

Conference Summary: Financial Globalization and Financial Instability

Scott Hendry, *Financial Markets Department**

- *The Bank of Canada's annual conference, held in October 2010, brought together leading researchers from universities and central banks around the world to discuss the issue of Financial Globalization and Financial Instability. The conference covered such topics as the effects of financial globalization on risk, liquidity, and asset prices, the causes of crises and their effects, and appropriate regulatory responses.*

The trend over the past few decades has been towards greater financial globalization. In other words, the ties between the economies of different countries have grown stronger over time as markets for goods and services, as well as those for financial assets, have been liberalized to greater trade. Cross-border financial flows have increased tremendously, bringing with them benefits in terms of growth from new investment and export opportunities, as well as potential costs in terms of increased uncertainty, financial market volatility, and possibly even a greater probability and size of crises. The characteristics and size of the overall net benefits from this process are still the subject of much debate.

The conference was divided into six sessions plus a keynote address and a panel discussion. The remainder of this article briefly summarizes these papers and discussions.

Session 1: Financial Globalization and Risk

There has been strong trend growth in cross-border financial flows among industrial economies and between industrial and emerging-market economies. At the same time, economists have been debating the benefits and costs of such financial globalization. Some economists believe that unfettered capital flows pose a serious impediment to global financial stability. Others argue that increased openness to capital flows has proven essential for economic growth and for the development of financial markets in emerging-market economies, while significantly enhancing stability among industrialized countries. The two papers in this session further advance this debate.

Charles A. Trzcinka and Andrey D. Ukhov (Indiana University) examine both the costs and benefits associated with financial globalization and risk sharing.

* I would like to thank Greg Bauer, Antonio Diez de los Rios, Koralai Kirabaeva, Sermin Gungor, Teodora Paligorova, Jesus Sierra, and Jun Yang for putting together an excellent conference and for their input to this article.

They develop a new modelling approach that allows heterogeneous agents to endogenously choose whether to participate in financial markets. The paper studies the welfare effects of opening markets to foreigners, using a framework that models the opposing economic forces that affect decision making in an economy as it is opened to foreign investment. As is the case with other research on asset pricing in a multicountry model, it demonstrates that financial globalization generally reduces a country's cost of capital. In contrast to previous models, however, motives to trade and participate are endogenous, and the authors are able to compute the change in welfare of the domestic agents. The model shows that the decision to open markets affects risk-sharing arrangements in the economy and asset prices, as well as the welfare of agents. The removal of barriers changes the distribution across different types of investors, causing prices and the cost of capital to change. It may also make it more expensive for some domestic agents to participate in the risk-sharing offered by risky domestic assets and will lead to a decrease in their welfare. Contrary to previous models, their model shows that opening markets is not Pareto optimal: the welfare of certain domestic agents, particularly demanders of risky assets, may be lower after the opening of markets.

The findings have political-economy interpretations and policy implications. Investment barriers may enhance a country's welfare, and the decision to maintain such barriers may be an endogenous, rational economic decision and not the result of agency costs or political failure. The argument for liberalization may be refined by identifying the set of agents who find risk sharing attractive after markets are opened. The timing of liberalization is not random, and it depends on endowments, prices, and risk exposure. The model also provides a rational explanation for the historical evidence of liberalization and the reversals of liberalization found by previous studies.

Gianni De Nicolò (International Monetary Fund) and **Luciana Juvenal** (Federal Reserve Bank of St. Louis) use data for a large number of advanced and emerging-market economies from 1985 to 2009 to investigate the real effects of financial integration on economic growth. First, the authors document the dynamics of financial integration. Strong evidence is given of a declining trend in the cross-country dispersion of equity premiums, which indicates increased integration in international financial markets. This result is driven primarily by increases in the financial integration of emerging economies. Second, the authors investigate the relation between financial

integration and economic growth. New measures are constructed for the level of financial integration and "risk-adjusted" growth opportunities. The measure of financial integration is given by the difference between a country's equity premium and that of the group average at each date. The measure of "risk-adjusted" growth opportunities is a Sharpe ratio-type measure¹ of the market price-to-earnings (PE) ratio relative to the global PE ratio. The paper tests whether financial integration predicts "risk-adjusted" growth opportunities, as well as the converse, both at the global and regional levels with monthly data. Increases in financial integration are found to robustly and significantly predict better growth opportunities, while "risk-adjusted" growth opportunities do not necessarily predict advances in financial integration.

