

The Countercyclical Bank Capital Buffer: Insights for Canada

David Xiao Chen and Ian Christensen

INTRODUCTION

A lesson learned from the global financial crisis is that regulatory capital requirements can be an important source of procyclicality that can amplify the credit cycle through periods of both boom and bust. For example, in the good times prior to the recent crisis, when risks were assessed to be low, capital requirements were also low, which fuelled the easing of lending conditions and the expansion of credit. In the downturn, however, the measured riskiness of bank assets rose, forcing up the required level of capital at a time when increasing capital levels was costly and difficult because of losses. In these cases, capital regulation contributed to the pressures on banks to reduce the size of their balance sheets, with important negative consequences for the supply of credit and for economic activity.

Reducing the procyclicality of bank lending can help to sustain economic growth during periods of stress. One way to achieve this is to establish a countercyclical capital buffer that can raise the required level of bank capital in boom times and allow it to be drawn down when the cycle turns (Arjani 2009). On 16 July 2010, the Basel Committee on Banking Supervision (BCBS) released a proposal for such a buffer (BCBS 2010a). The BCBS proposal sets out the objective and general decision-making framework for setting the buffer, as well as a numerical guide that could serve as an initial source of information when such decisions are made. Then, on 12 September, the Group of Governors and Heads of Supervision (GHOS), the oversight body for the BCBS, confirmed the countercyclical capital buffer as part of the package of reforms to global capital standards.¹ The countercyclical buffer, as well as a capital

conservation buffer, will be phased in beginning on 1 January 2016 and will become fully effective on 1 January 2019.

In this report, we describe the main features of the framework for the countercyclical capital buffer proposed by the BCBS. Some flexibility remains as to how the buffer will be implemented in each jurisdiction. This is followed by some examples of the kind of information that could be used to help inform the application of the buffer by Canadian authorities.

HIGHLIGHTS OF THE BCBS PROPOSAL

The aim of the countercyclical capital buffer is “to ensure that the banking sector in aggregate has the capital on hand to help maintain the flow of credit in the economy without its solvency being questioned, when the broader financial system experiences stress after a period of excess credit growth” (BCBS 2010a). This means that, in boom times, a buffer of regulatory capital would be built up, and in a bust, the requirement would be suspended in order to ease regulatory constraints on the flow of credit in the economy. Additionally, the buffer may help to mitigate the buildup of system-wide risk during a boom, and, hence, reduce the likelihood of a bust.

The countercyclical capital buffer is linked to, and shares many features with, the new capital conservation buffer, the goal of which is also to promote “the build-up of adequate buffers above the minimum that can be drawn down in periods of stress” (BIS 2009). The capital conservation buffer is intended to prevent international banks from making dividend payouts, share buybacks and other capital disbursements in periods of expansion when systemic risks may be mounting. Actions such as these reduced the resilience of individual banks and the banking system as a whole in many jurisdictions before the crisis took hold. The capital conservation buffer establishes a range for common equity

¹ See the 12 September 2010 press release from the BCBS, “Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards” (BCBS 2010b).

above the regulatory minimum requirement: when capital levels fall below the top of the range, banks are subject to constraints on the distribution of earnings. These constraints become more severe as capital levels approach the minimum requirement (the bottom of the capital conservation buffer), thereby encouraging banks and their supervisors to take prompt corrective action to address underlying problems before the minimum capital requirement is breached. The constraints imposed near the top of the range will be minimal, so the conservation buffer should not be seen as merely a new minimum requirement.

Under normal conditions, the countercyclical capital buffer requirement would be set to zero, and only the conservation buffer would be in place. When the countercyclical capital buffer is in effect, it will extend the range of the capital conservation buffer. Upon a full release of the countercyclical buffer by the authorities, it would return to zero. In their September statement, the GHOS announced that the countercyclical buffer will require banks to hold additional common equity or other fully-loss-absorbing capital in amounts ranging from 0 per cent to 2.5 per cent of the risk-weighted assets. The capital conservation buffer will be 2.5 per cent of risk-weighted assets, and this requirement will be met with common equity after deductions.

Under the BCBS proposal, the authorities would activate the countercyclical capital buffer in periods when they judge that aggregate credit growth is excessive, and associated with an increase in system-wide risk.² As well, decisions on this additional capital requirement (the buffer add-on) would be announced up to 12 months in advance, in order to give banks time to meet the requirements before they take effect.³ Reductions in the buffer would take place immediately, however, to reduce the risk that regulatory capital requirements might constrain the supply of credit. The consequences of a bank's capital falling below the level set by the countercyclical capital buffer will be the same as for the capital conservation buffer (i.e., constraints on distributions of earnings).

