

Conference Summary: Financial Intermediation and Vulnerabilities

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The Bank of Canada's annual economic conference, held in October 2012, brought together experts from around the world to discuss key issues concerning financial intermediation and vulnerabilities. The conference covered such topics as household finances and their relationship to financial stability, as well as bank regulation and shadow banking, including securitization and the regulatory perimeter.

Before the 2007–09 financial crisis, economic research traditionally focused on the relationships between households and businesses, and the entities (financial institutions) that act as intermediaries between savers and borrowers through activities on their balance sheets. The crisis, however, revealed that our perception of these relationships was overly simplistic.

We have had to reconsider how the financial system channels funds from savers to borrowers. In particular, more research is required to understand the traditional banking sector, as well as the market-based finance sector (i.e., the shadow banking system), and how both these sectors create links that redistribute risks through the financial system. The Bank of Canada's annual conference was organized to help analyze this process and the potential impact it has on households.

Households are central to the health of the Canadian economy. Their financial well-being has important implications for the stability of the financial sector, first in their ability to meet their financial obligations, and second through changes in the value of their most valuable asset—their homes. Understanding how changes to bank funding, in particular, the securitization market for mortgage-backed securities, can affect household borrowing and how household balance-sheet vulnerabilities can affect bank riskiness are therefore important areas of research.

The Bank of Canada's 2012 economic conference comprised six sessions, including a keynote address, as well as the John Kuszczak Memorial Lecture and a panel discussion. This article summarizes the papers presented and the discussions that followed.

Session 1: A New Era in Banking

Sir John Vickers (All Souls College, University of Oxford) opened the conference with a broad discussion of banking after the recent financial crisis. Vickers chaired the U.K. Independent Commission on Banking (ICB), which developed proposals to reform the U.K. banking sector. In his presentation, “Some Economics of Banking Reform,” Vickers discussed the main recommendations of the ICB. First, it advocates the separation of a bank’s retail-banking activity from its investment-banking activity (i.e., ring-fencing) to protect the safer retail services from the riskier investment-banking activities. Second, to increase the ability of banks to absorb losses if there is a negative shock, the ICB recommends that banks issue additional equity and loss-absorbing debt. The goal of these proposals is to shift risk away from retail depositors (and taxpayers) and toward investors so that banks would not be able to subsidize riskier investment activity with depositor funding, and to insulate retail banking from a failure of the investment-banking arm.

In the discussion that followed Vickers’ presentation, questions were raised about whether this ring-fenced insulation would reduce the “too-big-to-fail” problem. Vickers repeated his view that the proposed initiatives would increase financial stability, and argued that this benefit more than offsets the ICB estimates of the costs to U.K. banks of the ring-fencing and loss-absorbency measures (£4 billion to £7 billion per year). Vickers pointed to the Liikanen report,¹ which proposes reforms to increase financial stability throughout Europe and includes recommendations similar to those of the ICB. However, the Liikanen report recommends ring-fencing proprietary and third-party trading activities, rather than the retail bank.

Session 2: Consumer-Risk Models

Following the collapse of the U.S. housing market, there has been a keen interest in explaining the boom and bust of the market, and exploring alternative housing and mortgage policies for leaning against housing bubbles. In their paper “Real Estate Investors and the Boom and Bust of the U.S. Housing Market,” presenter **Wenli Li** (Federal Reserve Bank of Philadelphia) and co-author **Zhenyu Gao** (Princeton University) explore the role of mortgage borrowers for investment purposes (defined as purchasers of second homes). The authors’ empirical results show that the amount of investor activity is sensitive to house-price expectations and credit constraints. Real estate investors can therefore amplify housing cycles, and the relaxation of mortgage-lending guidelines can exacerbate the problem.