The authors also examine the predictive impact of financial integration on actual growth and on a proxy of growth volatility, using annual data. They find that advances in financial integration predict higher growth, lower growth volatility, and lower probabilities of systemic real risk for equity markets. Three indirect channels through which financial integration may foster economic growth are explored. Financial integration is found to foster domestic financial development and the liquidity of equity markets. Finally, they find that better-quality institutions and corporate governance are associated with higher levels of financial integration. Each of these effects promotes economic growth over the long term.

Session 2: Liquidity

Liquidity in financial markets is important for the stability and efficiency of the financial system. Sudden and extreme shifts in market liquidity may create a channel through which contagion can grow and propagate systemic risk throughout the economy. The two papers in this section analyze the contributing role of liquidity shocks to financial fragility.

Maya Eden (MIT) studies how financial integration between emerging and developed economies affects the global distribution of output volatility. She presents a model that explains why shocks to external funding are an important source of crises in emerging markets but are typically irrelevant in developed countries. The paper proposes a novel link, based on the interaction between financial distortions and the process of

¹ The Sharpe ratio compares a portfolio's return to a risk-free return, and then scales the result by the variance of the portfolio's return. The higher the Sharpe ratio, the better is the portfolio's return, given the amount of risk taken.

financial integration, to explain the interdependencies between the vulnerability of emerging economies to shocks to external funding and the moderation of liquidity-driven fluctuations in output in the developed world prior to the recent crisis. The model also generates volatility patterns that are consistent with the amplification of the subprime-mortgage crisis. In particular, it suggests that financial integration between developed and emerging economies may have led to endogenous structural changes in the financial system that set the stage for the crisis. These structural changes include the loosening of lending standards, increased securitization, and increased reliance on securitized products in banks' balance sheets.

Koralai Kirabaeva (Bank of Canada) studies the interaction between adverse selection, liquidity risk, and beliefs about systemic risk in determining market liquidity, asset prices, and welfare. The paper characterizes the portfolio choices of financial institutions between safe and risky assets when systemic risk is anticipated, and examines how investors' beliefs may contribute to market freezes. In the presence of information and liquidity frictions, financial institutions do not fully internalize the impacts of their actions on market liquidity and overinvest in risky, illiquid assets, which creates systemic externalities. The paper illustrates how even a small amount of adverse selection in the asset market can lead to fire-sale pricing and, possibly, to a market breakdown if it is accompanied by a flight to liquidity, an underestimation of systemic risk, or uncertainty about asset values. The paper further explores the effectiveness of possible policy responses, such as liquidity provision and purchases of low-quality assets, as well as an ex-ante requirement of larger liquidity holdings.

Session 3: Securitization and Capital Flows

Volatile capital inflows played an important role in aggravating the recent financial crises. The two papers in this section examine how such capital inflows affected housing markets and yields on U.S. Treasury bonds.

Filipa Sá (University of Cambridge), **Pascal Towbin** (Banque de France), and **Tomasz Wieladek** (Bank of England) examine the effects of capital inflows, monetary policy, and financial innovation on housing market activity. The study is motivated by recent discussions on how these factors affect housing markets.

One argument highlighted in the paper is that expansionary monetary policy has kept interest rates low, which has fuelled the demand for housing. Others attribute the growth in the housing market to global imbalances—countries with excessive savings and underdeveloped capital markets invest in countries with developed capital markets and thus depress the price of credit in the latter. It is also believed that interest rate changes have a much stronger impact on housing activity in countries with high consumer leverage and active securitized markets.

Using data for 18 OECD countries from 1984 to 2007, the study offers several results. Capital inflows and monetary policy shocks have a significant positive effect on real credit to the private sector, real house prices, and residential investment. These housing variables are more sensitive to shocks in countries with a developed mortgage market. The authors reason that in these countries, households can pledge a larger fraction of their house's value as collateral and increase their leverage, which makes them more sensitive to changes in the value of that collateral. Another finding is that the response of housing activity to capital inflows is larger and lasts longer in countries with developed mortgage markets.

The results provide input to the debate on global imbalances as a contributing factor to the crisis. Capital inflows to countries with developed mortgage markets expose their housing sector to capital-inflow shocks.

Carol Bertaut, **Laurie Pounder DeMarco**, **Steve Kamin**, and **Ralph Tryon** (Board of Governors of the Federal Reserve System) study the role played by inflows of international capital to the United States in the financial crisis. The authors document that foreign flows into corporate debt—including asset-backed securities (ABS)—were as large as those into U.S. Treasury bills and U.S. Agency securities. Inflows from Emerging Asia and the Middle East were primarily in the form of U.S. Treasuries and Agencies, while inflows from Europe were in the form of corporate debt and ABS. The non-European countries financed their investments through current account surpluses, while the European countries expanded their external liabilities.