Authorities in each jurisdiction will be responsible for setting the buffer add-on that applies to credit exposures in their jurisdiction. A bank with purely domestic credit exposures will be subject to the full amount of the add-on determined

by the national authorities. Internationally active banks will calculate a buffer add-on for each jurisdiction in which they have credit exposures, using the respective buffers in effect in each host jurisdiction (**Box 1**). National authorities will be required to inform authorities in other jurisdictions promptly of any change in the domestic countercyclical buffer. Supervisors will be responsible for ensuring that the banks domiciled in their jurisdictions calculate their buffer requirements correctly on a consolidated basis, according to the geographic location of their exposures. Authorities will not be able to impose a lower buffer on a domestic bank for a given foreign exposure than the buffer set by the supervisor in that jurisdiction (a form of reciprocity).

INFORMATION REQUIREMENTS FOR BUFFER-SETTING DECISIONS

The BCBS proposal also includes a methodology to calculate an internationally consistent reference guide to aid in setting the countercyclical buffer. This guide would be part of the information set used by each jurisdiction when making decisions related to the buffers. It is important to emphasize, however, that authorities would set the size of the buffer on the basis of their judgment, using a wide range of information on macrofinancial conditions, rather than on the basis of a simple fixed quantitative rule.

The information used in setting the countercyclical capital buffer would need to capture upswings and downswings in the financial cycle. Periods during which system-wide risks are mounting would be associated with the buildup phase of the buffer, and periods of sharp contraction—when risks begin to materialize—would correspond to the release phase of the buffer. It is unlikely, however, that a single measure would reliably capture both the buildup phase and the release phase, since the former requires sound leading-indicator properties and the latter must be a reliable contemporaneous indicator (Drehmann et al. 2010). As well, a good variable to proxy for the buildup phase should vary considerably from its long-run trend during boom times, but this effectively rules out measures such as non-performing loans (which are bounded at zero) and may limit the information content of credit spreads. In contrast, the latter variables may be very informative about the timing of the release phase.

In this regard, indicators may be more informative in combination than individually. For example, Borio and Drehmann (2009) show that measures of aggregate credit growth and real estate prices *jointly* contain more predictive information about future financial crises than when either is considered in isolation. If multiple indicators signal the emergence of excessive credit growth and growing system-wide risks, authorities can be more certain about turning on the buffer, or they may be willing to adjust its setting more forcefully. The decisions on setting the buffer

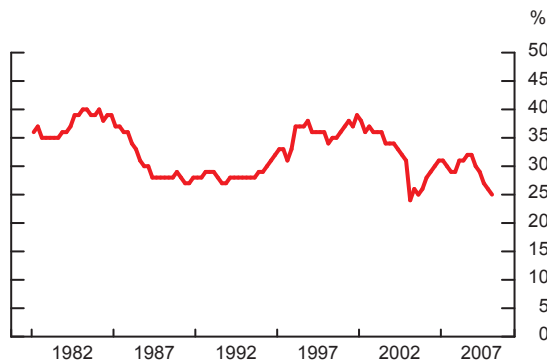
2 The additional capital requirements imposed under Pillar 2 of the Basel Capital Accord may need to adapt to the presence of the countercyclical capital framework, since it would not be appropriate for authorities to require additional capital to be held for financial system-wide issues if this is already required by the countercyclical buffer when the latter is above zero. However, as Pillar 2 may capture risks that are not related to system-wide issues (e.g., concentration risk), capital meeting the countercyclical buffer should not be permitted to be used to meet these non-system-wide elements of any Pillar 2 requirement.

3 This advance announcement will reduce the extent to which banks may feel obliged to hold extra capital to protect themselves against the uncertainty that the buffer may be activated, since it gives them time to increase capital after the announcement and therefore more choice in how they achieve higher capital levels. While a 12-month pre-announcement may seem lengthy, one should not underestimate the signaling component of buffer decisions and associated commentary on macrofinancial conditions, which is likely to affect bank behaviour at the time buffer decisions are announced, not when they take effect.

