

# Forefront

New Ideas on Economic Policy from the FEDERAL RESERVE BANK  
*of* CLEVELAND

## The Future of Financial Market Regulation

### **INSIDE:**

Slowing Speculation in Housing

Introducing the  
Cleveland Financial Stress Index

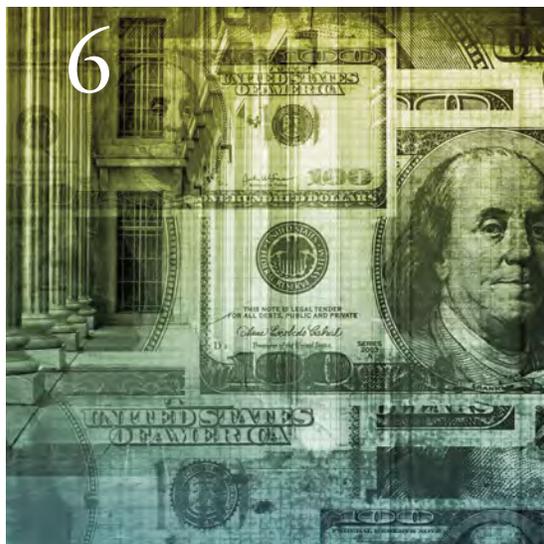
A Bad Bank, for the Greater Good

### **PLUS:**

Interview with Charles Calomiris

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WINTER 2011

Volume 2 Number 1

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# Keeping Banks Strong— Countercyclical Capital Requirements



**James B. Thomson,**  
Vice President  
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**Joseph Haubrich,**  
Vice President and Economist

To measure a bank's strength, one could look at factors like profitability or stock price, but few gauges are as revealing as a bank's capital level. That is why supervisors are increasingly turning to formal capital regulation as a way to promote financial stability. The belief is that the stronger individual institutions are, the safer the entire financial system will be.

But capital requirements can have unintended effects because they tend to be "procyclical." During economic expansions, banks need a smaller equity cushion to absorb unanticipated losses in their assets than they do during contractions. As a result, they increase leverage to accommodate credit demand in good times. They see little need to boost capital levels when credit losses are low and expected to remain that way. But in bad times, higher credit-default rates force banks to eat into their capital buffers.

Faced with continued losses, banks look to conserve their remaining capital, partly by reducing the credit supply.

The upshot of procyclical capital requirements is that economic swings are more intense than they otherwise would be. This is how credit bubbles are formed and burst.

That's what happened in the Panic of 2008, when the banking system corrected for its earlier exuberance by dramatically curtailing lending activity and hoarding capital. How can we avoid that problem in the future? How can regulators encourage financial institutions to increase their capital in good times, anticipating their needs when times turn bad? How can we start thinking about the merits of countercyclical capital requirements?

Last October, the Federal Reserve Bank of Cleveland held a conference to address these questions.

**Performance, Risk, and Capital Buffer under Business Cycles and Banking Regulations: Evidence from the Canadian Banking Sector**

**by Alaa Guidara, Van Son Lai, and Issouf Soumaré (Laval University, Québec)**

Canada offers an interesting case study for the United States. Although their economies are closely connected, the two nations' banking sectors differ in both structure and performance. Canada's system is dominated by a handful of nationwide banking companies. The United States has more than 10,000 insured depository institutions and, although it has a few mega-banks, it has no truly nationwide bank.

Guidara and his colleagues note that besides the Basel international capital standards, Canadian banks are subject to a leveraging constraint that could be adjusted according to the phases of the business cycle, producing what's known as a variable capital buffer. U.S. banks are also subject to a leveraging constraint, but theirs is fixed and cannot change with the business cycle.

To see how capital buffers affect the Canadian banking system's performance, the authors test the relationship between changes in the capital buffer, bank risk, and bank performance. They find evidence that Canadian capital buffers tend to be countercyclical. Moreover, they find a positive relationship between Canadian banks' capital buffers and their riskiness.

What these authors do not account for, however, is that Canadian banks are likely to have higher charter values than their U.S. counterparts—and charter values act as a constraint on risk-taking. If this structure results in Canadian banks having high charter values, then they would be expected to hold less risky portfolios than U.S. banks and be better positioned to weather an economic downturn.

