction with actual data—an estimate of cyclical effects.

9. See, for example, the estimates made by Ghosh, Sugawara, and Zalduendo (2011) on the near-term implications of Basel III capital regulations on bank flows to emerging markets, based on an analysis of the key determinants of these flows.

10. Agénor, Alper, and Pereira da Silva (2011) develop a general equilibrium framework for analyzing this issue. Their numerical results can be summarized as follows. First, if monetary policy can react strongly to inflation deviations from its target value (that is, there is no value for the policy rate and pace of rate change that cannot be pursued), the best policy is to follow an aggressive augmented interest rate rule—regardless of the degree of persistence in the policy rate. By contrast, if monetary policy cannot react strongly enough to inflation deviations from targets (because the central bank fears destabilizing markets by raising interest rates sharply while inflation remains subdued, for instance), combining a credit-augmented interest rate rule and a countercyclical capital regulatory rule is optimal for promoting economic stability. Second, the greater the degree of interest rate smoothing, the stronger should be the countercyclical regulatory response—regardless of how strongly monetary policy can react to inflation. Third, the stronger the policy maker’s concern with macroeconomic stability (compared to financial stability), the stronger should be the sensitivity of countercyclical regulation to real credit growth gaps.

11. As discussed earlier, the main argument against the Greenspan-Bernanke mop-up-after (*laissez-faire*) approach concerns financial stability. If the central bank allows bubbles to inflate and then to burst, it is *de facto* neglecting financial stability, which, in turn, affects its ability to pursue its standard economic stability goals, namely low inflation (and in the case of the U.S. Federal Reserve, high employment).

References

- Agénor, Pierre-Richard, Koray Alper, and Luiz Pereira da Silva. 2009. “Capital Requirements and Business Cycles with Credit Market Imperfections.” World Bank Policy Research Working Paper No. 5151, Washington, DC.
- . 2011. “Capital Regulation, Monetary Policy and Financial Stability.” Working Paper No. 237, Central Bank of Brazil, Brasilia.