The Buffer Add-On from the Perspective of the Major Canadian Banks

Canada’s six largest banks are all internationally active. **Chart 1-A** plots the average share of foreign claims in their total assets since 1982. The chart shows that the majority of the exposures are domestic, peaking at 75 per cent of total assets in the most recent data. Foreign exposures have been important over this period and show considerable variation, ranging from 23 to 40 per cent of total assets. To implement the countercyclical capital buffer, it is therefore essential for authorities to have *timely* information on the geographical distribution of the banks’ assets.

Chart 1-A: Since 1982, foreign claims of the six major banks have ranged between 23 and 40 per cent of assets



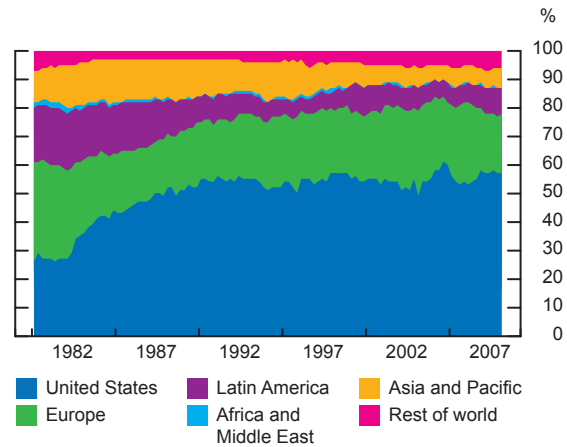
Source: Office of the Superintendent of Financial Institutions Last observation: 2010Q1

Internationally active banks must hold buffers for a foreign jurisdiction if they have private sector exposures in that jurisdiction that attract a capital charge for credit risk and if the authorities in that jurisdiction have activated the buffer. A bank’s total countercyclical capital requirement will thus be a weighted average of the buffers applied in the jurisdictions to which it has exposures. The weighting applied to these buffers will be the share of the bank’s charge for credit-risk exposures in one jurisdiction in the total credit-risk charge for exposures across all jurisdictions. The total amount of capital held for a bank’s countercyclical buffer may include capital held against domestic and foreign exposures (e.g., exposure₁) multiplied by the buffer set by the authorities in each jurisdiction (e.g., buffer₁):

$$\text{Buffer} = (\text{exposure}_1 \times \text{buffer}_1 + \text{exposure}_2 \times \text{buffer}_2 + \dots + \text{exposure}_N \times \text{buffer}_N).$$

To illustrate which foreign jurisdictions will be most important for the buffer calculation, **Chart 1-B** shows the breakdown of the foreign exposures of the six major

Chart 1-B: The United States and Europe account for the majority of foreign claims of the six major banks



Source: Office of the Superintendent of Financial Institutions Last observation: 2010Q1

banks as a group, measured on the basis of ultimate risk.¹ Not surprisingly, foreign claims on U.S. counterparties represent the largest percentage, followed by claims on European counterparties. The main development since 1982 is an increase in the share of claims on U.S. counterparties, which was mostly complete by the mid-1990s. If historical patterns continue, these plots suggest that, after the domestic buffer, developments in the U.S. buffer and, to a lesser extent, the buffers for European countries should have the strongest influence on the overall buffers that the six major banks would be required to hold. However, exposures in other regions may be important for individual banks (e.g., Latin and South America in the case of Scotiabank).

¹ Calculating foreign claims on the basis of ultimate risk allocates claims to the country where such risk lies; i.e., the country in which the guarantor of the financial claim resides or in which the head office of a legally dependent branch incurring the exposure is located. In contrast, foreign claims are measured on an immediate-borrower basis, which captures the location where the borrower resides. **Charts 1-A and 1-B** show the total nominal exposures (not risk-weighted exposures) that will be necessary for the calculation of bank-specific countercyclical capital buffers.

add-on will therefore need to take into account a broad array of information.

A useful indicator for setting the buffer must be available on at least a quarterly basis (or even more frequently) and provide information about the presence of excessive credit growth in *real* time. It is often argued that the buildup of imbalances is a cumulative process, and, thus, that data in the form of gaps from long-run trends are the most informative. In this case, the determination of the trend is an important issue. Ideally, authorities would be able to rely on measures of the gap that are available frequently and not subject to large revisions. It will therefore be important to better understand how innovations in the financial sector and regulatory change are likely to influence long-run trends in the data.