**Countercyclical Provisions, Managerial Discretion, and Loan Growth: The Case of Spain**

**by Santiago Carbó-Valverde and Francisco Rodríguez-Fernández (University of Granada)**

Spain provides another useful model for countercyclical regulatory policy. In Canada, the buildup of capital buffers might simply represent passive accumulation of earnings during a strong growth phase. But starting in 2000, Spain adopted a policy of countercyclical loan-loss provisioning, which sets aside reserves when bank profits are high and loan growth is strong.

By forcing banks to set aside reserves in good times, the policy reduces the near-term profitability of bank lending and reduces incentives to overlend. In doing so, this policy tames procyclicality in the bank credit cycle. Dynamic provisioning also reduces the impact of loan portfolio deterioration on bank credit decisions. This happens because reserves for loan losses can be drawn down during recessions, lessening the need to set aside additional earnings to cover them.

To analyze how Spain's dynamic provisioning policy affects loan growth, the authors use quarterly data on a sample of Spanish banks from the first quarter of 2001 through the first quarter of 2010. They test whether loan-loss provisioning in Spain before and during the financial crisis resulted in procyclical reserving, income smoothing, countercyclical loan growth, or some combination of them. Overall, they find evidence of procyclical reserving and income smoothing, although both of these effects decrease over the sample period. The authors do not, however, find evidence that dynamic loan-loss provisioning dampened loan growth at the peak of the credit cycle. That is to say, the Spanish policy failed to do one of its most important jobs—smoothing loan growth over the credit cycle by reducing incentives to overlend during the peak of the cycle.

**The Trade-offs between Capital and Liquidity Requirements: Theory, History, and Empirical Evidence**

**by Charles Calomiris (Columbia University)**

Calomiris reminds us that formal capital regulation is a relatively modern phenomenon. For most of U.S. banking history, supervision focused on liquidity (the liability side of the balance sheet rather than the asset side). Because banks' liabilities—banknotes before the Federal Reserve era and bank deposits after—are an important part of the money supply, regulation ensured that banks could meet maturing obligations, particularly during periods of financial distress. A bank's failure to redeem banknotes or inability to offset deposit withdrawals would mean closing its doors. Bank clearinghouses arose in the nineteenth century partly to provide a liquidity backstop for their members and, sometimes, for the broader banking system.

A lesson from the past, which was relearned during the crisis of 2007–09, is that general market liquidity tends to dry up in response to shocks to the system, particularly when firms start hoarding their liquidity as part of a preservation strategy. To put it another way, a source of liquidity is protective only if it can be tapped during a crisis.

The next iteration of the Basel international capital accords (Basel III) will include two kinds of liquidity standard. One is a coverage ratio that requires banks to hold enough liquidity to withstand 30 days of net cash outflows. The other is a net stable funding ratio that aims to lessen mismatches between the maturity structures of assets and liabilities. For example, a bank wouldn't want to have all of its assets in long-term mortgages and most of its liabilities in short-term deposits. Liquidity risk also gets attention in the 2010 regulatory reform act.

Calomiris argues that regulatory policy should refocus on liquidity and liquidity risk. But when establishing liquidity standards, the devil is in the details. As Calomiris sees it, a practical approach to measuring liquidity and implementing liquidity standards remains elusive. An open question is whether policymakers' current efforts to reward financial market firms for limiting liquidity risk will prove productive.

