



BANK OF CANADA

# Financial System Review

**June 2004**

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**D**evelopments

and

**T**rends

#### Notes

The material in this document is based on information available to *26 May* unless otherwise indicated.

The phrase “major banks” in Canada refers to the six largest Canadian commercial banks by asset size: the Bank of Montreal, CIBC, National Bank, RBC Financial Group, Scotiabank, and TD Bank Financial Group.

## Introduction

*This section of the Financial System Review examines the recent performance of the Canadian financial system and the factors, both domestic and international, that are influencing it. In each issue, one or more subjects of particular interest are discussed as highlighted topics.*

### Key Points

- Stronger-than-expected global economic growth has significantly reduced global macrofinancial concerns.
- The Canadian financial system has benefited from an improved global economic outlook, continued favourable financing conditions, and ongoing efforts by corporations to strengthen their balance sheets.
- Rapid adjustment of financial asset prices worldwide cannot be ruled out, as markets respond to changing expectations regarding policy interest rates in several countries.

Economic forecasts of global growth in 2004 have been revised upwards significantly. In addition, favourable financing conditions and the efforts of firms to restructure their balance sheets have reduced financial vulnerabilities worldwide.

The strengthening performance of the global economy contributed to a substantial rise in corporate profits and share prices in 2003, improving the quality of firms' credit and increasing the willingness of investors to assume risk.

Over the past year, several factors have played a role in the significant increases in the prices of

various financial assets. These increases were also highly correlated. This issue of the *Review* examines a possible reversal in these factors, including further changes in market expectations about increases in policy interest rates, especially in the United States. The analysis presented here suggests that, overall, economic fundamentals should continue to support the prices of financial assets globally. However, other factors, such as a reduction in leverage and risk tolerance, could put additional pressure on asset prices.

On balance, conditions in the Canadian financial system have improved since the autumn. The profitability of Canadian banks rebounded throughout 2003 and the beginning of this year. Improved risk management has allowed banks to sustain lower losses on loans than during previous business cycles. Other financial institutions also posted solid results.

Canadian banks have increasingly focused their activities in the retail market, including the mortgage market, which has also contributed to their financial success. New trends in the Canadian housing and mortgage markets are evaluated in this *Review*, especially in terms of the implications for housing prices, financial institutions, and financial stability. The analysis suggests that these trends pose only a minimal risk to the Canadian financial system.

Risks to the global financial system remain, however. In particular, the U.S. current account deficit, which is matched by corresponding imbalances elsewhere in the world, has increased since 1997. In the long term, these global imbalances will need to be resolved. The extent of the impact that these adjustments will have on the global financial system depends on its flexibility and on the soundness of macroeconomic policies.

## Highlighted Issues

Two issues are discussed in this section: factors that are affecting the prices of financial assets worldwide and the structural features of the Canadian markets for housing and mortgage financing.

### Factors affecting the prices of financial assets worldwide

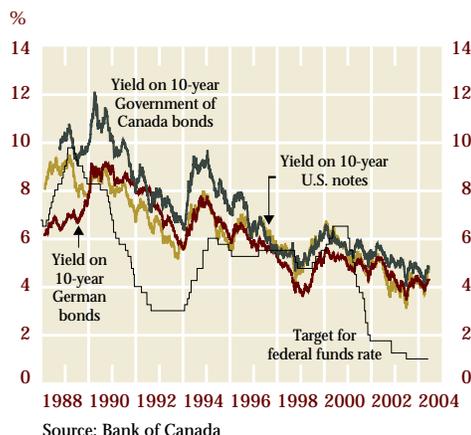
A set of favourable circumstances led to impressive gains in the prices of financial assets worldwide in 2003. Although these price movements have consolidated since the beginning of 2004, their strong correlation with each other in 2003 has raised concern about the risks of a similarly correlated reversal. In this section of the *Review*, we look at some of the factors that have been supporting global valuations and discuss their sustainability. The discussion suggests several reasons why the risk of a general reversal in these factors is limited. It also suggests, however, that investors should prepare for increases in policy rates and for the possibility of some further decline in asset prices. Indeed, since mid-April, prices for certain financial assets have already declined.

#### *Ample global liquidity*

In 2003, weakness in aggregate demand, low inflation, and accommodative monetary policy combined in most industrialized countries to help push yields on government securities to historic lows (Chart 1). This, in turn, contributed to a flow of funds into riskier assets, with higher perceived returns—notably, equities, corporate bonds, emerging-market debt, and real estate.

Global equity markets have appreciated by 20 to 30 per cent since March 2003 (Chart 2). Prices of corporate and emerging-market bonds have also risen markedly, resulting in much narrower yield spreads against government securities (Charts 3 and 4). In Canada and the United States, weighted average corporate spreads have declined by about 80 and 165 basis points, respectively, and now stand at roughly one-third of the highs recorded in October 2002. The spread compression has been most dramatic for the lowest-rated bonds. Spreads on emerging-market bonds, as measured by J.P. Morgan's Emerging Market Bond Index (EMBI+), have also fallen about 515 basis points from a recent peak in October 2002 and, as of late May, stand at about 510 basis points.

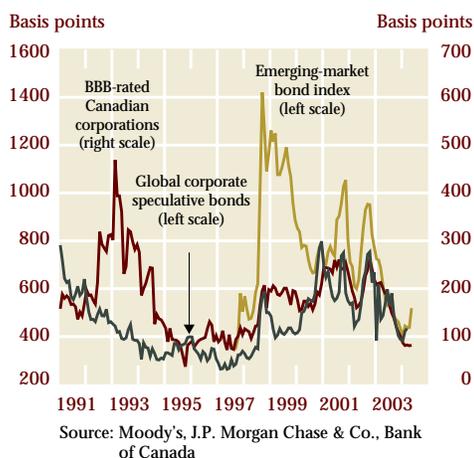
**Chart 1 U.S. Policy Rate and Yields on Government Bonds**



**Chart 2 Price Indexes for Equities and Corporate Bonds**



**Chart 3 Bond Spreads Relative to U.S. Treasuries**

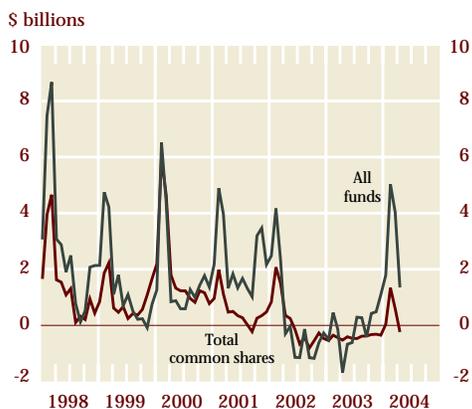


**Chart 4 Sovereign Bond Spreads (EMBI+)**

Source: J.P. Morgan Chase &amp; Co.

**Chart 5 Net New Sales of Mutual Funds in Canada**

Excluding reinvested distributions



Source: The Investment Funds Institute of Canada

*Strong demand for riskier assets*

As indicated above, North American equity markets recorded impressive gains in 2003. (See Box 1 for an assessment of current equity markets against common valuation measures.) This performance has contributed to strong net inflows into mutual funds, including, more recently, equity funds (Charts 5 and 26). Retail investors appear to have renewed their interest in equities, and the impact on investor confidence of corporate scandals and the sharp downturn in the equity market of 2001 seems to have receded.

Across a range of global prices for financial assets, several measures indicate that investors were willing to bear more risk in 2003.<sup>1</sup> These measures suggest that there was a generalized increase in the demand for risky assets in 2003. As of April 2004, however, these measures indicate a reversal in investors' perception of risk.

Globally, net capital flows to emerging markets increased sharply in the final months of 2003. The Institute of International Finance expects a further increase in net flows in 2004, with the bulk of capital coming from private creditors. Commercial banks were net lenders to emerging-market countries in 2003 for the first time since 1997. This rise in net capital flows suggests increased investor appetite for risk. However, anecdotal evidence received since mid-April suggests that capital flows to emerging markets have turned negative. This may be related to a reduction in portfolio leverage and diminished investor tolerance for risk associated with upward revisions to expectations regarding U.S. interest rates.

*Low supply of riskier assets*

Although the gross issuance of high-yield U.S. corporate debt rose 120 per cent in 2003, reaching a near-record level of US\$149.1 billion, it is estimated that 80 per cent of this was for refinancing purposes.<sup>2</sup> Canadian firms also moved aggressively to refinance their debts at lower costs. As a result, there was a record gap in 2003 between gross and net bond issuance as a

1. State Street, UBS, Deutsche Bank, J.P. Morgan, the IMF, and the BIS have all developed measures of risk appetite or aversion.
2. Estimate by J.P. Morgan. A record of US\$150.8 billion was raised in 1998.

**Box 1**

## North American Equity Valuations

Various methods are commonly used to assess whether stock markets are reasonably valued. (See Hannah 2000.) Price-earnings ratios, the dividend-discount model, and Tobin's Q are commonly used "rules of thumb." Each approach has its shortcomings, but valuable insight can be gained by comparing current measures with their historical averages.

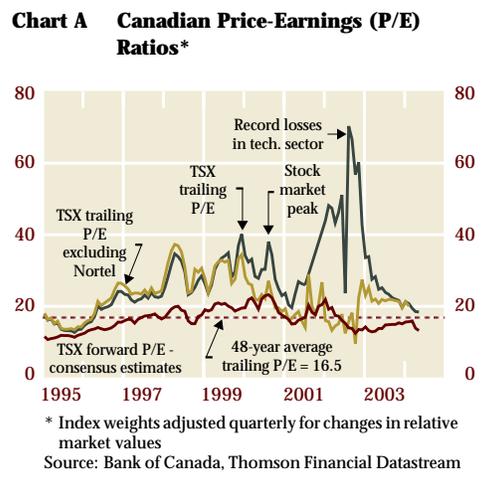
Price-earnings ratios can be calculated from either actual or forward (12-month-ahead forecasts) earnings (Chart A). Large deviations from the mean typically generate increased scrutiny.

The dividend-discount model comes in many forms, all of which attempt to assess share-price valuations by deriving the flow of dividends that they imply. In its simplest form, the model yields the growth rate of dividends that, if sustained forever, would "validate" current share prices (Table A). If the implied long-run real growth rate of dividends is above the long-run growth rate of real GDP, then share-price valuations can be interpreted as unsustainable, since, by implication, dividends (and corporate profits) as a share of GDP would increase implausibly. The results are, however, sensitive to the assumed equity-risk premium. Although historically it has averaged around 3 per cent in Canada, some argue that the premium has diminished in recent years.<sup>1</sup> If correct, this would increase the sustainable level of share prices for a given future evolution of dividends.

Tobin's Q (Chart B) compares the value of the stock market with the net worth of firms at market prices. When Q is greater than one, firms can issue equity at a value that is higher than the replacement cost of their assets. This would imply either that stocks are overvalued or that the market is expecting higher growth in earnings from intangible assets (such as human capital or franchise value), or both.

All three of these simple measures suggest that North American stock valuations are similar to those seen in 1997, when corporate profits were also rising. In addition, price-earnings ratios are near or slightly above their historical averages, and the marginal cost of capital is roughly equal to its marginal return. The dividend-discount model, however, suggests that, unless the equity-risk premium is below its historical average, current North American equity markets embody a higher real dividend growth rate than should be expected, given long-run growth rates for real GDP.

1. Based on the historical difference between earnings yields and estimated long-run real interest rates.

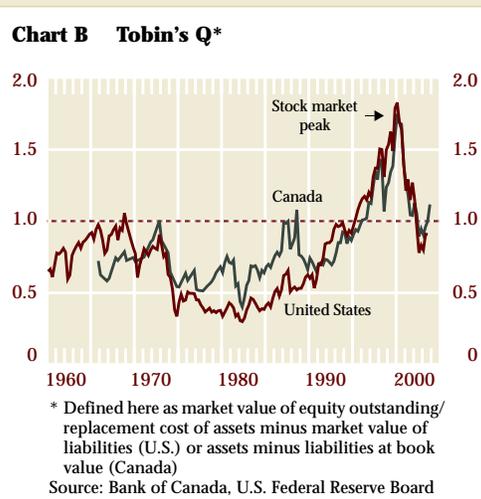


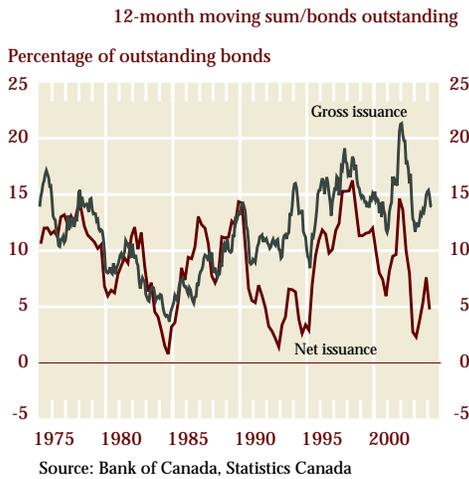
**Table A**  
**Dividend-Discount Model**

Per cent

	Implied real long-run growth of dividends, assuming a risk premium of:				Real dividend growth	Equity-risk premium	Real GDP growth
	2%	3%	4%	6%			
	Historical average 1958–2003						
TSX March 2004	2.9	4.0	5.0	7.0	3.3	3.1 <sup>a</sup>	3.6
TSX 1997 quarterly average	2.5	3.5	4.5	6.5			
United States S&P 500 March 2004	2.4	3.4	4.3	6.4	3.5	4.3	3.4

a. Calculated over the 1990–2003 period in light of data limitations



**Chart 6 Issuance of Canadian Corporate Bonds**

percentage of outstanding Canadian corporate bonds (Chart 6).