In his comments, **Césaire Meh** (Bank of Canada) highlighted the significance of real estate investors and documented the extent of their leverage as well as the “type” of investor they are. Interestingly, before the financial crisis, investment-motivated homeowners in the United States were less leveraged than owner-occupied homeowners and were more likely to be high-income borrowers with prime mortgages. Meh noted that Li and Gao’s results imply that policies such as increasing the amount of down payment required to qualify for mortgage insurance for investment properties will reduce investor activity and therefore dampen cycles in house prices. However, if investors tend to have large down payments for the purchase of properties (and therefore do not typically rely on mortgage insurance), such policies would have only a limited effect on investor demand. Similarly, **Derek Stacey**

¹ Also known as the report of the European Commission’s High-level Expert Group on Reforming the Structure of the E.U. Banking Sector, the Liikanen report was prepared by the European Commission Expert Group chaired by the Governor of the Bank of Finland, Erkki Liikanen.

(Ryerson University) noted that the role of real estate investors would increase if lenders relaxed mortgage lending standards, since, as shown in Li and Gao's model, the interaction of growth in house prices and demand for investment properties relies on the transaction costs for "flipping" investment houses being cheaper than buying and selling owner-occupied houses.

In his paper "Continuous Workout Mortgages in a Structural Model of Housing and Mortgage Markets," **Edward Kung** (University of California, Los Angeles) analyzes the welfare implications of different types of mortgage contracts. He shows that contracts in which house-price risk is shared by both the borrower and lender—continuous workout mortgages—can improve the efficiency of the mortgage and housing market. For example, if the lender takes on some of the risk in the depreciation of house prices but can also share in the capital gains, then consumer welfare increases. Such a mortgage design can also increase financial stability, since homeowners do not absorb the entire cost of the house-price depreciation and are, therefore, less likely to default. Variations of continuous workout mortgages have been proposed by Caplin et al. (2007); Caplin, Cunningham and Engler (2009); and Shiller (2008; 2009).

In his discussion, **Tom Davidoff** (Sauder School of Business, University of British Columbia) did not agree with Kung's findings, arguing that if homeowners wanted to hedge their house-price risk, they could buy Case-Shiller securities or a reverse mortgage. The empirical evidence suggests that homeowners do not take short positions on home prices.

Jim MacGee (University of Western Ontario) was impressed with the goal of using a structural model to analyze questions of mortgage innovation; however, he agreed with Davidoff on the probable unpopularity of such a mortgage. MacGee noted the potential for moral hazard with continuous workout mortgages; that is, since the lender shares some of the house-price risk but doesn't share in the upkeep of the home or the timing of the decision to sell, the borrower could take actions that lower returns for the lender.

Session 3: Household Vulnerabilities

With their ratios of debt to disposable income now averaging 165 per cent, Canadian households are increasingly vulnerable to movements in interest rates, negative income shocks and lower house prices.

In their paper "What Explains High Unemployment? The Aggregate Demand Channel," **Atif Mian** (University of California, Berkeley) and presenter **Amir Sufi** (University of Chicago Booth School of Business) explain how a negative shock to household balance sheets, resulting from a decline in house prices, for example, leads to lower aggregate demand and higher unemployment. Using county-level employment data and classifying industries as tradable or non-tradable, the authors find that the most highly leveraged counties experienced the sharpest declines in demand following the financial crisis (Mian, Rao and Sufi 2011), and that these counties also suffered the largest job losses in the non-tradable sector. Consistent with the aggregate demand channel, in which demand for traded goods declines everywhere, Mian and Sufi (2012) find that employment losses in the tradable sector do not correlate with household leverage in U.S. counties. The authors estimate that the aggregate demand channel can account for 65 per cent of the total loss in U.S. employment from March 2007 to March 2009.

In her discussion, **Katsiaryna Kartashova** (Bank of Canada) provided robustness analysis of the paper's results, exploiting data available at the U.S. state level, including on consumer expenditures, and confirmed patterns reported by the authors. She also showed that bank lending played a role in explaining the loss of employment in the United States after 2007. Kartashova found that a slowdown in bank lending affected employment in the non-tradable sector, not only as a result of lower demand for borrowing associated with household balance sheets (as in Mian and Sufi 2012), but also because of bank balance-sheet effects, thus amplifying Mian and Sufi's results.