The deviation of the private sector credit-to-GDP ratio from its trend (also known as a credit gap) was put forward in the BCBS proposal as a common, internationally available starting reference point or “guide” to help authorities make and explain decisions on buffers. An advantage of a credit-to-GDP ratio that incorporates measures of credit from institutions and markets is that it is less prone to strategic manipulation by the individual institutions to which the buffer would be applied. Another advantage is that the credit-to-GDP ratio is influenced by the behaviour of the banking sector as a group. This credit gap, which also accounts for the fact that aggregate credit demand and supply grow with the size of the economy, has historically shown success as a leading indicator of banking crises in various countries.⁴ However, this indicator is unlikely to adequately pinpoint the appropriate timing for the release of the countercyclical buffer, since it tends to rise as a crisis worsens, reflecting in part the decline in GDP (the denominator of the ratio) and the fact that the demand for credit can rise at the start of a crisis. Determining the appropriate timing of the release of the countercyclical buffer is critical to prevent capital regulation from further reducing the supply of credit to the economy.

The BCBS proposal and Drehmann et al. (2010) highlight some additional information that might be useful for decisions on when to activate and release the buffer. This information includes indicators of banking sector performance (earnings, losses or asset quality); the cost and availability of credit (funding spreads and credit conditions surveys); the prices of broad classes of assets (real estate and equity prices); and other measures of the amount of financial intermediation (apart from the credit-to-GDP ratio).

4 One of the criteria used to assess the forecast performance of an indicator is the noise-to-signal ratio. This measure accounts for the frequency with which an indicator gives false-positive signals (i.e., signals a crisis when one does not happen) and false-negative signals (signals no crisis when one happens). Drehmann et al. (2010) show that the credit-to-GDP ratio achieves the lowest noise-to-signal ratio (performs the best) among a range of indicators considered.

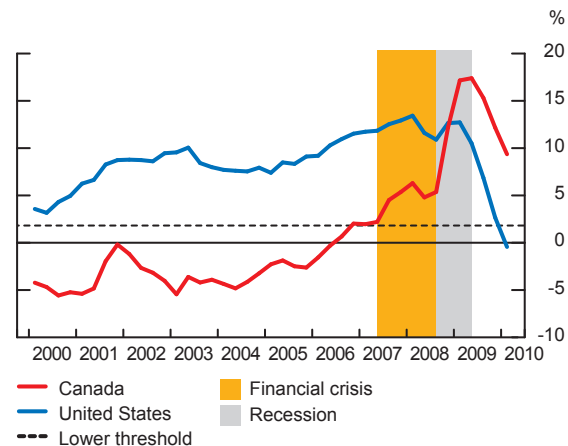
ILLUSTRATION: THE RECENT CRISIS

To illustrate, we now consider what a small set of indicators, including the credit-to-GDP gap, might have signalled to authorities in Canada and the United States in the period before and during the crisis and recession. These indicators were chosen for illustration purposes, and this discussion is not a comprehensive examination of all the available information that might be considered.

Chart 1 shows the gap in the credit-to-GDP ratio for Canada and the United States. This indicator is a rough measure of the aggregate leverage of the financial system (relative to trend) as it captures aggregate debt levels over a measure of aggregate income. Aggregate private sector credit for Canada is constructed from data series published by the Bank of Canada and includes all credit extended to households and non-financial firms. It captures lending by institutions (banks and private non-bank lenders) and debt raised in financial markets (bankers’ acceptances, commercial paper and corporate bonds). The credit-to-GDP ratio is detrended, using the procedure suggested in the BCBS proposal.⁵ The yellow area of the chart indicates the first part of the crisis, starting in 2007Q3, and the grey area indicates the Canadian recession, which began in 2008Q4.

Consistent with earlier empirical work by Borio and Lowe (2002), the BCBS proposal and Drehmann et al. (2010) have shown that the larger the credit-to-GDP gap, the more informative it is with respect to future crises. As a result, the methodology for the reference guide described in the BCBS proposal includes a notional threshold that is broadly consistent with cross-country evidence and is intended to

Chart 1: Canada and the United States showed marked differences in the credit-to-GDP gap



Sources: U.S. Federal Reserve, Flow of Funds, U.S. Bureau of Economic Analysis, Bank of Canada and Statistics Canada

Last observation: 2010Q1

5 The proposal suggests calculating the trend using the Hodrick-Prescott filter. We use data from 1969 to 2010.

signal when the credit gap might be reaching a level that warrants attention. The proposal suggests a threshold of 2 per cent for the credit-to-GDP gap, which is plotted as a dashed horizontal line in **Chart 1**.