Similarly, liability-management operations represented the majority of capital transactions by emerging markets in 2003, as governments took advantage of low interest rates. These operations were aimed at improving the structure of their domestic and external debt.<sup>3</sup>

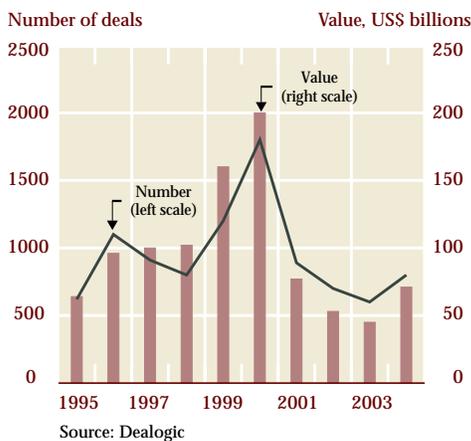
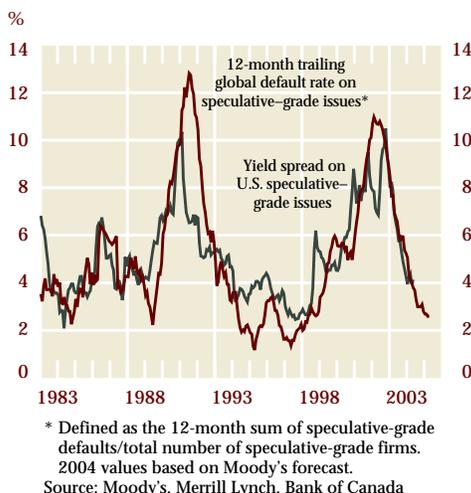
Very recently, there are signs that the supply of higher-yielding riskier assets may be growing. Initial public offerings of equities have risen thus far in 2004, particularly in Asia (Chart 7). Net issuance of high-yield securities has also risen so far this year. Nonetheless, despite rising demand for riskier assets, global net bond and equity issuance reached a multi-year low in 2003, and is generally expected to remain moderate.

### *Diminished credit risk*

The significant narrowing in corporate bond spreads in 2003 can also be attributed to a decline in perceived overall credit risk. Global default rates have fallen from almost 11 per cent in early 2002 to just over 5 per cent in early 2004, and are forecast by Moody's to fall below 3 per cent by the end of the year (Chart 8).

Several technical factors are also contributing to the expected decline in global credit risk. The significant number of defaults over the 2000–2002 credit cycle removed a large pool of speculative-grade borrowers from global bond-yield indexes, thus increasing the aggregate credit quality of the pool of issuers tracked by those indexes. In addition, Moody's estimates that U.S.-dollar-denominated corporate refunding requirements over the next three years will fall by approximately one-third, because several firms refinanced at favourable longer-term rates over the past year. (A reduction in refunding risk translates into a lower probability of default.)

Finally, the liquidity of the corporate bond market has improved considerably over the past several years, contributing to the more efficient pricing of credit risk. For instance, the annualized turnover in Canadian corporate bond markets now represents 32.5 per cent of outstanding

**Chart 7 Global Initial Public Offerings (IPO)****Chart 8 Indicators for Corporate Bonds**

3. These activities included lengthening the maturity profile of the debt, obtaining the release of collateral, and reducing potentially volatile debt linked to either foreign exchange or short-term interest rates (IMF 2004).

bonds, and trading volumes are more than double their levels in 1998, a time when market illiquidity exacerbated the widening of spreads.

### *Fundamentals are improving*

The broad-based compression in global bond spreads and the rise in equity prices through 2003 and into 2004 also reflect improved prospects for the global economy, emerging-market fundamentals, and strengthened corporate balance sheets and profitability.

In recent years, many emerging markets have adopted market-oriented macroeconomic policies.<sup>4</sup> The adoption of floating exchange rates, better debt-management strategies, and the lowering of inflation rates have put emerging markets in a better position to deal with adverse shocks. Current account surpluses and the accumulation of foreign exchange reserves in many countries have also reduced external vulnerabilities. This has helped over 50 per cent of sovereign emerging-market bond issues to receive an investment-grade rating, whereas only 10 per cent received such a rating in 1998, at the height of the financial crisis in emerging markets.

In the United States, strong gains in productivity have supported corporate profit margins. In 2003, Canadian corporate profits also rose 37 per cent from 2002. Profits as a share of GDP are now above their historical average (Chart 9). According to the May poll of market analysts by Thomson Financial, Canadian corporate earnings are expected to grow by a further 26.4 per cent in 2004.

### *Current risks*

Despite the improvement in the global economy and in corporate fundamentals, risks for current asset valuations remain. First, the global economy continues to face risks from persisting global imbalances. (See p. 12 of this *Review*.) The adjustment process involved in reducing these imbalances is complex and could entail economic disruption. Second, heightened geopolitical uncertainties could also weigh on the prices of certain financial assets.

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4. Examples include Chile and Mexico, where solid policies have been implemented for over a decade, and Russia, which has undertaken impressive structural reforms. More recently, Brazil has adopted tax and pension reforms that contribute to a better macroeconomic framework.

Third, owing to the strong correlation in price gains for riskier assets in 2003, there could be a strong, similarly correlated reversal. Such a reversal could be triggered, for example, by large upward revisions to expectations regarding policy interest rates. Such an unexpected increase could reduce the demand for riskier assets by those investors who are targeting notional returns. It would also erode the profitability of highly leveraged trades that were structured to take advantage of very low interest rates. The current environment of ample liquidity and low volatility has also allowed trading portfolios based on value-at-risk (VaR) capital thresholds to become increasingly leveraged. A general reduction of portfolio leverage, should it occur rapidly, would also lead to increased volatility.

The valuations of emerging-market debt have reversed this year in response to a change in expectations regarding the extent and timing of future policy tightening by the U.S. Federal Reserve (Chart 10). The reaction has been significant. Recent price movements may also be indicative of risks reminiscent of the sharp increase in Brady Bond spreads that occurred when the Fed began increasing policy rates in 1994 (Chart 11).<sup>5,6</sup> Spreads for most countries, however, remain below their long-term averages. Nevertheless, rising interest costs for certain emerging-market countries, such as Brazil, could make it more difficult for these countries to manage their debt obligations over the medium term.

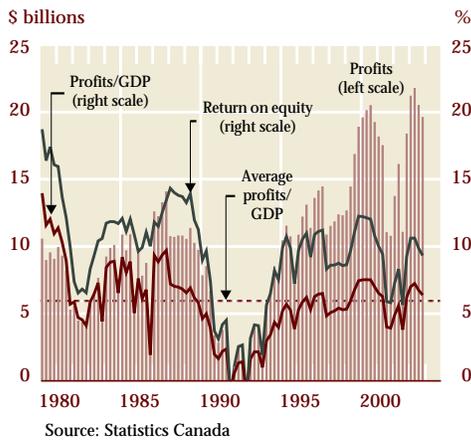
Assessment of the factors that have been supporting global valuations suggests that several of them should continue to support the prices of global financial assets. The global economy is in the early stages of a cyclical expansion, and improving corporate fundamentals should help underpin asset valuations. The relatively low levels of net new corporate and equity issuance should also continue to support market valuations. Many emerging-market countries have also covered a large share of their borrowing needs for 2004.

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5. Brady Bonds are U.S.-dollar-denominated bonds issued by an emerging market and are collateralized by U.S. Treasury zero-coupon bonds.

6. More generally, however, experience suggests that a gradual rise in the cost of capital can occur without a major disruption in emerging-market financing, provided that investor tolerance for risk and market liquidity remain supportive.

**Chart 9 Profitability of the Canadian Non-Financial Sector**



The assessment also suggests, however, that investors should prepare for the possibility of some further decline in financial asset prices. This could result from a potential reduction in investor leverage and risk tolerance associated with changes in expectations regarding increases in policy interest rates in several countries. In addition, investors should be aware that portfolio diversification may not be as beneficial as in the past if a correlated reduction in global asset prices were to occur.

### Structural features of the Canadian housing and mortgage-financing markets

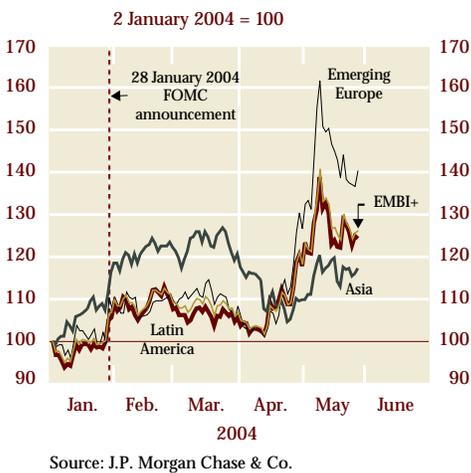
In this second Highlighted Issue, selected features of residential home financing are assessed with a view to drawing inferences about their implications for the efficiency and stability of the Canadian financial system. These assessments are made in light of recent Canadian developments and evidence from other countries of how such features can contribute to financial system risk.

These features can affect the financial system through various channels. First, with Canadian real estate assets accounting for 45 per cent of personal net worth (2003Q4), housing equity represents an important component of household net worth and thus influences investment and consumption decisions, as well as access to various sources of credit. Second, the introduction and growing popularity of financing options (such as variable-rate or high-ratio mortgages) may affect the dynamics of house prices. Third, the leveraged nature of the financial arrangements supporting transactions in the housing market can amplify the impact of changes in house prices on personal net worth. Fourth, residential mortgages are an important segment of the loan portfolios of many financial institutions.

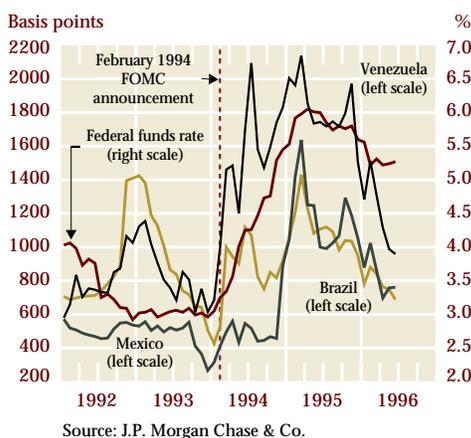
Overall, the analysis presented below suggests that mortgage-lending practices are becoming increasingly flexible. At the current time, these developments are also found to support financial stability.

Only 54 per cent of homeowners, representing 37 per cent of households, have mortgages. Nevertheless, mortgage debt accounted for 61 per cent of total household debt in the fourth quarter of 2003. Residential mortgages

**Chart 10 Sovereign Bond Spreads (Emerging-Market Bond Index +) Relative to U.S. Treasuries**



**Chart 11 Spreads on Brady Bonds over U.S. Treasuries**



are also a key business line for financial institutions, for example, representing nearly half of the loan portfolio of chartered banks in Canada (Chart 12). Moreover, recent decisions announced by a number of major banks to focus on the retail sector suggest that residential mortgages will likely remain a strong component of their loan activity. One of the longer-term structural features supporting the growth of the residential mortgage sector has been the introduction, over the last 30 years, of innovative and flexible mortgage products (Table 1).

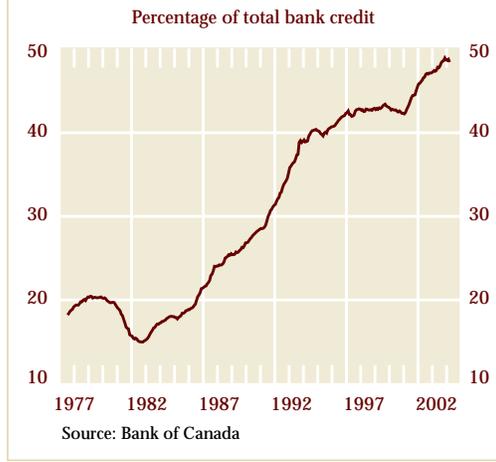
The choice of mortgage term and type can have important implications for the financial condition of households and for the dynamics of the housing market. For example, in the case of variable-rate and short-term mortgages, changes in interest rates have an immediate impact on the obligations associated with the loans, thereby affecting the affordability of and demand for housing, as well as the credit risk associated with mortgage loans for financial institutions. While variable-rate mortgages can enhance housing affordability and demand on average, they can also increase the sensitivity of households' overall debt-service burden to changes in interest rates.