Rui Castro (Université de Montréal) focused on an alternative hypothesis for the increase in unemployment in the non-tradable sector—that it was a sector-specific shock. Since most non-tradable firms are small (e.g., restaurants), and most tradable firms are large (e.g., auto manufacturers), non-tradable firms rely more on bank lending. Castro argued that these smaller firms were therefore affected by a credit crunch in the most leveraged counties. Given the importance of household leverage in today's economy, the audience had a lengthy discussion of this research.

In their paper "Consumer Bankruptcy and Information," **Jason Allen** (Bank of Canada), presenter **Evren Damar** (Bank of Canada) and **David Martinez-Miera** (Carlos III University) examine the factors that have contributed to the rise in household insolvency during the past two decades. Drawing on an administrative database of Canadian bankruptcy filings, the authors document substantial variation in bankruptcy rates over time and across neighbourhoods. Their main hypothesis is that the observed patterns in bankruptcy rates across different neighbourhoods can be partially explained by the role of bank branches and the relationship between creditors and debtors at the local level. The key empirical finding is that banks that approve more loans per branch experience more client bankruptcies. One explanation is that these banks use soft information less intensively because of their inability to form substantial relationships with each of their many borrowers. This finding has important policy implications, since it implies that hard information (credit scoring) cannot fully replace the type of information gathered at local branches through personal contact.

Discussants **Reint Gropp** (Goethe University) and **Emre Ergungor** (Federal Reserve Bank of Cleveland) analyzed the two mechanisms used in the paper: (i) bank mergers and the reallocation of lenders across branches, and (ii) a regression of the use of soft information on consumer bankruptcies. Both discussants agreed that the first mechanism was a more convincing explanation of the bank branch-bankruptcy relationship. Ergungor argued that branch divestiture is often an important issue in the United States and should be part of the formal analysis. Gropp raised the issues of the potential social welfare impact of branch closures, as well as the socially optimal level of bankruptcy.

Session 4: Financial Intermediation and Asset Prices

In the keynote address "Capital Flows and the Risk-Taking Channel of Monetary Policy," presenter **Hyun Song Shin** (Princeton University) and co-author **Valentina Bruno** (Kogod School of Business, American University) highlight the importance of global liquidity conditions for domestic credit. In a world with global banks, low interest rates decrease the costs of bank funding and therefore increase the supply of credit. They also increase risk taking. The authors argue that even as banks take on more risk, measures of risk taking appear to decline during normal times, and this leads to even more cross-border banking flows and more risk taking by banks. There is,

the authors conclude, an interplay between risk taking and measured risks. The key amplification channel that Bruno and Shin examine is the effect that increased risk taking has on currency appreciation through rising capital flows. These capital flows decrease the measured volatility (i.e., perceived risk) of bank assets, which in turn leads to more capital flows as banks seek to target a particular level of risk taking.

In his discussion of Bruno and Shin’s analysis, **Guillaume Plantin** (Toulouse School of Economics–Institut d’Économie Industrielle) noted that the main mechanism in the paper is the failure of uncovered interest rate parity (UIP)² to hold—that is, low interest rate currencies tend to depreciate, rather than appreciate, as dictated by UIP. Empirically, UIP tends to be rejected by the data; however, economists have not been able to explain this rejection. This issue is of course troubling for economists, and a lot of recent research has focused on it.³

Session 5: Financial Innovation, Shadow Banking and the Prudential Perimeter

The Financial Stability Board (FSB) broadly describes shadow banking as “credit intermediation involving entities and activities outside the regular banking system” (FSB 2011). The shadow banking sector was at the centre of the 2007–09 financial crisis because of its poor securitization practices and its greater reliance on less-stable funding, and because of its use by traditional banks for similarly less-stable wholesale funding. These funding markets were largely based on securitization markets such as the market for asset-backed commercial paper (ABCP) and asset-backed securities. To address this problem, the Basel Committee on Banking Supervision (BCBS) called in 2009 for proposals to strengthen liquidity requirements to promote the resilience of the financial sector.⁴

In their paper “A Theory of Bank Liquidity Requirements,” presenter **Charles Calomiris** (Columbia University), **Florian Heider** (European Central Bank) and **Marie Hoerova** (European Central Bank) take up the BCBS call with an in-depth analysis of liquidity requirements. Using a model where capital requirements and liquidity requirements interact, the authors determine the optimal mix of these requirements under a number of scenarios. Cash plays an important role, because it mitigates liquidity risk and encourages greater risk management. Since deposit insurance reduces the incentives for banks to monitor each other, the government could require banks to hold more cash to achieve the same level of risk as in an environment without deposit insurance.