The paper argues that global investors in U.S. Treasuries pushed down yields on safe assets to such an extent that the appetite for riskier assets in general, and for subprime mortgages in particular, was greatly increased. On the other hand, foreign investors' demand for risky assets contributed to the decline in the interest rates on ABS relative to those on safe

assets. Furthermore, it led to an increase in the supply of ABS, thereby directly increasing the flow of resources to subprime and other risky borrowers.

Using a calibrated portfolio-balance model, the authors show that inflows from non-European countries suppressed the yields on U.S. Treasury bills. Foreign purchases of ABS, mainly by European investors, pushed down the yield spreads on the mortgages underlying these securities.

Session 4: Regulatory Responses

Historical evidence proves that financial systems are prone to periods of instability. The global financial crisis that began in mid-2007 has highlighted the ongoing debate about designing new and more effective financial regulation and supervision. The two papers in this session examine optimal regulatory policies in order to prevent future crises.

Javier Bianchi (University of Maryland) and **Enrique G. Mendoza** (University of Maryland and NBER) examine overborrowing² and financial crises in an equilibrium model with collateral constraints. The authors focus on the comparison of the allocations and welfare attained by private agents facing collateral constraints in a decentralized competitive equilibrium with those attained by a social planner subject to the same constraints. The private agents take the price of their collateral assets as given. As a result, a “credit externality” arises because they do not internalize the effects of their individual borrowing plans on the market price of collateral and on the wage costs relevant for working capital. On the other hand, the constrained social planner internalizes these effects and takes into account how current borrowing choices affect future asset prices and wages.

Although the credit externality results in only a small overborrowing compared with the constrained-efficient allocations of the social planner, it produces financial crises that are significantly more severe and more frequent than in the constrained-efficient equilibrium, and produces higher variability in the business cycle in the long run. The credit externality also produces excess returns on assets, Sharpe ratios, and market prices of risk that are much larger than in the constrained-efficient equilibrium. The authors suggest the introduction of an optimal schedule of

state-contingent taxes on debt and dividends. In other words, the policy implication of their model is a tax on debt and dividends that should be higher in bad times, i.e., when the economy is building up leverage and becoming vulnerable to a financial crisis, but before a crisis actually occurs, and lower in good times. This is to induce private agents to value the accumulation of savings more than they do in the competitive equilibrium without taxes.

The second paper in this session by **Alan D. Morrison** (University of Oxford and CEPR) and **Lucy White** (Harvard Business School and CEPR) sheds light on the optimal regulation of the financial system by a *common* regulator in order to reduce the risk of inter-bank contagion. The authors demonstrate that the reputation of the common regulator can be a cause of financial contagion, and, therefore, it may be socially desirable that regulators engage in ex post “reputation management.” Such management can be achieved through private or public policies, depending on the regulator’s initial reputation.

In their model, the failure of one bank can undermine the public’s confidence in the competence of the banking regulator and, hence, in other banks chartered by the same regulator. Thus, depositors may withdraw funds from the other banks, even when the returns on the assets in which those banks invest are uncorrelated and there is no interbank lending. Under these panic circumstances, it can be optimal for the regulator to exercise forbearance privately towards a failing bank in order to conserve its own reputation and hope that the bank—and, hence, other vulnerable banks—survives. In contrast, public bailouts are ineffective in preventing panics because they do not conserve the regulator’s reputation ex post. Therefore, when forbearance is public, it may need to be supplemented by additional and costly measures, such as increased deposit insurance. Whether transparency or privacy is optimal ex ante depends on the regulator’s initial reputation and the likely size of shocks to its reputation. Regulatory transparency improves confidence ex ante but impedes the regulator’s ability to stem panics ex post. Hence, privacy and discretion may be socially preferable for regulators with strong reputations; however, transparency is essential if the regulator’s reputation is initially very poor.

² Overborrowing is defined as the difference between the amount of credit that an agent obtains acting individually in an environment with a given set of credit frictions, and the amount obtained by a social planner who faces the same frictions but internalizes the general-equilibrium effects of its borrowing decisions.

Session 5: Crises and Expected Returns

The global 2007–09 crisis has provided a clear illustration for the existence of “economic disasters” and the impact of such rare events on the returns obtained by international investors. Along these lines, Barro (2006) finds that, despite being low-probability events, such economic disasters can have a large impact on expected returns and can even explain asset-pricing puzzles, such as the equity premium. The papers in this session address whether the risks of global economic disaster can also explain international asset-pricing puzzles, such as uncovered interest rate parity.