Many homeowners, particularly first-time buyers, prefer the security of a fixed-rate mortgage. Currently, 59 per cent of all (fixed- and variable-rate) mortgages have 5-year terms (Chart 13).<sup>7</sup> Nonetheless, a noteworthy recent trend in the current low and stable interest rate environment has been the growing popularity of variable-rate mortgages. These now account for 21 per cent of all residential mortgages (Chart 14).

Another important way that mortgage lending practices can interact with the financial system and with house-price dynamics is through the willingness of households to incur, and lenders to finance, higher leverage. In aggregate, the credit exposures that can result from higher loan-to-value ratios have the potential to stimulate the housing market, as well as to increase credit risk in the event of a deterioration in the housing market or in debt-service capacity.

The Bank Act (c. 46, s. 418) allows banks to extend conventional mortgages up to 75 per cent of the value of a residential property. When less

**Chart 12 Chartered Bank Residential Mortgage Credit**

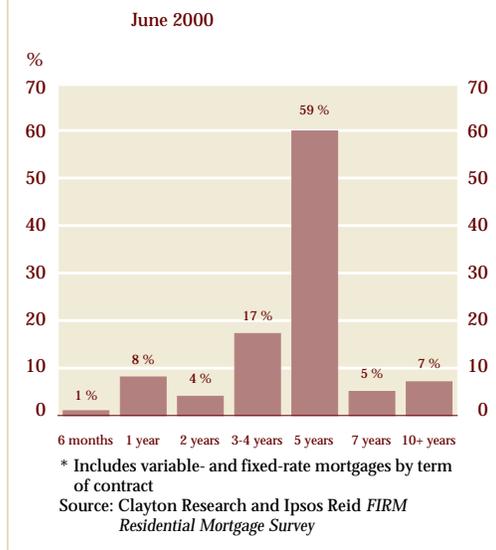


**Table 1 Mortgage Characteristics**

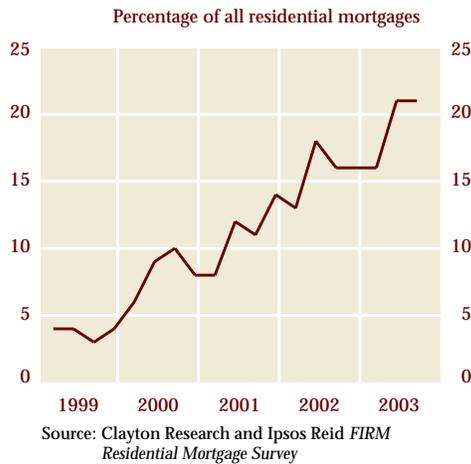
Characteristic	Early- to mid- 1970s	2000–2004
Terms and rates	Predominantly five-year closed mortgages	Closed, open, and convertible mortgages. Variable-rate, multi-rate, or fixed-rate mortgages. 6-month, 1-, 2-, 3-, 4-, 5-, 7-, and 10-year mortgages.
Rates and incentives	Posted rates	Discounted mortgage rates Incentives including cash-back
Payment options	Monthly payments only	Monthly, biweekly, weekly, and accelerated payment options
Portability	Not available	No charges with portable mortgages
Prepayment provisions	No prepayment allowed	Some prepayment provisions

Source: Canadian Bankers Association

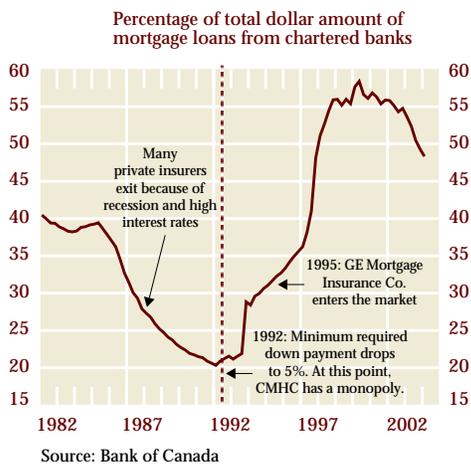
**Chart 13 Original Mortgage Term\*: Canada**



7. See Montplaisir (1996–97) for an examination of the maturity structure of the Canadian household sector's balance sheet.

**Chart 14 Variable-Rate Mortgages**

than 25 per cent of the value of the property is provided as a down payment, the Bank Act requires this amount of the mortgage to be insured to protect the lender against borrower default. In practice, however, mortgage insurers insure the total amount of the mortgage in these circumstances. The rise in insured mortgages during the 1990s illustrates the popularity of these “high-ratio” mortgages. It also shows the increased access to mortgage financing that followed the decrease in the required minimum down payment from 10 to 5 per cent in 1992 (Chart 15). Mortgage insurers in Canada have recently broadened the eligible sources of funds for the minimum down payment for selected borrowers to include borrowed funds. It is still too early to assess what impact, if any, the introduction of this feature will have on housing-market leverage or house-price dynamics.

**Chart 15 Insured Mortgages in Canada**

The increasing number of insured mortgages has been supported by the introduction of Mortgage-Backed Securities issued under the National Housing Act (NHA MBS), which are guaranteed by the Government of Canada. Outstanding NHA MBS more than tripled between 1998 and 2003. They have widened the funding sources available to institutions extending mortgages and, as of December 2003, represent 10.6 per cent of mortgage balances.<sup>8</sup>

The trends towards variable-rate and high-ratio mortgages, together with the mortgage characteristics in Table 1, have increased the range of financing options available to households. Although some of these instruments could also, in principle, increase the financial vulnerability of some households, raise the potential amplitude of cyclical peaks and troughs in house prices, and heighten the credit risk facing mortgage lenders, these risks appear to be reduced by Canada’s generally conservative mortgage-credit culture. This is partly illustrated by the proportion of variable-rate mortgages in Canada, which is well below that in many industrialized countries, including the United Kingdom and Australia. Canada’s regulatory infrastructure further diminishes these risks. Overall, the Bank for International Settlements characterizes Canada as among the group of countries with mortgage-

8. Since mortgage-prepayment options in Canada are limited, and since most mortgages have a term of five years or less, the risk of prepayment to investors and issuers of MBS is smaller than in the United States.

lending practices most conducive to financial stability.<sup>9</sup>

## The Macrofinancial Environment

Global economic growth has been stronger than expected in recent months. Although risks remain, there is increasing evidence that the global recovery is proceeding at a solid pace. Macroprudential concerns have consequently been significantly reduced since the autumn of 2003.

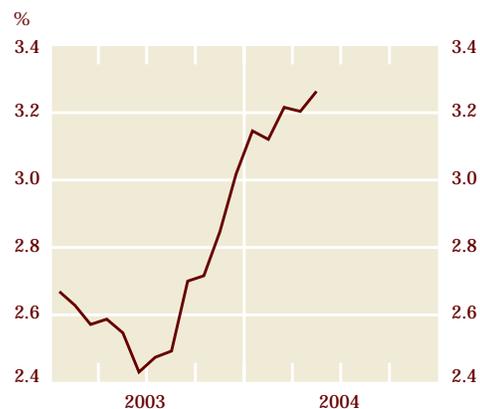
### Global environment

Consensus projections for economic growth in 2004 in the industrialized economies have been steadily revised upwards since the middle of last year (Chart 16). This reflects large upward revisions to growth expectations for Japan, the United States, and the United Kingdom. Expectations for growth in the euro area have remained basically unchanged. This greater economic strength, continued favourable financing conditions, and ongoing efforts by corporations to strengthen their balance sheets have led to a reduction in financial stress. This is reflected in the marked decrease in global default rates last year (Charts 8 and 17). The global default rate for speculative corporate issuers, as measured by Standard & Poor's 12-month rolling average, fell to 4.7 per cent in December 2003 and to 3.5 per cent in April 2004 from 9.5 per cent at the end of 2002. The current rate is now well below the average of 5.3 per cent since 1981.

### Global imbalances

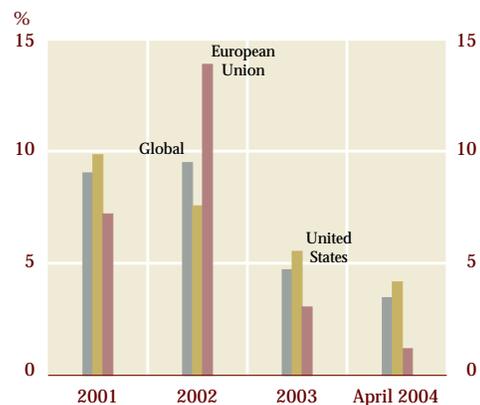
Although prospects for global economic growth have improved markedly, uncertainties remain. A key risk continues to be the persistence of U.S. external imbalances, which mirror external imbalances elsewhere, especially in Asia (Chart 18). Various policy or structural changes are desirable to facilitate the reduction of these imbalances. Such changes would also contribute to the internal economic stability of the countries concerned.

**Chart 16 Evolution of Consensus Estimates for Annual Growth of Industrialized Economies in 2004\***



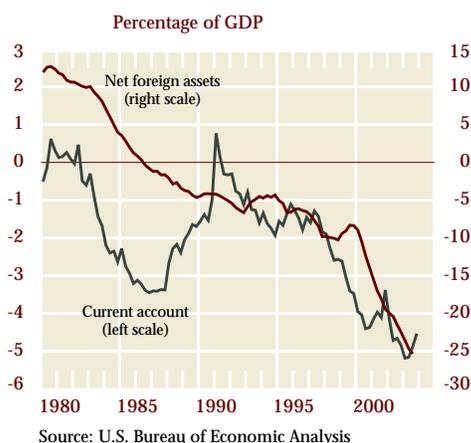
\* North America, Western Europe, and Japan  
Source: Consensus Economics and Bank of Canada calculations

**Chart 17 Default Rates on Speculative-Grade Bonds**



Source: Standard & Poor's

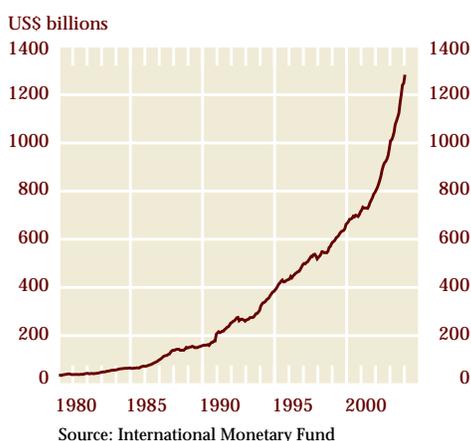
9. Tsatsaronis and Zhu (2004). This assessment was based on the prevalence of features that have been found to contribute to variability and with short-run dynamics of housing prices.

**Chart 18 External Balance: United States**

In the United States, fiscal restraint would reduce the demand for external savings and would contribute to the adjustment in the current account (Chart 19). Structural reforms that would increase the rate of potential growth in Europe and Japan could also help to raise the demand for U.S. goods and services. Part of the required adjustment is a change in real exchange rates to bring about a reduction in the relative prices of U.S. goods and services with respect to those in other countries, especially in Asia. Such an exchange rate adjustment would be facilitated if most emerging markets in Asia were to moderate their policies on foreign exchange intervention to allow for greater flexibility in their exchange rates (Chart 20). This would also help to alleviate some of the risks raised by such policies for the internal economic stability of these countries. (See Box 2.)

**Chart 19 U.S. Federal Government Net Savings**

The resulting change in the composition of growth within countries, as well as the real exchange rate changes that it implies, pose risks, especially in the adjustment period. It will also entail economic disruption as resources move from export-oriented to domestic-oriented sectors in countries whose currencies are appreciating, and vice versa in the United States. Overall, the adjustment process involved is likely to be complex and could affect the global financial system through several channels, including changes in exchange rates and potential changes in the prices of financial assets. The extent of the impact will depend on the flexibility of the financial system and on the type of macroeconomic policies adopted.

**Chart 20 Currency Reserves: Emerging Asia**

### *Other potential risks in the global economy*

In light of the evidence of a solid global recovery, the current accommodative policy rates in many countries will need to become less stimulative over time. Higher interest rates (particularly in the United States) could, in turn, negatively affect corporate and emerging-market borrowers through a higher cost of capital. (See Highlighted Issues on page 8 of this *Review* for further discussion of this risk.) Higher interest rates might also weigh on the housing and equity markets, thus affecting household balance sheets.

Household spending in the United States and in certain other countries has contributed significantly to the current global recovery. In many countries, however, household debt increased substantially in recent years and now stands at

**Box 2**

## The Growth of Foreign Exchange Reserves in the Emerging-Market Economies of Asia

### Trends

Foreign exchange reserves held by emerging-market economies (EMEs) in Asia have ballooned over the past decade (Chart 20). This is the case for countries with exchange rate regimes that are managed floats, as well as for those with fixed exchange rates. By the end of 2003, the region's foreign exchange reserves, excluding gold, had risen to approximately US\$1,300 billion from US\$370 billion at the end of 1995. China alone had accumulated US\$400 billion in reserves. This box examines the implications of this policy for financial and economic stability in these countries, which are already coping with excess demand. The growth of these holdings can affect the performance of these economies, which in turn, can affect Canada by way of commodity prices or other channels.