Discussant **David Martinez-Miera** (Carlos III University) appreciated the authors’ message regarding the dual role of cash—to mitigate both liquidity risk and insolvency risk. His concern was that higher cash requirements might reduce the charter value of banks,⁵ which would in fact increase insolvency risk, not decrease it. This effect could reduce a bank’s incentive to preserve its charter and therefore cause it to pursue more risky short-term investments.

² Uncovered interest rate parity asserts that the difference in interest rates between two countries is equal to the expected change in their exchange rates.

³ For example, see Alvarez, Atkeson and Kehoe (2007) and Obstfeld and Rogoff (2000).

⁴ See www.bis.org/press/p091217.htm.

⁵ The charter value of a bank is the value to shareholders of the bank’s future discounted net profits.

Francesco Trebbi (University of British Columbia) initiated an extended discussion about the paradox of liquidity (Myers and Rajan 1998); that is, since cash is liquid and easy to shift around, it reduces a bank's commitment to a specific course of action. More cash provides bank managers with greater freedom to behave in a manner that is inconsistent with what the bank's shareholders or a regulator would want. Trebbi concluded that liquidity requirements are more subtle than they first appear and more work should be done to understand their potential drawbacks.

In their paper entitled "Covered Bonds and Systemic Risk," **Kartik Anand** (Bank of Canada), presenter **James Chapman** (Bank of Canada) and **Prasanna Gai** (University of Auckland) examine the financial stability implications of covered bonds, i.e., bonds secured by a pool of high-quality, ring-fenced assets that stay on a bank's balance sheet. In their model, banks are constrained in the amount of covered bonds they can issue by a limit on encumbrance. The authors conduct an experiment where the ring-fenced assets are impaired and the bank has to readjust the amount of assets inside and outside the ring fence. This readjustment makes depositors prone to run, since it causes the impairment of assets to be borne entirely by the unsecured creditors. When returns are high, increasing allowable encumbrance can decrease systemic risk because of the rise in investment opportunities. When returns are low, increasing allowable encumbrance can increase systemic risk because of the effect it has on the rollover decisions of unsecured depositors. The model implies that limits on encumbrance should be dynamic rather than static. It also implies that there is a role for central banks to support the secondary market for covered bonds by swapping "bad" collateral for "good," both during a systemic crisis and in normal times.

Both discussants, **Douglas Gale** (New York University) and **Rodney Garratt** (University of California, Santa Barbara), were intrigued by the role of covered bonds in financial stability. They argued that, while the results appear to be sensible, the authors should relax some of the modelling assumptions. In particular, they noted that, since this is the first paper to look at the incentive aspects of covered bonds, the authors should focus only on ring-fencing, rather than attempt to model both the issuance of covered bonds and their trading in secondary markets.

Session 6: Regulating Systemic-Risk Externalities

The papers in this session provided retrospective analyses of shadow banking crises. In "Responding to a Shadow Banking Crisis: The Lessons of 1763," presenter **William Roberds** (Federal Reserve Bank of Atlanta) and co-author **Stephen Quinn** (Texas Christian University) analyze the collapse of the merchant bank De Neufville in 1763, and its impact on other merchant banks and on the Bank of Amsterdam. They then compare this episode with the collapse of Lehman Brothers in 2008. There are many similarities: (i) both banks were involved in securitization; (ii) both faced rollover risk; and (iii) in both cases, the central bank provided loans to the securitizers and emergency facilities. Unlike with the Lehman collapse, however, the intervention of the Bank of Amsterdam led to a recovery of the Dutch market, even though De Neufville failed. The Lehman collapse was similar to the De Neufville collapse in that shocks to collateral from a shadow bank led to the failure of a leveraged institution. The Lehman collapse, however, had larger repercussions on the global economy.