<p><b>Incentive Compensation, Accounting Discretion, and Bank Capital</b></p>	<p><b>by Timothy W. Koch, Dan Waggoner, and Larry D. Wall (Federal Reserve Bank of Atlanta)</b></p>
<p>Most writing on regulatory reform doesn't bother with connections; it often treats the effects of policy in isolation. A useful corrective to this practice is provided by researchers at the Atlanta Fed, who look at how new regulatory guidance on bankers' pay will interact with accounting rules to affect <i>how</i> banks adjust their capital buffer in good times and bad.</p> <p>Because accounting rules allow discretion in how firms report gains and losses, it's not surprising that firms engage in earnings management, generally smoothing their earnings over time. Nor is it surprising that bankers' compensation affects how they smooth earnings. And because retained earnings increase bank capital, and declaring losses lowers it, anything that affects earnings management affects bank capital.</p> <p>Regulatory guidance on compensation will have somewhat contradictory effects on the cyclicity of bank capital. A lot depends on whether the banker's pay is based more on accounting earnings or on stock</p>	<p>price. If it's earnings, the new guidance will reinforce the current countercyclical pattern that results from smoothing earnings. With more compensation coming from deferred bonuses with a potential claw-back (that is, the ability of the firm or regulators to seek repayment of some or all of a bonus payment), managers will want to make sure earnings stay steady in the future, so that they actually see that bonus when it is due to arrive. And with less sensitivity to performance, bumping up earnings this year won't add a lot to that bonus.</p> <p>Putting more of the bonuses in stock, the other alternative, could have the opposite effect. Managers could want a high price when they sell their stock or exercise their options, so they might want to goose earnings in the short term to boost share prices when they sell.</p> <p>The upshot is that incentive guidance on capital may have ambiguous effects, which is less than satisfying. But there is really a larger point at stake—the need to consider these sorts of interactions when making policy, setting regulations, or establishing guidance.</p>

<p><b>Accounting for Banks, Capital Regulation, and Risk-Taking</b></p>	<p><b>by Jing Li (Carnegie Mellon University)</b></p>
<p>Li formulates the regulatory question as one of choosing a capital requirement and how bank capital is measured (that is, the accounting standard). The question comes down to which accounting regime most effectively controls excessive risk-taking by banks, given that the regulations can have costly side effects.</p> <p>The paper considers three accounting regimes: "historical cost" accounting, in which assets are valued at their historical price; "lower of cost or market value" accounting; and "fair value" accounting, in which assets are marked to market prices. The accounting regime that is adopted may effectively reduce capital, driving levels below what regulators require and forcing an intervention. For example, under fair-value accounting, a drop in the price of the asset would show up as a loss, reducing capital, while value measured at historical cost would show no change. If, as seems likely, asset prices move along with the business cycle, the choice of accounting standard also affects the amount of cyclicity in bank capital.</p>	<p>Which accounting standard is best? The answer depends partly on which comes first, the accounting standard or the capital requirement. The government might coordinate these requirements, but the Federal Reserve and the Financial Accounting Standards Board are quite independent of each other.</p> <p>Overall, regulators face a rather complicated problem. Capital requirements can reduce risk, but setting them too high shrinks the banking system and reduces the liquidity they provide. Adopting the appropriate accounting standard can help, but at the cost of curtailing bank loans to productive enterprises. Regulators must balance the relative importance of two bank activities: funding new businesses and providing deposit accounts. Instead of coming to a once-and-for-all decision, Li's paper highlights the trade-offs and tough choices that banking regulators and accounting boards must face.</p>

<p><b>Countercyclical Regulation under Collateralized Lending</b></p>	<p><b>by Laura Valderrama (International Monetary Fund)</b></p>
<p>Some banking historians have described the evolution of the recent financial crisis as a run on collateral, especially in the repo market, where institutions agree to sell securities and then repurchase them at a specified date and price.</p> <p>Bank capital regulation that focuses on credit risk doesn't prevent the type of contagion that exists in the interbank collateralized lending markets. After all, the banks in Valderrama's model are assumed to</p>	<p>be default-free. So she proposes that regulators adopt policies that deal specifically with the "spread of systemic liquidity risk" through collateral runs. She shows that under certain conditions, adding a liquidity buffer, a capital buffer, or a regulatory haircut on collateral could reduce the probability of a repurchase run and help stabilize financial markets.</p>

## Credit Derivatives and the Default Risk of Large, Complex Financial Institutions

by Giovanni Calice (University of Southampton),  
Christos Ioannidis (University of Bath), and  
Julian M. Williams (University of Aberdeen)

These authors explore a method of setting explicit numerical values for bank capital requirements. By looking at the risk in 16 large, complex institutions as well as the risk in the market for credit default swaps, their paper paints an intriguing picture of risk transmission.