### Considerations

The desire of the Asian authorities to accumulate such sizable reserves stems partly from their wish to safeguard against financial crises. Indeed, in light of the steady succession of financial crises in recent years, accumulating reserves by running large current account surpluses may reflect a greater aversion to risk.<sup>1</sup> The sheer volume of the reserves, however, suggests that other factors may have played a role.<sup>2</sup> One explanation can be found in efforts by the region's central banks, particularly China's, to contain the appreciation of their nominal exchange rates or to avoid revaluations of their currencies against the U.S. dollar.<sup>3</sup> China's reluctance to detach its currency from the U.S. dollar undoubtedly stems from a desire for stability and continuity. Although China weathered the 1997 Asian crisis quite well, that was probably partly because of the relatively closed nature of its capital account, with capital controls sheltering the economy from sudden reversals in capital flows.<sup>4</sup>

### Consequences

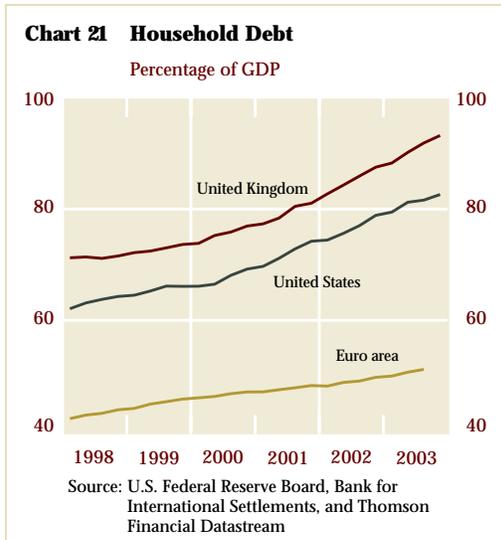
The accumulation of reserves cannot continue indefinitely without affecting domestic economies. In particular, the ability to effectively neutralize the impact of such reserves on the money supply is limited. The more that authorities resist market pressures for an appreciation of their currency, the more they expose themselves to the risk of being unable to control the expansion of the money supply and of credit. This, in turn, can provoke a cycle of overheating and recession. In the absence of adequate instruments to monitor and control credit, there is a real risk of financial bubbles or an increase in bad loans.

Even though China possesses a vast reservoir of inexpensive labour, pressures will eventually affect the prices of other resources, such as land and skilled labour. Indeed, inflation has recently been rising in China. The real exchange rate will adjust eventually, either through an increase in the nominal exchange rate or through an acceleration in domestic inflation. Moreover, bank credit is rapidly expanding, giving rise to excessive investment in some sectors. This could exacerbate the difficulties that Chinese banks are already experiencing with unproductive loans. Authorities there are aware of the risks that this would entail, and consequently, they increased the reserve ratios of commercial banks last summer and recently initiated additional measures to tighten credit.

### Conclusion

The ongoing accumulation of foreign exchange reserves in the emerging-market economies of Asia presents two types of risk to financial stability. First, it could provoke financial instability by increasing the amount of unproductive bank loans, which is already high. Second, it could increase domestic financial instability by leading to high and variable inflation. Introducing gradual flexibility into the exchange rate would help to mitigate these risks.

1. Asian EMEs posted current account surpluses equivalent to 4 per cent of GDP in 2003.
2. A recent IMF study concludes that the foreign exchange reserves accumulated in the region since 2002 are significantly higher than would be required as a precautionary measure (IMF 2003).
3. The analysis presented pertains to China but is generally applicable to other Asian EMEs.
4. See Box 2 on page 14 of the December 2003 *Review*.



an elevated level (Chart 21). Mortgage debt represents the largest share of household liabilities. This higher household indebtedness should be seen against the background of rising household net wealth boosted by higher prices for houses and other assets. Nevertheless, in some countries, the higher level of indebtedness has increased the vulnerability of households to variations in interest rates, income, and asset prices. This could be the case in the United Kingdom, where a large portion of mortgage contracts carry a variable interest rate and where concerns have been voiced about the sustainability of the strength of the housing market. On the other hand, the financial conditions of the household sectors in the United States and the euro area raise fewer concerns. As well, inflation rates are at relatively low levels in these areas, mitigating the risk of substantially higher interest rates. If central banks remain successful in keeping inflation low, stable, and predictable, debt-servicing costs are unlikely to reach the highs recorded in the past.

A number of corporations remain highly indebted, and some continue to face a drain on financial resources from underfunded pension plans.<sup>10</sup> However, business profitability has generally improved, given cost reductions, productivity gains, and the positive effects on earnings resulting from the global recovery. Indeed, profits as a share of GDP in the United States stand well above the average since 1990 (Chart 22). In Japan, the number of business failures has declined by 33 per cent from its high in October of 2001. In the euro area, the situation appears less certain, however, owing to the slower pace of the economic recovery. In addition, the debt of non-financial corporations in the euro area, as a percentage of GDP, is high at about 62 per cent, a level comparable to that in the early 1980s.

Nevertheless, the financial systems in most major countries generally appear able to withstand significant adverse shocks. Stress tests carried out by the IMF for the U.K. and German banking sectors point to the resilience of these countries' financial systems (Deutsche Bundesbank 2003; Hoggarth and Whitley 2003). In aggregate, the banks possessed sufficient capital to

10. See Box 3 on page 19 of the December 2003 *Review* for a discussion of developments in global pension funds and Standard & Poor's (2004).

cushion the losses assumed in the stress tests. This likely continues to be true today. In the United States, bank profitability, as measured by the return on assets, is at an historic high (Chart 23). The banking sectors in some other countries remain fragile, however. In Japan, although bank profitability, as measured by the return on assets, improved in the first half of fiscal 2003, it nevertheless remains slightly below zero. Non-performing loans in Japan have also declined from the peak reached in the first half of 2002, but still represented about 7 per cent of total loans as of September 2003. China's state-owned banking system appears insolvent, according to some experts (Lardy 1998), with estimates for non-performing loans ranging between 25 and 40 per cent of total loans. These countries have, however, taken measures to improve the health of their banking systems. In Japan, for example, many banks have been placed on credit watch with positive implications.

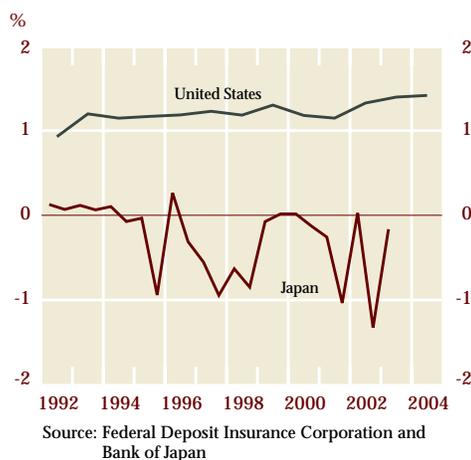
### Government-sponsored enterprises

Concerns about the adequacy of the regulatory oversight of U.S. housing-related government-sponsored enterprises (GSEs), as well as the appropriateness of their implicit government guarantee, have recently resurfaced and been voiced by policy-makers in the United States. Given the complexity and the leveraged nature of GSE balance sheets, these institutions may not be fully covered against various financial risks. (See Chart 24 for an assessment of the sensitivity of these institutions to one form of financial risk.) Should a financial risk materialize against which the GSEs are not well protected, the U.S. financial system could face problems given the size of GSE balance sheets (Chart 25).

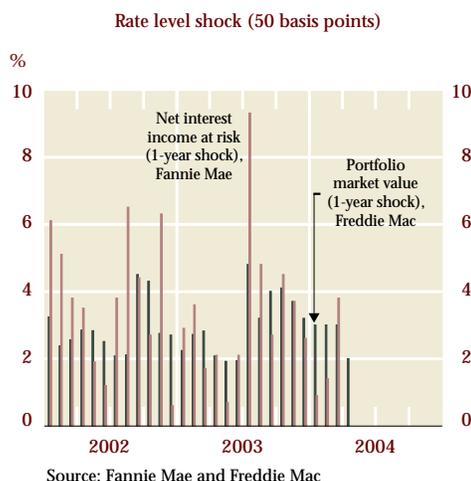
A bill seeking to change the regulatory oversight of these enterprises was again recently proposed by Congress. A key feature of this bill was the transfer of oversight of Fannie Mae and Freddie Mac from the Office of Federal Housing Enterprise Oversight to a new division in the U.S. Treasury.<sup>11</sup> This bill was, however, not signed into law. The U.S. government is currently

11. Fannie Mae and Freddie Mac are congressionally chartered companies owned by private shareholders. They acquire home mortgages from the lenders that initially extended credit and aim to help low- and moderate-income Americans purchase homes.

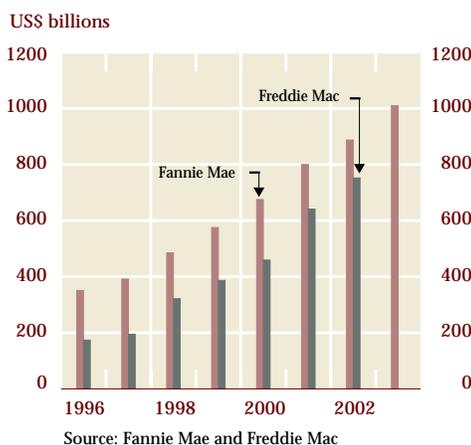
**Chart 23 Banks' Return on Assets**

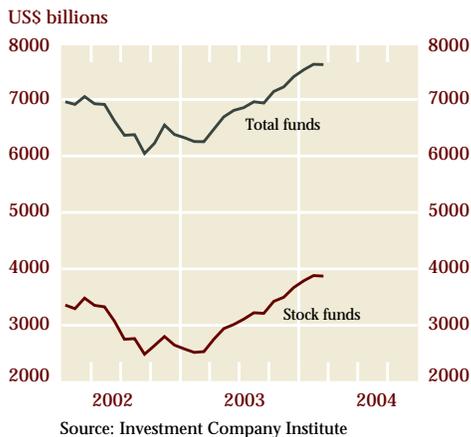
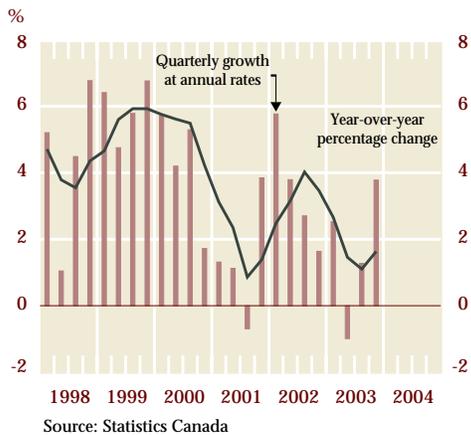


**Chart 24 Sensitivity to Interest Rate Risk: Fannie Mae and Freddie Mac**



**Chart 25 Total Assets: Fannie Mae and Freddie Mac**



**Chart 26 Mutual Fund Sales: United States****Chart 27 Real GDP Growth: Canada**

looking into various means available under the current legislative framework to increase regulatory oversight of these enterprises. Federal Reserve Chairman Greenspan has also expressed support for increasing the regulatory oversight of these institutions and has argued for the effective removal of the implicit government guarantee from which these institutions are perceived to benefit (Greenspan 2004).

## Mutual fund industry

Several instances of improper and/or illegal practices (*late trading* and *market timing*) were uncovered in the mutual fund industry in 2003. Although the scandal centred in the US\$7.1 trillion mutual fund industry, many of the issues identified are also relevant in other jurisdictions. The practices uncovered resulted in reduced returns to most fund investors, in whose best interest the fund company is supposed to act. Another set of issues relate to inappropriate fee disclosure by sellers of mutual funds. These issues have prompted regulatory responses in the United States. In Canada, regulators are investigating mutual fund practices.

Strong net inflows into U.S. and Canadian mutual funds since these practices were uncovered suggest that the regulatory response and rising valuations were effective at maintaining investor confidence and preventing outflows from the mutual fund industry (Chart 26). Such outflows could have proven disruptive to financial markets.

## Canadian Developments

### *Canadian economy*

Aggregate output in Canada, after little change between the first and third quarters of 2003, rebounded towards year-end (Chart 27). In 2004, economic growth is expected to come primarily from private domestic demand, supported by monetary stimulus and by solid household and business confidence. The expected boost to Canadian exports from the improvement in global economic conditions will be dampened by the 2003 appreciation of the Canadian dollar.

### *Households*

The financial health of Canadian households is increasingly important to the banking sector in light of the greater emphasis placed by Canadian

banks on retail lending. Overall, the risks relating to household credit quality are relatively low.<sup>12</sup>

Household indebtedness, measured by the ratio of debt to disposable income, has continued to rise, reaching a record high of 118 per cent. However, the higher level of household assets has kept the total household debt-to-asset ratio from rising significantly (Chart 28). The cost of servicing these higher levels of indebtedness has also remained near historic lows, owing to low consumer and mortgage interest rates (Chart 29). Although personal bankruptcies and the rate of credit card delinquency increased slightly in 2003, they have remained relatively stable since the mid-1990s. Residential mortgage arrears have remained low (Chart 30). In the fourth quarter of 2003, the savings rate fell to 1.5 per cent from 3.2 per cent a year earlier. While this rate is extremely low, wealth-adjusted savings, which account for increases in wealth arising from higher housing and other asset valuations, remain relatively stable.