- Agénor, Pierre-Richard, and Luiz Pereira da Silva. 2009. "Cyclical Effects of Bank Capital Requirements with Imperfect Credit Markets." World Bank Policy Research Working Paper No. 5067, Washington, DC. Also forthcoming in *Journal of Financial Stability*.
- . 2011. "Reforming International Standards for Bank Capital Requirements: A Perspective from the Developing World." In *International Banking in the New Era: Post-Crisis Challenges and Opportunities*, IFR Vol. No 11, ed. by S. Kim and M. D. McKenzie. Emerald: Bingley.
- BCBS (Basel Committee on Banking Supervision). 2010. "An Assessment of the Long-Term Impact of Stronger Capital and Liquidity Requirements." August, www.bis.org/publ/bcbs173.pdf.
- Bernanke, Ben S. 2002. "Asset-Price 'Bubbles' and Monetary Policy." Remarks before the New York Chapter of the National Association for Business Economics, New York, NY, October 15, <http://www.federalreserve.gov/BoardDocs/Speeches/2002/20021015/default.htm>.
- . 2009. "The Right Reform for the Fed." *The Washington Post*, November 29, http://www.washingtonpost.com/wpdyn/content/article/2009/11/27/AR2009112702322_pf.html.
- . 2010. "Monetary Policy and the Housing Bubble." Remarks at the American Economic Association meetings, January 3, Atlanta, GA.
- Blinder, Alan. 2010. "How Central Should the Central Bank Be?" *Journal of Economic Literature* 48 (1): 123–33.
- Brunnermeier, Markus, Andrew Crockett, Charles Goodhart, Avinash D. Persaud, and Hyun Shin. 2009. *The Fundamental Principles of Financial Regulation*. Geneva: International Center for Monetary and Banking Studies.
- Burda, Michael C., and Charles Wyplosz. 2005. *Macroeconomics: A European Text*, 4th Edition. Oxford University Press.
- Canuto, O. 2009. *The Arrival of Asset Prices in Monetary Policy*. http://www.roubini.com/author/otaviano_canuto, accessed October 20.
- Canuto, Otaviano, and Marcelo Giugale, eds. 2010. *The Day After Tomorrow—A Handbook on the Future of Economic Policy in the Developing World*. Washington, DC: World Bank. www.worldbank.org/prem.
- CGFS (Committee on the Global Financial System). 2010. "Macroprudential Instruments and Frameworks: A Stocktaking of Issues and Experiences." Publication No. 38, <http://www.bis.org/publ/cgfs38.htm>.
- De la Torre, Augusto, and Alan Ize. 2009. "Regulatory Reform: Integrating Paradigms." World Bank Policy Research Working Paper 4842, Washington, DC.
- Drehmann, Mathias, Claudio Borio, Leonardo Gambacorta, Gabriel Jiménez, and Carlos Trucharte. 2010. "Countercyclical Capital Buffers: Exploring Options." BIS Working Paper No. 317, Monetary and Economic Department, <http://www.bis.org/publ/work317.htm>.
- Financial Services Authority. 2009. *The Turner Review: A Regulatory Response to the Global Banking Crisis*. London.
- Frankel, J. A. 2009. "What's In and Out in Global Money." Finance and Development 46 (3) September, <http://www.imf.org/external/pubs/ft/fandd/2009/09/frankel.htm>.
- FSB (Financial Stability Board), IMF (International Monetary Fund), and BIS (Bank for International Settlements). 2011. "Macroprudential Policy Tools and Frameworks: Update to G-20 Finance Ministers and Central Bank Governors." February 14, <http://www.imf.org/external/np/g20/pdf/021411.pdf>.
- Galati, G., and R. Moessner. 2011. "Macroprudential Policy—A Literature Review." BIS Working Paper, No. 337, <http://www.bis.org/publ/work337.htm>.
- Garcia, Marcio G. P. 2011. "Can Sterilized FX Purchases under Inflation Targeting Be Expansionary?" Department of Economics, PUC-RIO, April, <http://www.econ.puc-rio.br/PDF/td589.pdf>.
- Ghosh, S., N. Sugawara, and J. Zaldueño. 2011. "Bank Flows and Basel III—Determinants and Regional Differences in Emerging Markets." World Bank Economic Premise 56, April, <http://siteresources.worldbank.org/INTPREMNET/Resources/EP56.pdf>.
- Goodhart, Charles, and Avinash Persaud. 2008. "A Proposal for How to Avoid the Next Crash." *The Financial Times* January 31.
- Haldane, A., V. Saporta, S. Hall, and M. Tanaka. 2004. "Financial Stability and Macroeconomic Models." *Financial Stability Review* June 2004.
- IMF (International Monetary Fund). 2009. "Lessons for Monetary Policy from Asset Price Fluctuations." World Economic Outlook October, <http://www.imf.org/external/pubs/ft/weo/2009/02/pdf/c3.pdf>.
- . 2011. "Recent Experiences in Managing Capital Inflows—Cross-Cutting Themes and Possible Policy Framework." Strategy, Policy, and Review Department, <http://www.imf.org/external/np/pp/eng/2011/021411a.pdf>.
- Moreno, Ramon. 2011. "Policymaking from a 'Macroprudential' Perspective in Emerging Market Economies." BIS Working Paper, No. 336, <http://www.bis.org/publ/work336.pdf>.
- Ostry, Jonathan D., Atish R. Ghosh, Karl Habermeier, Marcos Chamon, Mahvash S. Qureshi, and Dennis B. S. Reinhardt. 2010. "Capital Inflows: The Role of Controls." IMF Staff Position Note No. SPN/10/04, <http://www.imf.org/external/pubs/ft/spn/2010/spn1004.pdf>.
- Svensson, Lars E. O. 2010. "Inflation Targeting and Financial Stability." Policy Lecture at the CEPR/ESI 14th Annual Conference on "How Has Our View of Central Banking Changed with the Recent Financial Crisis?" October 28–29, Central Bank of Turkey, Izmir.
- Wadhvani, Sushil. 2008. "Should Monetary Policy Respond to Asset Price Bubbles? Revisiting the Debate." *National Institute Economic Review* 206 (March): 25–34.

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