Angela Redish (University of British Columbia) was impressed by the authors' collection and examination of Dutch archival data for their analysis of the 1763 banking crisis, although she wanted the authors to draw more lessons and policy implications from their analysis. For example, could stress testing have flagged the incipient collapse? Could higher capital or liquidity requirements have helped?

Olivier Accominotti (London School of Economics and Political Science) commented that the archival work of the authors should lead to a host of research in the area of Dutch banking. Accominotti's main point was that the collapse of De Neufville might be more similar to the collapse of American International Group (AIG) than Lehman Brothers because De Neufville traded acceptances, which did not have the maturity mismatch that we saw with Lehman.

In "The Flight from Maturity," **Gary Gorton** (Yale School of Management) presented a retrospective look at the collapse of Lehman Brothers. Gorton and co-authors **Andrew Metrick** (Yale) and **Lei Xie** (Yale) argue that following the initial run in the repo market and ABCP market in early 2007, there was a buildup of risk that led to the collapse of Lehman in 2008. The mechanism for this buildup was market participants trying to create "moneyness," which involved a flight from long instruments, such as long-term debt, to short instruments (e.g., repos). The authors use econometric methods to test their hypothesis and find multiple breaks (or shifts) in the series related to the crisis. They conclude that each break was a further buildup of risk, and that the financial crisis was not the result of a single unexpected shock that brought down the entire financial system. Rather, it was symptomatic of a financial system that had become increasingly more vulnerable over time. The Lehman collapse was not a shock that kicked off the crisis, but the beginning of an inevitable realization of these vulnerabilities.

Anna Kovner (Federal Reserve Bank of New York) applauded the authors' documentation of the short-term funding positions of banks before and during the financial crisis, but wanted more. Unfortunately, many pieces of information that would be useful, for example, information on haircuts, repo volumes or over-the-counter trades, were not collected before the crisis.

Andrew Morton (Citibank) drew on his experience at Lehman during the crisis to express his agreement with Gorton that the financial crisis started before the collapse, and that there was a dynamic run-up starting with the repo shock in July 2007. From a policy perspective, therefore, there might be ways to detect these events in advance, rather than rationalizing them in hindsight. This should be the goal.

John Kuszczak Memorial Lecture

Every year since 2002, the Bank of Canada has honoured the memory of one of its own, John Kuszczak, with a guest lecture in his name. This year's speaker—**Edmund Clark** (Chief Executive Officer of TD Bank Group)—discussed the erosion of public confidence in the global banking system, and bankers in particular, since the 2007–09 financial crisis. He explored some of the reasons behind this erosion, including the ongoing European crisis, the financial missteps of certain banks, and the fact that significant government and central bank intervention rescued some banks that continue to make large profits today with little change in their behaviour. Clark called on regulators to be steadfast in their pursuit of principles-based regulation (in contrast to strict rules-based regulation), so that financial institutions and, hence, the economy, can perform better in an environment with less regulatory uncertainty.

Panel Discussion

The conference ended with a panel discussion involving **Governor Mark Carney** (Bank of Canada), **Governor Stanley Fischer** (Bank of Israel) and **Professor Robert Kaplan** (Harvard Business School).

Governor Carney focused on the current regulatory work surrounding shadow banking, which is among the key priorities of the FSB. He argued that the shadow banking sector plays an important complementary role to the regulated banking sector in the credit-intermediation process, and that, although it should be encouraged, it should also be monitored. More broadly, Governor Carney described key initiatives undertaken by the FSB and stressed their full and consistent implementation. This implementation is essential to preserve the advantages of an open and globally integrated financial system, since market participants and authorities need to have confidence in the strength of financial institutions and markets in other countries. But Governor Carney also noted the risk that a return to a nationally segmented global financial system could reduce both financial capacity and systemic resilience, with major consequences for jobs and growth across our economies.