### Corporate sector

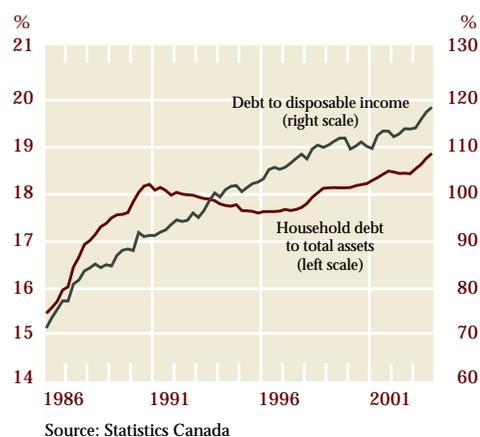
The financial position of the non-financial corporate sector improved through 2003. The aggregate debt-to-equity ratio fell further (Chart 31), and profitability remained strong. This has contributed, in part, to the improved confidence of firms since the third quarter of 2003 (Chart 32).

Corporate credit quality has also continued to stabilize since December 2003, though there was a slight increase in the number of companies downgraded by Standard & Poor's. Overall for 2003, Moody's ratio of downgrades to upgrades for financial corporations remained above one, but declined from a 9-year high of 6.4 in 2002 to 2.0 (Chart 33), and fell further to 1.0 in the first quarter of 2004.

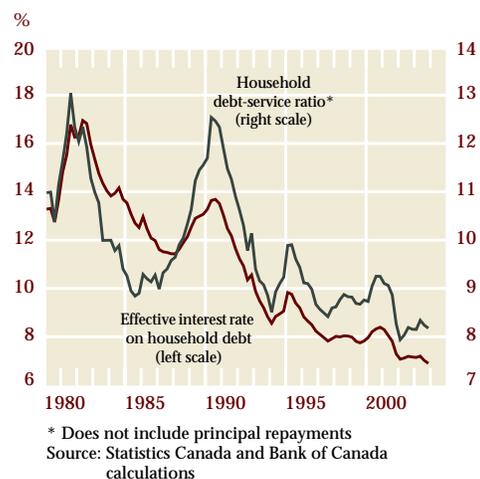
The 16 per cent real appreciation of the Canadian dollar relative to the U.S. dollar in 2003 is, however, expected to weigh on corporate profits in 2004. To date, the impact of the appreciation of the Canadian dollar on corporate profits has been limited mainly to certain sectors with a strong net export orientation. (See Box 3.)

12. See the December 2003 *Financial System Review* for a detailed discussion of the health of the Canadian household sector. (Also, see p. 9 for a discussion of structural features of the housing and mortgage markets.)

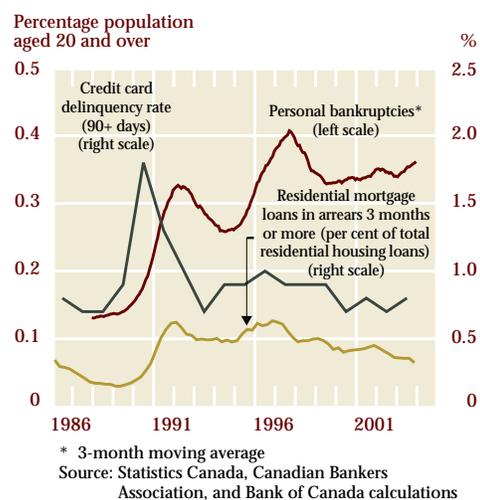
**Chart 28 Financial Situation of Canadian Households**



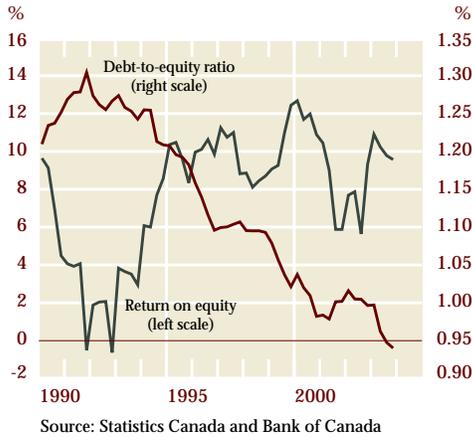
**Chart 29 Household Sector Debt**



**Chart 30 Canadian Financial Indicators**



**Chart 31 Financial Position of the Canadian Non-Financial Corporate Sector**



Indeed, for many exporters strong commodity prices and U.S. growth are likely to significantly mitigate the impact on profits.

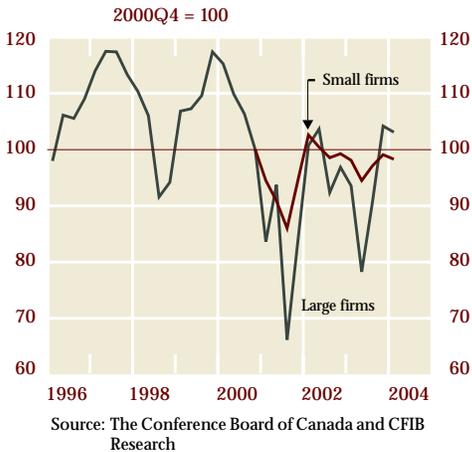
Many corporations continue to face important costs in meeting their long-term obligations on employee retirement benefits. (See “What Is the Funding Status of Corporate Defined-Benefit Pension Plans in Canada?” on page 45 of this Review.) Although it appears that only a few pension funds face funding difficulties so severe that they pose a serious financial risk to the corporation, firms with deficits in defined-benefit pension plans are likely to be more vulnerable to other shocks such as an economic downturn.

Overall, however, risks to the financial system from the corporate sector remain small. Indeed, despite the appreciation of the Canadian dollar and some weakness in aggregate demand in 2003, and despite the need for many firms to make special payments to meet obligations on employee retirement benefits, the Canadian corporate sector, in aggregate, appears robust.

*Industry sector*

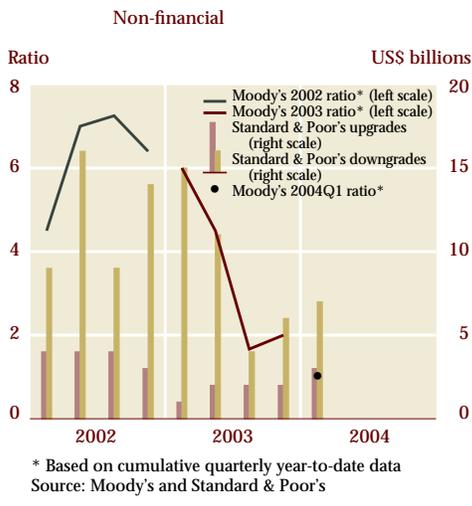
Even so, a limited set of industries, often with a high exposure to international trade, continued to be under financial stress last year and into early 2004. This group accounts for only about 10 per cent of the output of the non-financial business sector, however, and thus poses only a limited risk to the Canadian financial system.

**Chart 32 Canadian Business Confidence**



Profitability weakened significantly in the wood and paper industry towards the end of 2003 (Chart 34). Although the appreciation of the Canadian dollar contributed to the profit decline, other factors, such as excess capacity, high energy costs, and U.S. duties on softwood lumber were also maintaining downward pressure on rates of return. As a result, the credit ratings of several forest-products companies have been downgraded (especially those with exposures to newsprint sales). Recent strong gains in the prices for both lumber and other wood products should contribute to a recovery in the industry’s profitability.

**Chart 33 Canadian Corporate Downgrades/Upgrades**



Some Canadian steel manufacturers have also seen their financial position worsen considerably, given the strong Canadian dollar and continued high costs for energy and raw materials. The need to raise employer contributions to meet long-term obligations for employee pension plans is another source of downward

**Box 3**

## Surveys of Foreign Exchange Hedging by Canadian Corporations

The Canadian dollar appreciated by 16 per cent in real terms relative to the U.S. dollar in 2003, raising questions about its impact on corporate profits, corporate credit quality, and, ultimately, the financial system more generally. In January 2004, the Bank of Canada sent a questionnaire to the major financial institutions active in the Canadian-dollar market. The questions focused on the foreign exchange hedging activities of their corporate customers. The following are the common themes among the responses. It should be noted that the responses varied significantly among financial institutions in light of differences in their client bases.<sup>1</sup>

First, financial institutions indicated that most corporations were less hedged through 2003 and currently remained less hedged relative to what had been the case in the past. Reflecting this currency exposure, and the relative importance of the trade sector to the Canadian economy, survey respondents estimated that, on average, Canadian firms negatively affected by the Canadian dollar's strength over the last year outnumber those positively affected. Respondents estimated that about half their clients had been negatively affected by the dollar's appreciation since early 2003. The other half of their client bases are about equally split between those positively affected and those who experienced no material currency effect.

The financial institutions' view on the proportion of firms affected by the appreciation is supported by similar responses to questions in the Bank's survey of companies.<sup>2</sup> The Bank's survey also showed that over half of the firms affected by the appreciation are currently using some type of financial instrument to help manage their exposures. The use of such instruments by companies adversely affected by the appreciation was close to 60 per cent, higher than the use by favourably affected companies (close to 50 per cent). Responses also indicated that large firms were more likely to be using financial hedging instruments than smaller ones.

Second, despite the effects of the currency appreciation on exporters' profit margins, most respondents

felt that the majority of their client base had either adjusted, or would be able to adjust, to the stronger Canadian dollar—at least to the levels at the time of the survey, approximately 74 to 77 U.S. cents. Although more firms were negatively affected by the Canadian dollar's strength than were positively affected, of the firms adversely affected, most experienced only “moderate” effects. Financial institutions did not expect the currency's strength to have any significant adverse impact on the credit quality of their overall loan portfolios.

Third, although most firms are managing to adjust to the higher value of the currency, a minority are having significant difficulty. Moreover, those firms most severely affected are often the least able to respond effectively, either by hedging or by adapting their business processes. The squeeze on profit margins has made it more difficult for such firms either to get extended credit lines from their bankers (necessary to underwrite hedging programs) or to implement investments aimed at enhancing productivity (despite cheaper prices for imported machinery).

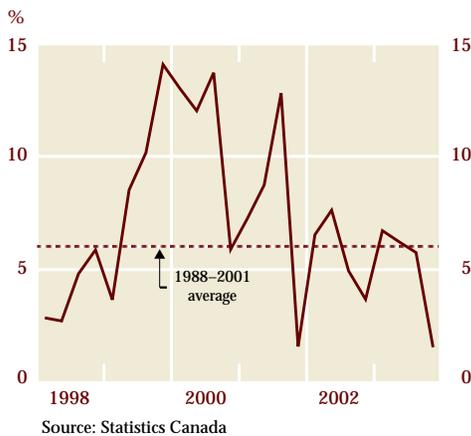
Fourth, financial institutions indicated that the accounting rules governing derivatives (FAS 133 in the United States and AcG 13 in Canada) have affected corporate hedging practices. These standards, which govern the reporting of derivatives, have made it more difficult for firms to attain “hedge accounting” status—that is, cost or accrual accounting treatment—for their currency hedges. The default-reporting protocol for derivatives is mark-to-market, which most firms prefer to avoid because it potentially makes their earnings statements more volatile.<sup>3</sup> This has reportedly led some firms to reduce, or in a minority of cases, eliminate, their hedge coverage, which has allegedly exacerbated the negative impact of the Canadian dollar's appreciation.

### Hedging activities and the financial system

Overall, insights drawn from these surveys suggest that about half of corporations were partially hedged, and that the appreciation of the Canadian dollar in 2003 does not pose significant risks to the Canadian financial system.

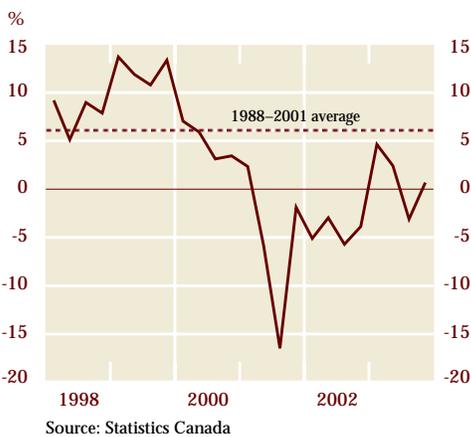
1. A more detailed description of responses will be released shortly.  
 2. Four times a year, the Bank directly interviews 100 businesses across Canada. For a review of the answers to the questions on the adjustment to the appreciation of the Canadian dollar by businesses, see <[www.bankofcanada.ca/en/mpr/pdf/survey/mpr\\_survey0404.pdf](http://www.bankofcanada.ca/en/mpr/pdf/survey/mpr_survey0404.pdf)>.

3. Mark-to-market reporting protocols better reflect actual market positions, and are considered more appropriate by accounting standard-setters.