Two other indicators that contain information that might be useful to the decisions on buffer activation and release are also considered: house prices (**Chart 2**) and spreads on corporate bond yields relative to government bond yields (**Chart 3**).⁶ Rapid and sustained changes in asset prices, particularly the prices of residential or commercial property, may signal growing imbalances in these markets. Because many commercial banks have large mortgage loan portfolios, a bust in the housing market may have a simultaneous large negative impact on bank balance sheets. An index of corporate BBB-rated bond yields relative to government bond yields is an indicator of credit quality for the broad economy, as well as the cost of financing and the risk appetite of investors. Very low spreads may be present in a boom, followed by sharp rises in a bust. An indicator of credit spreads in the banking sector, such as an index of credit default swaps (CDS) for banks, could also be informative, but these are not actively traded for Canadian obligors.

In Canada, the credit-to-GDP gap (**Chart 1**) was not positive until the latter part of 2006, just before the crisis began, and did not exceed the threshold value proposed by the BCBS (dashed line) until just before the crisis. This indicator suggests that the rise in credit was generally in line with the increase in economic activity, rather than a sign of excessive credit growth.⁷ In part, this reflects the fact that Canada did not have the same easing in lending standards that characterized subprime-mortgage lending in the United States. Although Canadian house (**Chart 2**) and equity prices were climbing steadily over this period, and corporate bond yield spreads were historically low (**Chart 3**) in the three years before the crisis, the credit-to-GDP ratio suggests that these developments were not fuelled by higher leverage in the private sector as a whole, and thus were less likely to suggest the buildup of system-wide risk.

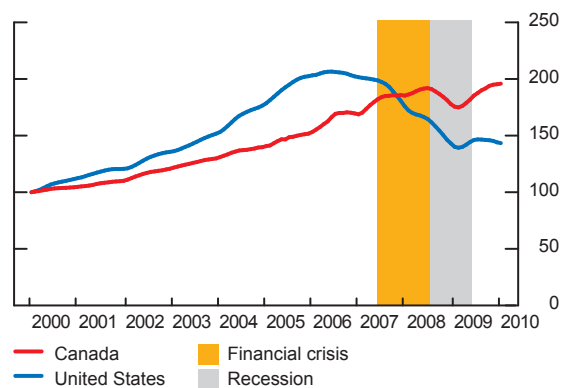
It should be kept in mind that the lack of a signal from the credit-to-GDP ratio before the crisis is consistent with the fact that the crisis originated outside Canada. It is unlikely that any domestic indicator will be a good leading indicator if the source of the banking stress is a spillover from a foreign shock. This is the role of the buffer add-ons for international exposures (**Box 1**). Therefore, one should consider whether there were advance signals to increase the buffer for exposures to foreign jurisdictions.

⁶ House prices are the nominal price from the repeat-sale house price index from Teranet/National Bank for Canada and Standard & Poor's Case-Shiller Index for the United States. Chart 2 indicates the percentage increase in house prices since January 2000 in each country.

⁷ Note that the rise in the credit-to-GDP gap in Canada during the crisis and recession is an illustration of the concerns, raised in the BCBS proposal, that this measure can be misleading during a downturn.

Chart 2: House prices were rising before the crisis

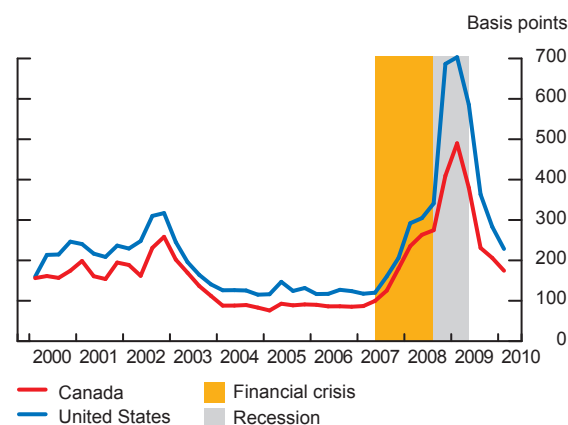
Indexes (January 2000=100)