François Gourio (Boston University), **Michael Siemer** (Boston University), and **Adrien Verdelhan** (MIT) develop a rich two-country model of the real business cycle with a small, yet time-varying, risk of a global economic disaster (i.e., a large drop in global consumption) and where countries differ in their exposure to this global risk. The authors find that changes in the probability of a worldwide disaster lead not only to variations in risk premiums, but also induce variability in macroeconomic quantities. In particular, as the probability of a disaster increases, investment becomes less attractive, and thus investment and output fall. On the other hand, demand for pre-cautionary savings increases, leading to a drop in the interest rates on risk-free assets, while yield spreads on risky assets increase. For this reason, capital is pulled out of the riskier country, which experiences the largest recession, as investors seek safety. The model also rationalizes the risk premium on carry trade because, in their setup, the currency with high interest rates depreciates when global risk increases.

Alexandre Jeanneret (HEC Montréal) develops and calibrates to U.S. data a two-country general-equilibrium model with international trade, where the default decisions of firms and governments are endogenous. In his model, a negative economic shock in the foreign country deteriorates the fiscal position of the foreign government and increases the risk of a sovereign default abroad and of a contraction in economic growth in the domestic country. Thus, an increase in sovereign risk reduces the expected value of future export revenues for U.S. firms through a depreciation of the terms of trade and triggers an incentive for portfolio rebalancing towards the risk-free bond, thus depressing equity prices in both countries. The risk of a contraction in economic growth abroad amplifies, through these two channels, the initial fall in the equity values of U.S. firms and thus the rise in volatility of equity returns in the United States.

Session 6: Global Imbalances and Asset-Price Dynamics

Global imbalances have been cited as a possible cause of the recent financial crisis, since it is believed that they may have contributed to the decrease in interest rates that, in turn, increased the risk-taking behaviour of market participants. However, empirical evidence of a significant impact on the prices of domestic assets from foreign purchases of net assets is still inconclusive. On the other hand, it is also possible that changes in asset prices may have led to capital movements; in fact, at the aggregate level, a country's net foreign asset position necessarily embeds expectations about future asset prices. The papers in this session attempt to shed some light on the causal relationship between asset prices and international capital flows.

Jesus Sierra (Bank of Canada) studies the impact of international capital flows on interest rates through risk premiums. Interest rates contain two components: expectations of future short-term rates and expected excess returns (risk premiums). Given that the central bank does not set its policy rate in response to foreign purchases of long-term bonds, any impact of capital flows on interest rates must take place through risk premiums. If we assume rational expectations, this suggests that the impact of capital flows on asset prices could be measured by calculating the correlation between future realized excess returns and current flows. Inflows of funds by foreign official institutions have a negative and non-linear impact on risk premiums and thus appear similar to relative supply shocks, while private net purchases, with a positive and linear effect, absorb excess supply and are thus compensated in equilibrium for this service. The results do not support the view that international capital flows were among the main drivers of the decrease in long-term U.S. rates from 1994 to 2007.

In the second paper in this session, **Martin D. D. Evans** and **Alberto Fuertes** (Georgetown University) examine the channels through which the net external asset position of the United States deteriorated over the past 35 years. They find that most of the quarter-by-quarter changes in the U.S. external position between 1973 and 2008 are due to news (shocks) about future returns and trade flows, with news about future returns dominating news about future trade flows. Over long horizons, however, the changes reflect prior expectations about how the United States would meet its international financial obligations. Their results suggest that only through *both* favourable

changes in return differentials and future trade surpluses will the United States be able to return to an external balance and that this process could take over 13 years and involve a significant real depreciation of the dollar.

John Kuszczak Memorial Lecture

Eswar Prasad (Cornell University and Brookings Institution) delivered the conference's keynote speech. He discussed how globalization created channels for the cross-country spillover of shocks, and examined the implications and future prospects of global imbalances. The speech covered lessons and challenges for monetary policy in an integrated world economy with open capital accounts. In particular, he discussed the scope of a central bank's objectives, including whether and how asset prices might be incorporated into the monetary policy framework, and what the optimal degree of central bank independence is. Some potential research topics arising from these issues were also outlined. For example, he called for further exploration of the connections between price stability and financial stability, and for the development of more robust monetary policy frameworks that address challenges faced by emerging markets in the post-crisis world.

Panel Discussion: Whither Financial Globalization?