**Chart 34 Return on Equity: Wood and Paper Manufacturing**

pressure on expected profitability. As a result, several companies are planning major restructuring measures to lower their operating costs in order to better compete with foreign producers. The recent surge in global steel prices, if sustained, is also likely to help stabilize the financial position of this industry.

The financial situation in Canada's livestock industry remains weak, following the appearance of a case of BSE in the United States in late December, which was linked back to Canada. With the continuing ban on imports of live cattle from Canada, Canadian cattle prices remain relatively low. However, financial aid to cattle producers from the Government of Canada is likely to mitigate some of the losses.

**Chart 35 Return on Equity: Electronics and Computer Manufacturing**

The electronics and computer manufacturing industry returned to a marginal level of profitability in 2003, following substantial losses in 2001 and 2002 (Chart 35). This reflected substantial cost cutting, the marked upturn in real global spending on computers, and increased demand for advanced wireless components. These factors were partly offset, however, by the rise in the value of the Canadian dollar. Moreover, a major Canadian company in this industry recently had its long-term debt rating downgraded because of ongoing investigations into its financial statements.

Profitability in Canada's airline and aerospace manufacturing industries, after falling sharply in 2003, is likely to improve this year, reflecting both an expected recovery in air transportation activity and the impact of cost-cutting measures. The recent sharp increase in fuel costs, as well as the higher contributions required for employee pension plans, constitute important offsetting factors.

## The Financial System

Since December 2003, the Canadian financial system has benefited from the stabilizing effects of marked improvements in global growth prospects, continued favourable financing conditions, ongoing efforts by corporations to strengthen their balance sheets, and continued sound macrofinancial conditions.

### Financial markets

Currently, financial market conditions are largely influenced by the evolution of views on U.S.

economic and employment growth, as well as by the impact of future increases in policy rates on financial asset prices. Their effect on the external value of the U.S. dollar is a major channel by which changes to the economic outlook are transmitted to the financial sector.

Global financial markets generally witnessed higher prices for riskier assets in 2003. Although these developments reflect improved fundamentals that have largely been incorporated into asset prices, the trade-off between risk and return is an important factor for investors to consider when acquiring such assets. (See Box 1 on page 6 for a more detailed discussion of factors affecting valuations of financial assets.) A significant amount of uncertainty also surrounds the extent to which future unanticipated increases in interest rates will affect investor behaviour and risk appetite.

Domestically, the Financial Stress Index (FSI) is one way of assessing how much stress the financial system is under at a given time (Illing and Liu 2003). Recent movements in the FSI have remained near the bottom quartile, reflecting the smooth absorption of recent developments by the Canadian financial system (Chart 36).

On 30 March 2004, the Canadian Securities Administrators implemented new rules for disclosure and governance practices. These new rules are Canada's regulatory response to the global corporate scandals that have been uncovered since 2001 and aim to improve the quality of corporate financial statements and, hence, investor confidence. The new rules apply to most listed companies in Canada.<sup>13</sup> The rules include shorter deadlines for filing financial statements; certification of disclosure by CFOs and CEOs; enhanced disclosure requirements for off-balance-sheet items, related-party transactions, and executive compensation; as well as specific qualifications for audit committee members, and participation by auditing firms in the Canadian Public Accountability Board.

Canadian financial markets have been affected by rapid technological and financial innovation, greater international and local capital

**Chart 36 Financial Stress Index for Canada**



13. In May 2004, the Government of Canada released a proposal for amendments to the Canada Business Corporations Act. These are aimed at enhancing the transparency and accountability of corporations to investors and shareholders. See <[www.strategis.ic.gc.ca/corporate\\_governance](http://www.strategis.ic.gc.ca/corporate_governance)>.

Table 2

**Size of Credit-Derivatives Markets**

US\$ billions

Instrument	1998	1999	2000	2001	2002	2003
Credit derivatives						
-BIS triennial survey	108			695		
-British Bankers' Ass'n	350	586	893	1189		
-Risk Magazine			360	1241	2120	
-ISDA				919	2192	3584
Global debt securities <sup>a</sup>	4292	5361	6369	7506	9195	11681

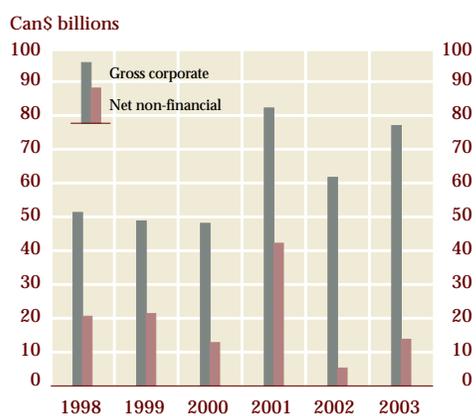
a. Statistics on global debt securities compiled by the BIS include money market instruments, bonds, and notes but exclude loans.

flows, and new financing methods. In response to these changes, industry participants have called for a reform of the current securities regulatory structure. Proposals for reform are discussed in Box 4. As well, the securities industries of Canada and the United States are moving to straight-through processing (STP) to clear and settle securities transactions. STP will improve service and efficiency, reduce costs, and lower risks. (See Box 5.) The Bank of Canada supports the efforts by all Canadian participants to take the necessary steps to ensure that the June 2005 implementation date for STP will be met.

**Fixed-income credit markets**

Global markets for credit derivatives, which transfer credit risk without transferring ownership of the underlying asset, have continued to grow rapidly since the mid-1990s (Table 2).<sup>14</sup> More recently, improvements in credit quality and investor search for yield have also contributed to the rapid development of these global markets. Credit derivatives have allowed investors to leverage (or acquire significant amounts of credit risk). Although the rapid development of these markets and the relative investor inexperience with such instruments had raised concerns about their impact on financial markets in the face of a rapid shift to higher interest rates or sudden shock affecting investor confidence, recent events, such as the orderly reaction of these markets to the Parmalat corporate scandal, as well as analytical work, have diminished such concerns (IMF 2004).

In Canada, gross and net issuance of corporate long-term debt exhibited divergent patterns in 2003. Market participants viewed 2003 as the second-best year ever for corporate debt issuance (\$77 billion). However, the net debt-financing activities of non-financial firms in 2003 were low (Chart 37). This suggests that firms had little need for external funds in 2003, potentially because of the dampening effects of previous uncertain economic prospects for investment spending. Low net issuance of debt is also consistent with firms' emphasis over the past few years on improving corporate balance sheets.

**Chart 37 Canadian Corporate Debt Issued in U.S. Dollars and Canadian Dollars**

Source: Bank of Canada (net) and *Financial Post* (gross)

14. Instruments for transferring credit risk can facilitate optimal allocation of credit risk in the economy. These markets also allow for more effective hedging of credit risk (Kiff 2003).

**Box 4**

## Recent Developments in the Regulation of Canadian Securities Markets

Securities markets in Canada are regulated by 13 provincial and territorial agencies. While the statutes in each jurisdiction are similar to one another, they may be interpreted and applied differently from one jurisdiction to the next.

Over the last 40 years, there have been numerous proposals to reform the structure of securities regulation in Canada. The last attempt was in 1994 when the federal government proposed a uniform national structure for securities regulation in Canada. This proposal was shelved, however, because of divergent views between different levels of government on certain jurisdictional and political aspects.

### Current proposals for reform

Three proposals for reform have recently been submitted to the public for consultation and debate. They are the uniform securities legislation project (USL), the passport system, and a single regulator. Provincial securities regulators have also been subject to important changes during the last two years. While these latest initiatives reform securities regulators within each province, the USL, passport, and single-regulator initiatives deal with the interprovincial and provincial-federal structure of securities regulation. All the reform proposals have common goals: to reduce the regulatory burden for market participants, foster investor protection, and enhance market efficiency and competitiveness.

#### *The USL*

Announced in March 2002, the USL is an initiative by the Canadian Securities Administrators to harmonize securities laws in Canada. It aims to eliminate differences in securities legislation across jurisdictions and to provide a national framework for securities regulation by developing a uniform securities act and rules for adoption in all jurisdictions across Canada within two years.

#### *The passport system*

In June 2003, the provincial ministers responsible for securities regulation published a discussion paper on an interprovincial securities framework. The paper proposed a passport system built on harmonized securities laws to ensure consistency across jurisdictions.<sup>1</sup> The passport system would allow a market participant to meet the

requirements in every Canadian jurisdiction by meeting the requirements of only the primary regulator (determined using agreed-upon indicators). All jurisdictions adhering to the passport system would rely on a primary regulator for oversight and enforcement of the rules and requirements.

#### *A single regulator*

In December 2003, the Wise Persons' Committee submitted a report to the federal Minister of Finance recommending a single regulator and a single code of legislation for securities markets. The single regulator would be co-operatively created and overseen by the federal and provincial governments, with rules based on the USL initiative. The Committee advocates a collaborative approach on the part of the federal and provincial governments.

#### *Recent provincial initiatives*

In April 2003, the British Columbia Securities Commission (BCSC) proposed draft legislation. The model recommends a principles-based approach to securities regulation and a "plain language" approach with the objective of allowing market participants to better understand how securities regulation applies to them.

Introduced in April 2004, the New Brunswick bill will overhaul the current provincial regulatory regime and create a new Securities Commission, which will be funded by the industry. As well, both Saskatchewan and Quebec have proceeded with the merging of financial regulators.

#### *Ongoing discussions*

The federal and provincial governments and securities regulators are engaged in discussions with market participants on the most appropriate regulatory structure for Canada. All stakeholders share a common belief that the current structure needs to be more efficient and to better reflect changing market conditions. Within this context, the Government of Canada 2004 Budget indicated support for the conclusions reached by the Wise Persons' Committee. The Government of Canada has stated its intention to work with provincial and territorial governments to resolve this issue.

1. The discussion paper stressed the importance of harmonized securities laws for consistent rules across jurisdictions but did not identify the USL as a prerequisite for the implementation of the passport model. The USL is considered to be complementary to the passport system.

## Box 5

## Aiming for Straight-Through Processing in Canada

The Canadian Capital Market Association (CCMA) has been actively promoting straight-through processing (STP) in the Canadian securities industry since 2002.<sup>1</sup> The CCMA defined industry-wide STP as “seamlessly passing information electronically—on a timely, accurate, system-to-system basis—to all parties in the end-to-end securities transaction chain without manual handling or redundant processing.” More practically, STP implies that once securities trade orders (for sale or purchase) have been executed, they will be matched, cleared, and settled without further manual input or changes from parties involved in the processes (e.g., custodians, brokers/dealers, investment managers, exchanges, transfer agents, depositories, and others).

Note that the CCMA’s initial objective was to shorten the standard settlement cycle of three days after the trade date (T+3) to one day following the trade date (T+1) by June 2005. In July 2002, the CCMA changed the objective to STP, following a similar decision by the Securities Industry Association (SIA) in the United States.<sup>2</sup>

### Efficiency, risks, and STP

The move to industry-wide STP is motivated by a desire to increase the efficiency of the securities settlement system and to maintain the competitiveness of Canadian securities markets.

Often overlooked by investors and issuers, the matching, clearing, and settlement processes are critical for securities transactions. These processes are interconnected and require all participants to communicate trade information in sequential and repetitive steps that currently still involve significant manual intervention. Thus, if a mistake is made at any point in the process, the transaction may not settle, may be delayed, or may carry errors related to the

amount, volume, etc. These mistakes impose costs (additional to transactions costs) to participants.<sup>3</sup>

From a risk perspective, the increasing volume and value of transactions in recent years have raised operational risks and exerted additional stress on the settlement system. STP addresses these risks by significantly reducing settlement risk.<sup>4</sup> The adoption of new technology, standards, and best practices to achieve industry-wide STP should reduce operational risk and costs by eliminating inefficient processes. STP would also help manage a growing trading volume and, hence, expand the capacity to effectively and safely process securities transactions.

Another motive for STP is that by increasing the efficiency of the settlement processes and adopting comparable standards to those in the United States, Canadian capital markets will maintain competitiveness with global marketplaces.

### STP milestones

The CCMA has completed its first milestone by publishing industry standards and best practices in December 2003. Participants can now update their in-house systems and processes according to the specified standards and best practices in an integrated fashion with the rest of the industry.

The next milestone, planned for December 2004, requires the enactment of relevant legislative, regulatory, and rule changes to facilitate the implementation of STP. Finally, industry-wide STP implementation is projected for June 2005.

1. Created in August 2000, the CCMA is a forum for industry experts to provide leadership and coordinate the industry-wide implementation of STP.

2. The SIA’s position is that the industry needs to focus on more effective STP before converting to T+1. The change reflected industry concerns over the need to strengthen business continuity following the 11 September 2001 terrorist attacks in the United States and the concurrent downturn in the credit cycle.

3. According to a Cap Gemini Ernst & Young (2002) survey for CCMA, “inefficient securities settlement processes cost the Canadian securities industry an estimated \$140 million a year.”

4. Settlement risk has two components: (i) credit risk or counterparty risk; and (ii) operational risk, such as a breakdown in communication or human errors.