Governor Fischer focused his discussion on two macroprudential issues in Israel: measurement of stress and risks in the financial system, and coordination among macroprudential regulators. He highlighted the importance that central banks must now place on measuring risks (domestic and foreign, market, financial, bank, and macro), and also on how to communicate these risks.

Professor Kaplan closed off the conference by discussing the importance of leadership as we recover from the financial crisis, implement bank regulation and think about economic growth. He noted that central banks are currently taking a leadership role, but this is not enough for a strong recovery. To return to higher growth, Kaplan argued, economies in North America and Europe need more leadership from political authorities to undertake the drastic change required for prosperity.

List of Conference Papers and Literature Cited

- Allen, J., H. E. Damar and D. Martinez-Miera. 2012. "Consumer Bankruptcy and Information." Bank of Canada Working Paper No. 2012-18.
- Alvarez, F., A. Atkeson and P. J. Kehoe. 2007. "If Exchange Rates Are Random Walks, Then Almost Everything We Say About Monetary Policy Is Wrong." *American Economic Review* 97 (2): 339–45.
- Anand, K., J. Chapman and P. Gai. 2012. "Covered Bonds and Systemic Risk."
- Bruno, V. and H. S. Shin. 2012. "Capital Flows and the Risk-Taking Channel of Monetary Policy."
- Calomiris, C., F. Heider and M. Hoerova. 2012. "A Theory of Bank Liquidity Requirements."

- Caplin, A., J. H. Carr, F. Pollock, Z. Y. Tong, K. M. Tan and T. Thampy. 2007. "Shared-Equity Mortgages, Housing Affordability, and Homeownership." *Housing Policy Debate* 18 (1): 209–42.
- Caplin, A., N. B. Cunningham and M. Engler. 2009. "Rectifying the Tax Treatment of Shared Appreciation Mortgages." *Tax Law Review* 62 (4): 505–38.
- Financial Stability Board (FSB). 2011. "Shadow Banking: Strengthening Oversight and Regulation." Available at www.financialstabilityboard.org/publications/r_111027a.pdf.
- Gorton, G. B., A. Metrick and L. Xie. 2012. "The Flight from Maturity."
- Kung, E. C. 2012. "Continuous Workout Mortgages in a Structural Model of Housing and Mortgage Markets."
- Li, W. and Z. Gao. 2012. "Real Estate Investors and the Boom and Bust of the U.S. Housing Market." Available at <http://ssrn.com/abstract=2024199>.
- Mian, A., K. Rao and A. Sufi. 2011. "Household Balance Sheets, Consumption, and the Economic Slump." Available at http://faculty.chicagobooth.edu/amir.sufi/MianRaoSufi_EconomicSlump_Nov2011.pdf.
- Mian, A. and A. Sufi. 2012. "What Explains High Unemployment? The Aggregate Demand Channel." National Bureau of Economic Research Working Paper No. 17830.
- Myers, S. C. and R. G. Rajan. 1998. "The Paradox of Liquidity." *Quarterly Journal of Economics* 113 (3): 733–71.
- Obstfeld, M. and K. Rogoff. 2000. "The Six Major Puzzles in International Macroeconomics: Is There a Common Cause?" National Bureau of Economic Research Working Paper No. 7777.
- Roberds, W. and S. Quinn. 2012. "Responding to a Shadow Banking Crisis: The Lessons of 1763." Federal Reserve Bank of Atlanta Working Paper No. 2012-8.
- Shiller, R. J. 2008. *The Subprime Solution: How Today's Global Financial Crisis Happened and What to Do About It*. Princeton, NJ: Princeton University Press.
- . 2009. "Policies to Deal with the Implosion in the Mortgage Market." *The B.E. Journal of Economic Analysis & Policy* 9 (3): Article 4.
- Vickers, J. 2012. "Some Economics of Banking Reform." University of Oxford, Department of Economics Discussion Paper No. 632.