The conference concluded with a discussion of the future prospects for financial globalization by a panel consisting of **Timothy Lane** (Bank of Canada), **Stanley Zin** (New York University), and **Martin Evans** (Georgetown University).

Timothy Lane led off the discussion with a brief review of some of the costs and benefits of financial globalization and of recent financial crises that have hit the global economy. In advanced economies, financial globalization was not seen as a real problem until recently, and the probability of a crisis was thought to be remote. There was a much larger concern that financial globalization could cause problems in emerging-market economies by making macroeconomic management much more difficult. In the wake of the Asian crisis, there was only weak evidence that liberalization was good for growth. The most recent global financial crisis largely reflected a combination of macroeconomic imbalances, a search for yield, and pervasive weaknesses in the financial systems

of many countries. In the wake of the crisis, some are arguing that global capital flows should be limited, but international efforts are instead focused on making the global financial system more robust. Financial reform is under way on capital regulation, infrastructure, resolution policies, and system-wide prudential policies. These efforts need to promote information sharing in the regulation of globalized financial institutions and to monitor the risks possible from regulatory arbitrage. There is a risk that regulation could become a source of financial protectionism going forward, but international efforts are under way to counter this risk and allow globalization to promote growth.

Stanley Zin expressed the belief that the trend towards financial globalization will continue strongly into the future and will not be derailed by any regulatory changes because the underlying forces promoting it are simply too strong. One of the most important driving factors that he cited was demographic imbalances (e.g., an aging population and global population distribution). Financial assets are designed to move capital across time, space, and generations, all of which will support financial flows going forward. Zin then went on to discuss some ideas on how we should structure global financial markets. He argued there is a strong need for international coordination of regulatory initiatives and that there should be a preference for rules versus discretion in the design of policy. Rules are more appropriate for keeping regulators from being co-opted by business and for maintaining a stable environment. Solid regulation should be built and then maintained so that, going forward, decisions can be made with more certainty with respect to the financial environment.

Martin Evans also expressed the opinion that financial globalization will continue unabated because of strong underlying drivers, such as demographic trends, continuing advancements in telecommunications, and the difficulty in coordinating international regulatory efforts (which creates large opportunities for regulatory arbitrage). He went on to discuss some of the gaps in our knowledge that need to be addressed by researchers. For example, he called for extensive work on the links between the fields of finance and macroeconomics. Our macroeconomic models need to incorporate more detail on how financial markets function, the roles of market-makers and heterogeneous agents, and the nature of information problems. This combination of macroeconomic and financial factors is required for the design of optimal regulatory policy.

Literature Cited and List of Conference Papers

The conference papers cited in this article are also available on the Bank's website at http://www.bankofcanada.ca/en/conference_papers/economic_conference2010/papers.html.

- Barro, R. J. 2006. "Rare Disasters and Asset Markets in the Twentieth Century." *The Quarterly Journal of Economics* 121 (3): 823–66.
- Bertaut, C., L. Pounder DeMarco, S. Kamin, and R. Tryon. 2010. "ABS Inflows to the U.S. and the Global Financial Crisis."
- Bianchi, J. and E. Mendoza. 2010. "Overborrowing, Financial Crises and 'Macro-Prudential' Taxes." NBER Working Paper No. 16091.
- De Nicolò, G. and L. Juvenal. 2010. "Financial Integration, Globalization, Growth and Systemic Real Risk." Federal Reserve Bank of St. Louis Working Paper No. 2010-012D.
- Eden, M. 2010. "Financial Distortions and the Distribution of Global Volatility."
- Evans, M. and A. Fuertes. 2010. "Understanding the Dynamics of the US External Position."
- Gourio, F., M. Siemer, and A. Verdelhan. 2010. "International Risk Cycles."
- Jeanneret, A. 2010. "Sovereign Default Risk and the U.S. Equity Market."
- Kirabaeva, K. 2010. "Adverse Selection, Liquidity, and Market Breakdown." Bank of Canada Working Paper No. 2010-32.
- Morrison, A. and L. White. 2010. "Reputational Contagion and Optimal Regulatory Forbearance."
- Sá, F., P. Towbin, and T. Wieladek. 2010. "Low Interest Rates and Housing Booms: The Role of Capital Inflows, Monetary Policy and Financial Innovation."
- Sierra, J. 2010. "International Capital Flows and Bond Risk Premia." Bank of Canada Working Paper No. 2010-14.
- Trzcinka, C. and A. Ukhov. 2010. "Financial Globalization and Risk Sharing: Welfare Effects and the Optimality of Open Markets."