The income-trust market in Canada has continued its tremendous growth (Chart 38). Issuance in the fourth quarter of 2003 surpassed \$4.6 billion. Proceeds from these income-trust issues have been used to fund new investment opportunities, retire debt, and/or return proceeds to shareholders. In this respect, this market can be viewed as a substitute for debt-market financing. It is still too early to assess what impact the 2004 Government of Canada budget measures proposing to limit the size of investment by pension funds in business income trusts may have on the growth of this market.

A positive development for participants in Canadian fixed-income markets is the introduction this spring by the Bourse de Montréal of a new futures contract on the 2-year Government of Canada bond. This contract will complement the current futures contract on 10-year Government of Canada bonds.

### Foreign exchange markets

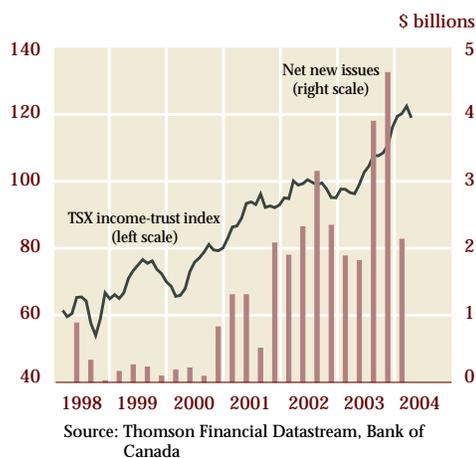
The U.S. dollar has been firm against most currencies since December 2003 (Chart 39). The Canadian dollar has stabilized relative to the U.S. dollar in a range of 71.5 to 76.5 U.S. cents and has depreciated relative to the currencies of its non-U.S. trading partners since early December.

Volatility in currency markets surpassed 2003 highs in early 2004 as market participants reacted to monetary policy signals and discussions of potential currency intervention (Chart 40). These factors also affected the Japanese yen, the appreciation and volatility of which had been dampened by significant intervention by the Bank of Japan through mid-March 2004. Volatility in the yen resumed in late March amid market speculation that intervention had been suspended, in light of evidence of an increasingly robust Japanese economic recovery. Overall, risks to the financial system related to developments in foreign exchange markets since December 2003 have been moderate.

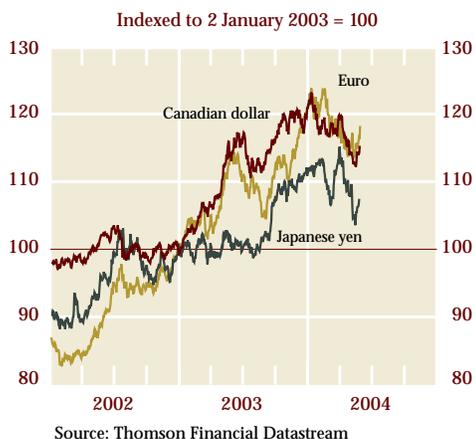
### Financial institutions

The six largest Canadian banks reported a sharp rebound in profitability at their fiscal year-end (31 October), which rose 52 per cent year-over-year to a record high \$11.6 billion. The average return on equity rose sharply to 16.5 per cent in 2003 and has risen further to 19.1 per cent for the first quarter of 2004.

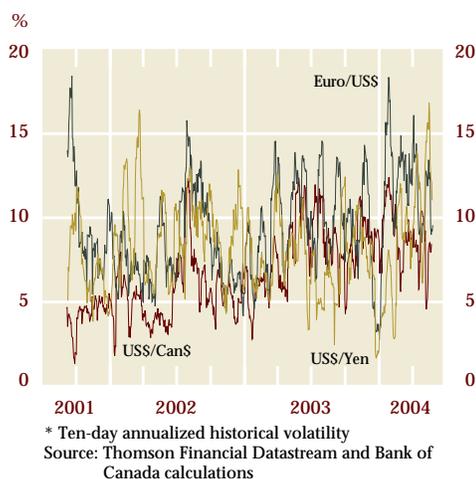
**Chart 38 Income Trusts**

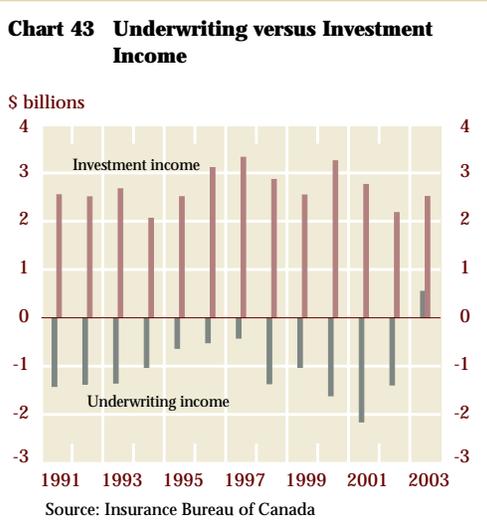
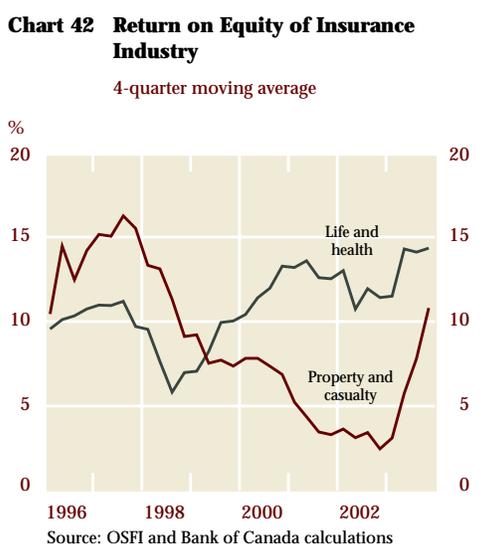
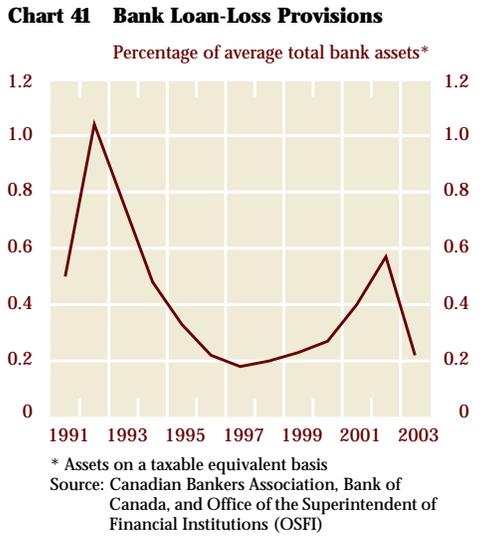


**Chart 39 Performance of Currencies against the U.S. Dollar**



**Chart 40 Exchange Rate Volatility\***





Revenues from investment banking rose as trading activity increased and the value of financial assets moved higher. Loan-loss provisions continued to be reduced. Lending to the retail sector also continued to be a reliable and substantial source of revenue. However, it appears that the 2003 appreciation of the Canadian dollar weighed on some bank profits by lowering the translated value of their earnings from U.S. operations.

Overall, Canadian banks managed the 2001–02 decline in credit quality associated with the economic downturn much more effectively than was the case during and after the 1990–91 recession. Better portfolio diversification and risk-management techniques, lower interest rates more generally, as well as a less severe economic downturn, allowed loan-loss provisions as a share of average assets to peak at about half that held during the 1990–91 recession (Chart 41).

The life insurance industry continued to report sound financial performance in the fourth quarter of 2003, with a return on equity of 14 per cent. Strong balance sheets, conservative investment policies, and effective diversification helped insurers sustain profitability (Chart 42). Following recent merger activity, three dominant life insurers now exist in Canada; namely, Manulife, Sun Life, and Great-West Life.

The profitability of the property and casualty insurance industry improved significantly in 2003 (Chart 42). The industry posted a positive level of underwriting income for the first time since 1978 (Chart 43). Rising premium rates and improved investment incomes also allowed the industry to report a return on equity of 11.3 per cent for the year ending December 2003. Uncertainty about industry prospects remains, however, particularly regarding the performance of the automobile insurance market (which accounts for more than half of all premiums collected). Returns from this sector will depend on the outcome of recently introduced regulatory reforms aimed at improving market conditions for insurers and, in some cases, reducing premiums for consumers.

Operating profits in the Canadian securities industry grew in 2003, helping the industry post a third consecutive year of strong profits (Chart 44). Retail financial advisory business continued to grow, aided by the strong price gains of financial assets. This business segment benefited from robust investor participation in debt and equity markets, and, in some cases,

in unconventional investments, as investors searched for higher returns. Indeed, investor search for yield provided strong demand for fee-based services and products. This demand has helped fee-based revenue to double since 2000 (Chart 45).

Reports of first-quarter earnings for 2004 from large international investment banks indicate a sharp rise in revenue from fixed-income, currency, and commodity trading. These results have raised questions as to whether revenue growth in these markets could be achieved without increased risk taking.<sup>15</sup> In Canada, an assessment of the available VaRs reported in the financial statements of the major banks suggests that the market risk assumed by these institutions has been trending lower (Chart 46). In addition, capital maintained to cover overall risks has risen over the past few years as reflected by the evolution of capital ratios in the banking sector (Chart 47). Major banks thus remain well capitalized and appear well positioned to manage potential adverse movements in financial asset prices.

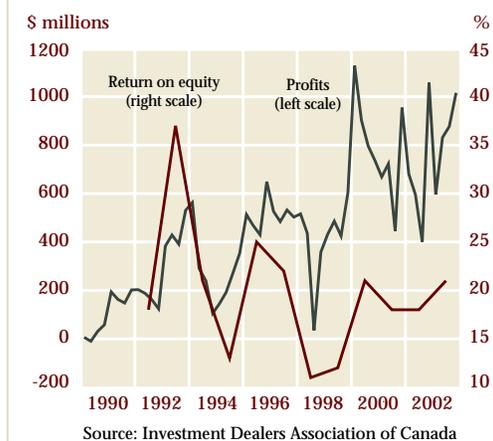
### Clearing and Settlement Systems

A key component of the financial system is a robust set of arrangements to clear and settle payments and other financial obligations. The Bank of Canada supplies services to four such systems. They are the Large Value Transfer System (LVTS), for settling large-value or time-sensitive payments; the Automated Clearing Settlement System (ACSS), used mainly for smaller-value retail and some electronic payments; the CDSX, Canada's securities settlement system; and the Continuous Linked Settlement (CLS) Bank, an international system for settling foreign exchange transactions. Because of their systemic importance, the Bank has formal oversight responsibilities for the LVTS and the CDSX, and shares oversight responsibilities with other central banks whose currencies are included in the CLS Bank.<sup>16</sup>

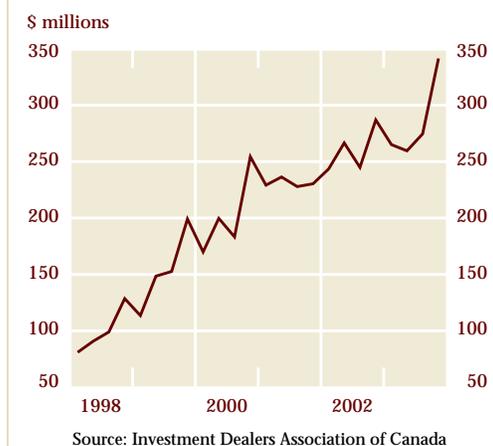
15. The principal tool used to measure market risk is value at risk (VaR). See the December 2003 *Financial System Review* (Box 1, page 10) for more on "Managing Market Risk."