The story begins with a standard measure of risk that comes from Nobel Prize winner Robert Merton, something called distance to default. Let's say the bank owns a portfolio of assets—loans, government bonds, cash in its ATMs—and that its portfolio is risky. Loans may go bad, bond prices may fall, and robbers may steal the cash. The bank also has debts, mainly to depositors but also to investors who have bought senior and subordinated bonds. Merton assumes that when the value of the assets falls below the value of the debt, the firm is bankrupt and must close down (this leaves out accounting issues, such as when the value is declared—admittedly important but sometimes a distraction).

How far is the bank from defaulting? The distance-to-default approach starts by finding out the bank portfolio's risk or, put another way, its variability. This is measured in standard deviations, perhaps familiar from statistics classes. The distance to default is the number of standard deviations that the bank's value must fall before it drops below the value of the debt. The more standard deviations, the further the distance to default and the lower the chance of failure. Using standard

deviations allows us to compare the riskiness of different-sized banks. It would also make sense to declare a distance-to-default equivalent to how much money a bank would have to lose to become insolvent, but that might make a bigger bank look safer than a small one, even if their chance of failure is the same.

It turns out that the distances to default of large, complex financial institutions (like Citigroup and Goldman Sachs) often move together. The distances also move together with the volatility of two indexes of credit-default-swap markets. Credit default swaps are a way to protect against bonds defaulting. One party to the swap "buys protection," paying what amounts to an insurance premium. The other party "sells protection" by agreeing to make a large payment if the bond defaults. There are two indexes for stocks, the Dow Jones and the S&P; likewise, there are two indexes for credit defaults, the iTraxx and the CDX. Using these indexes, Calice and his colleagues show that the volatilities of bank assets and credit default swaps move together. The authors put this down to the transmission of volatility across banks via credit default swaps.

Furthermore, the distance to default measure provides a natural stress test for a bank's capital: Is the capital buffer large enough to make default unlikely? The influence of the aggregate iTraxx and CDX indexes, then, adds a cyclical component across firms.

## Managing Credit Booms and Busts

by Olivier Jeanne (Johns Hopkins University) and  
Anton Korinek (University of Maryland)

The authors ask how policymakers should respond to the continual booms and busts in credit and asset markets. They point out that if there is too much of something, one solution is to tax it. They argue that there is too much borrowing, and prescribe a "pigouvian tax" (after Arthur Pigou, the late Cambridge University economist). Of course, this adds the problem of determining the right tax level, which Jeanne and Korinek tackle.

The root of the problem is that excessive borrowing makes the economy vulnerable to a feedback spiral when an adverse shock arrives. Falling housing prices, worsening unemployment, or other shocks make credit tighter, so people spend less. This further reduces asset values and makes credit even tighter, continuing the downward spiral. So the financial system exacerbates booms and busts in credit and asset markets and, ultimately, in output and employment.

Curiously, the authors' solution—to discourage excessive borrowing by taxing it—is exactly the opposite of U.S. policy, which subsidizes borrowing by making interest tax deductible for businesses and home mortgages.

Jeanne and Korinek then take a step that too often is skipped: They set out to quantify how much tax should be levied. Using U.S. data, they estimate that imposing an additional tax of 0.5 percent on household borrowing, and slightly more on business borrowing, would counteract the effect of excessive borrowing. For example, households might pay 4.5 percent instead of 4 percent on a loan. Furthermore, the tax rate should vary with the business cycle. In a boom, the tax slows the growth of debt; but during a recession, the tax drops to avoid a worse decrease in spending. ■



### Conference on Countercyclical Capital Requirements

For links to conference papers, go to  
[www.clevelandfed.org/research/conferences/2010/10-14-2010\\_capital/index.cfm](http://www.clevelandfed.org/research/conferences/2010/10-14-2010_capital/index.cfm)



### Resources

Countercyclical capital requirements are the subject of some proposed rules under the Dodd–Frank Act. For more information, see  
[www.federalreserve.gov/newsevents/reform.htm](http://www.federalreserve.gov/newsevents/reform.htm)