Sources: Standard & Poor's and Teranet/National Bank

Last observation: 2010Q1

Chart 3: Yield spreads on corporate bonds rose sharply as the crisis developed



Source: Merrill Lynch

Last observation: 2010Q1

The case of the United States is illustrative. In contrast to the Canadian experience, a U.S. credit-to-GDP buffer guide and other supplementary indicators would have sent the same signals of excessive credit growth and rising systemic risk. Hence, this evidence suggests that rising house and equity prices were being fuelled, in part, by rising financial leverage in the U.S. economy. The U.S. credit-to-GDP gap exceeded the BCBS's proposed threshold between 2000 and 2009 (**Chart 1**). U.S. house prices also rose sharply after 2003, and yield spreads on corporate bonds were at historical lows by 2004. The U.S. example shows the potential for available information to signal the need to build up the countercyclical capital buffer. If the BCBS proposal had been in place at the time, and if U.S. authorities had raised the buffer in response to these signals, Canadian banks would have held a higher buffer of capital against their U.S. exposures prior to 2007.

Equally important as the timing of the activation is the timing of the release phase, when the countercyclical capital buffer is lowered to allow bank capital to absorb losses, thus mitigating the negative impact of losses on lending. Since the demand for credit tends to rise at the start of a recession, it is not surprising that the U.S. credit-to-GDP ratio was very slow to signal the need to release the buffer. However, as the crisis unfolded, there was a sharp rise in the spreads on corporate bond yields (**Chart 3**) and a rapid decline in house prices in the United States. Both of these indicators provided a signal for the release of the buffer, even as the credit-to-GDP gap continued to rise.

CONCLUSION

The new Basel III capital rules for banks include a countercyclical capital buffer to mitigate the tendency of bank capital regulation to amplify movements in lending conditions and real economic activity. This buffer will rise during periods of excessive credit growth associated with increasing systemic risk, and thus help to protect banks in the event of an adverse turn in the credit cycle. It will be released when the cycle turns, reducing the pressure on banks to deleverage to meet regulatory capital requirements. An additional benefit will be the reduction in system-wide risk during the boom phase of the cycle.

We have described the main features of the framework for the countercyclical buffer proposed by the BCBS. When this framework is in place, Canadian authorities will regularly assess a range of indicators to evaluate the evolution of system-wide risks in the financial system and form a view on the appropriate setting for the capital buffer. This type of information is regularly analyzed as part of the Bank of Canada's system-wide surveillance activities. The Bank's analysis will complement that from other relevant federal authorities in informing buffer-setting decisions.

A key advantage of the countercyclical capital buffer is that banks are required to carry the additional capital only when systemic risk is building. In addition, the reciprocity provisions in the buffer framework give domestic authorities confidence in knowing that any actions they take will not be undercut by foreign authorities, which will help to promote a level playing field for all banks with exposures in a particular jurisdiction.

Given the importance of judgment in buffer decisions, it is crucial that authorities explain the reasons for their actions to foster accountability and help banks and market participants manage uncertainty about future capital requirements. Thus, as recommended in the BCBS proposal, a key element in the implementation of a countercyclical capital buffer is the development of a communications strategy to achieve these goals. Canadian authorities will be considering the appropriate strategy for the Canadian context.

A countercyclical capital buffer is just one component in a set of system-wide tools. These tools should be designed to address problems at their source. The countercyclical capital buffer is likely to be used when more-targeted measures are unavailable, or unsuccessful, and when there is a need to prepare banks for the turn in the credit cycle. Used appropriately, the countercyclical capital buffer will help to maintain economic growth during periods of financial and economic stress.

REFERENCES

- Arjani, N. 2009. "Procyclicality and Bank Capital." Bank of Canada *Financial System Review* (June): 33–39.
- Bank for International Settlements (BIS). 2009. "Strengthening the Resilience of the Banking Sector." Available at <<http://www.bis.org/publ/bcbs164.pdf>>.
- Basel Committee on Banking Supervision (BCBS). 2010a. "Countercyclical Capital Buffer Proposal." Available at <<http://www.bis.org/publ/bcbs172.pdf>>.
- . 2010b. "Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards." Press Release, 12 September. Available at <<http://www.bis.org/press/p100912.pdf>>.
- Borio, C. and M. Drehmann. 2009. "Assessing the Risk of Banking Crises—Revisited." *BIS Quarterly Review* (March): 29–46.
- Borio, C. and P. Lowe. 2002. "Asset Prices, Financial and Monetary Stability: Exploring the Nexus." Bank for International Settlements Working Paper No. 114.
- Drehmann, M., C. Borio, L. Gambacorta, G. Jiménez, and C. Trucharte. 2010. "Countercyclical Capital Buffers: Exploring Options." Bank for International Settlements Working Paper No. 317.