16. The Federal Reserve is the lead overseer for the CLS Bank.

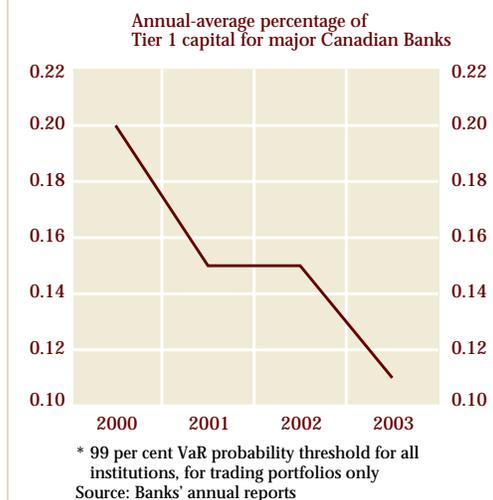
**Chart 44 Operating Profits: Securities Industry**

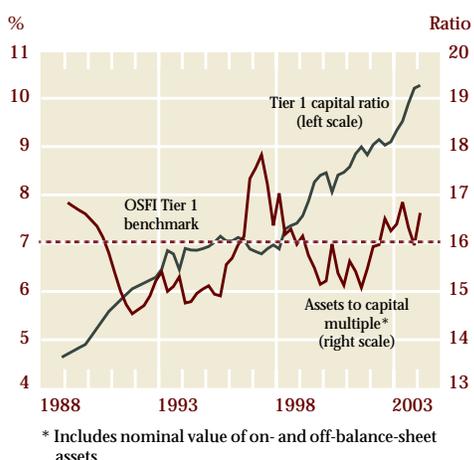
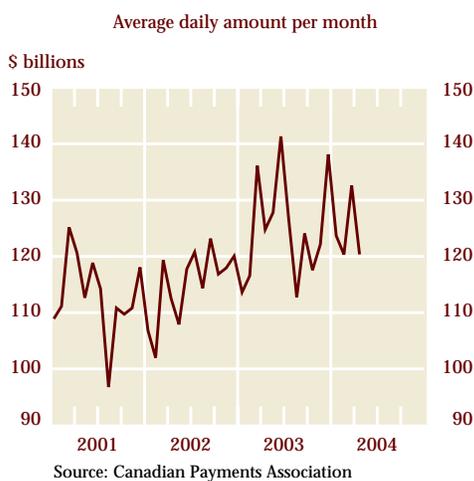
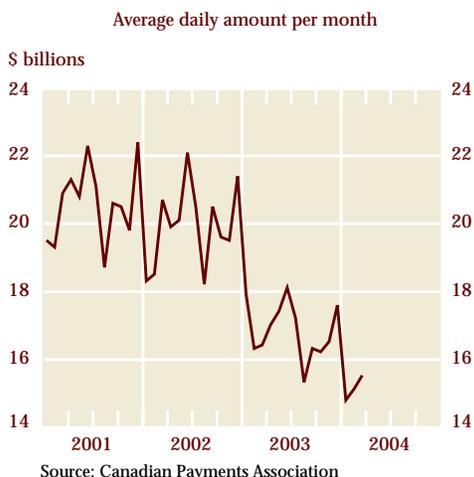


**Chart 45 Fee-Based Revenue: Securities Industry**



**Chart 46 Value at Risk for Bank Trading Portfolios\***



**Chart 47 Capital and Leverage Ratios****Chart 48 Value of Payments Processed by the LVTS****Chart 49 Value of Payments Processed by the ACSS**

### Recent Developments

In the first four months of 2004, the average daily value of payments processed by the LVTS was up by about 1.2 per cent over the corresponding period in 2003 (Chart 48). On 1 December 2003, LVTS payments hit a daily record of just over \$200 billion, compared with an average daily value of about \$125 billion in 2003. Payment flows in the ACSS averaged about \$15 billion per day in the first quarter of 2004, down about \$2 billion from year-earlier levels (Chart 49). The decline is due to the continued migration of large-value paper items from the ACSS to the LVTS, resulting from the cap of \$25 million placed in 2003 on paper items allowed to settle through the ACSS. The liquidity savings generated by CLS settlement (see below) lead to a decline in LVTS payments related to foreign exchange transactions. But this decline has been masked by strong growth in other payments flowing through the LVTS.

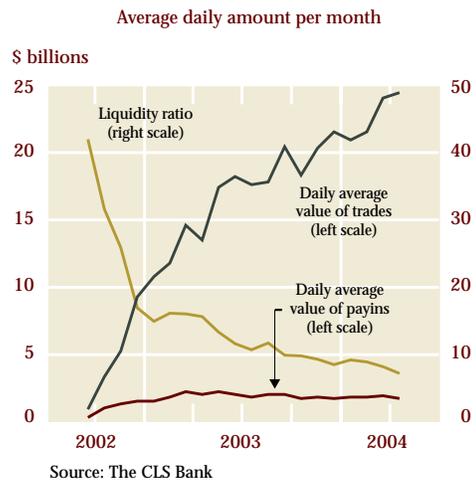
Flows through the CLS Bank continue to increase. In March 2004, a record average of about 135,000 foreign exchange transaction sides per day, worth US\$1.4 trillion, were settled in all 11 currencies. Settlement values hit a record US\$2.2 trillion (about 260,000 transaction sides) on 20 January, the first business day following the Martin Luther King Jr. holiday in the United States.

The value of Canadian-dollar trades settled through the CLS Bank increased to more than \$24 billion per day in April 2004, compared with an average of about \$22 billion in the first quarter of 2004. Nevertheless, because of the limited participation of domestic banks in CLS, this value remains at fairly low levels relative to the size of the Canadian foreign exchange market. Although estimates are subject to considerable uncertainty, about 25 per cent of Canadian-dollar trades are estimated to settle through CLS, whereas for all CLS currencies combined, this share is close to 50 per cent. The liquidity ratio provides a measure of the liquidity savings generated by CLS settlement. For Canada, this ratio stood at a record low of 7.3 per cent in April (Chart 50). This indicates that funding of just over \$7 would be required to settle \$100 worth of Canadian-dollar trades. (Liquidity savings will grow as the value of trades settled through CLS increases.) This compares with a liquidity ratio of about 2 per cent for all CLS currencies combined.

In 2004, the CLS Bank intends to start settling the Hong Kong dollar, the Korean won, the New Zealand dollar, and the South African rand once all CLS criteria are met and if regulatory approval is received. This follows the introduction of three Scandinavian currencies in 2003 (Danish, Norwegian, and Swedish), as well as the Singapore dollar.

In 2003, the Bank began meeting with operators and major participants of key clearing and settlement systems in Canada in order to explore the potential for strengthening the resilience of the financial system to severe shocks, such as the power outage of 2003. In 2004, the Bank is continuing to work with the Canadian Payments Association and the Canadian Depository for Securities to address business-continuity planning in clearing and settlement systems from a systemwide perspective.

**Chart 50 Canadian-Dollar Foreign Exchange Trades Settled by the CLS Bank**



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# Reports



## Introduction

**R**eports address specific issues of relevance to the financial system (whether institutions, markets, or clearing and settlement systems) in greater depth.

The Bank of Canada regularly hosts conferences and workshops. The first two reports in this issue summarize two such recent events, which focused on financial system developments and regulation. The third report addresses the implications for the financial system of the solvency status of defined-benefit pension plans in Canada. The last report aims to contribute to the current debate in Canada on securities market regulation by reviewing some of the literature on the organizational structure of financial market regulation.

Financial markets and financial infrastructure arrangements are becoming increasingly inter-related and globalized. This has led many financial institutions to modify their business lines with resulting implications for their risk-return profile. These changes have also highlighted the need to understand how the regulatory environment—which is defined by the rules and incentives that influence the decisions of regulators, financial institutions, and non-financial agents—can best promote macrofinancial stability. In this context, the report, *The Evolving Financial System and Public Policy: Conference Highlights and Lessons*, explores three key financial system issues: financial contagion, implications of bank diversification, and financial sector regulation.

Technological innovations have been an important driver of financial market developments. In particular, technology enhancements have affected the way in which market participants can trade securities with each other. These innovations have presented opportunities for enhancing the liquidity and efficiency of financial markets. These enhancements have, however, challenged regulators to support their benefits

to market quality, while fostering competition, innovation, and market integrity. The report, *Bank of Canada Workshop on Regulation, Transparency, and the Quality of Fixed-Income Markets*, summarizes the discussions on changes in these markets and how regulation regarding the availability of trade-related information should evolve.

The non-financial corporate sector can have an important influence on the financial system. The report, *What Is the Funding Status of Corporate Defined-Benefit Pension Plans in Canada?*, analyzes how the price movements of equities and fixed-income assets have resulted in a marked deterioration in the solvency status of some pension plans. The report analyzes the evolution of funding deficits for defined-benefit pension plans and assesses the extent of the deficits for individual firms and for Canadian financial stability.

Canada's financial services sector has changed rapidly in response to technological and financial innovation, greater international and local capital flows, and new financing methods. In response to these changes, industry participants in Canada have called for a reform of the current securities regulatory structure. In *The Organizational Structure of Financial Market Regulation: Highlights from the Literature*, insights from the academic literature are provided to contribute to the ongoing debate about the regulatory structure of securities markets in Canada. Issues related to self-regulatory organizations are also examined.



# The Evolving Financial System and Public Policy: Conference Highlights and Lessons

*Pierre St-Amant and Carolyn Wilkins*

**T**he Bank of Canada hosted its 12th Annual Economic Conference in Ottawa on 4 and 5 December 2003. Representatives from various public and private organizations joined Bank of Canada staff to discuss three key issues affecting the financial system: financial contagion, implications of bank diversification, and financial sector regulation. This article presents highlights of the conference and directions for future research.<sup>1</sup>

## Financial Contagion

The Bank of Canada works to promote a sound and stable financial system, one in which problems in one part do not trigger instability elsewhere. Financial markets and financial infrastructure arrangements are becoming increasingly interrelated and globalized. It is therefore important to understand the channels through which financial crises spread across institutions, sectors, and countries so that policy-makers can understand how to better safeguard systems against contagion.

Three conference papers attempted to gain insight into the nature of contagion. **Santor** studies the extent to which Canadian banks have become globalized and how Canadian foreign-asset exposures have adjusted to crisis events. Using firm-level panel data from 1984 to 2003, the author finds that Canadian banks are very active globally, although the composition of exposures has changed over the past two decades.

In particular, Canadian banks now have lower foreign exposures in terms of deposits and loans but higher exposures in terms of foreign securities. The author finds that banks do not adjust their portfolios of foreign securities immediately in the presence of a crisis, and that a banking crisis in one country does not appear to influence the decision of banks to continue doing business with countries that have similar characteristics to the country in crisis.

**Gobert et al.** study the lending market under decentralized and centralized systems. The authors develop a model of a competitive inter-firm lending market in which firms can borrow or lend. They identify a source of inefficiency in this market that may lead to financial fragility. For instance, a liquidity shock can have a persistent component and can lead to firm failures that are inefficient. In this model, the authorities can help to eliminate this inefficient equilibrium by ensuring that there is sufficient liquidity in the system. Conference panellists were of the view that these types of theoretical models represent a good start but are too highly stylized to have direct implications for real-world policy.

**Gropp and Vesala** take this field of study a step further by using market-based indicators to determine the probability that a European bank faces financial difficulty, given that other European banks are also facing difficulty. They find significant evidence of contagion both domestically and across borders. This contagion appears to be typically generated by particularly concentrated interbank exposures. Their empirical model also indicates that larger banks are the main sources and the main victims of cross-border contagion. The discussant of this paper underscored a caveat to these conclusions that the authors' approach is of the reduced-form

1. A more detailed discussion of this conference will be presented in the autumn 2004 issue of the *Bank of Canada Review*. Conference papers and discussions are available on the Bank of Canada's Web site at: <[www.bankofcanada.ca/en/economic\\_conference\\_2003/index.htm](http://www.bankofcanada.ca/en/economic_conference_2003/index.htm)>. Proceedings of this conference will be published in 2004.

type, which complicates the interpretation of their results. Nonetheless, their study provides a useful starting point for future research on this topic.

## Bank Diversification

Central banks rely on the financial system to transmit the effects of monetary policy actions to the real economy. For this reason, it is very important to understand the implications of new business lines and changing strategies for pricing and diversifying risk. Two conference papers contributed to our understanding of the links between the changing behaviour of financial institutions and risk-return trade-offs. These papers suggest that diversification, encouraged to some extent by regulatory changes, has not always had beneficial implications for the risk-return trade-off.

**Stiroh** studies the implications for risk-adjusted profits of the shift in the activities of U.S. bank holding companies (BHCs) towards a wider range of financial services. This shift was encouraged by many factors, including regulatory changes, such as the Gramm-Leach-Bliley Act of 1999. This act explicitly allowed bank holding companies and their subsidiaries to engage in a host of new activities, such as brokerage, portfolio advice, and underwriting. The authors find evidence of diversification benefits in terms of higher risk-adjusted profits across BHCs, but these benefits are offset by increased exposure to activities that are associated with lower risk-adjusted profits.

In a related paper, **D'Souza and Lai** study how the efficiency of Canadian banks is affected by regional and industrial diversification in portfolios, as well as by diversification in business lines and financing sources. They construct a measure of efficiency using a portfolio-allocation approach. The authors find that bank efficiency is increased by diversification of business lines and financing sources; reduced by regional diversification; and unaffected by industrial diversification. The discussant of the paper found this approach to be an improvement over the existing literature because it explicitly takes into account the risk-return trade-off facing banks and, hence, the overall welfare of banks and depositors. The discussant also noted that, in future work, it may be useful to look at some of the model's assumptions,

which appear to be overly simplistic. For example, the model does not explicitly account for informational frictions or for non-pecuniary elements in bank returns that are not captured in price and market-return data (e.g., credit rationing and the use of collateral).

These papers highlight the importance of studying diversification using measures that explicitly account for the risk-return trade-off. If it is true that diversification does not always raise the risk-adjusted returns to banks, future work should concentrate on determining the reasons why banks are not making more profitable portfolio choices. At the same time, discussion by conference participants revealed many deficiencies in the data used (e.g., short sample periods, combining book and market value data, the omission of some activities such as off-balance-sheet activities), pointing to a major challenge in this type of analysis.

## Financial Sector Regulation

The Bank of Canada is very interested in how the regulatory environment, including the regulations themselves, supervision, or regulatory governance (the governance arrangements of the regulatory agencies themselves), can best promote macrofinancial stability. The regulatory environment is defined by the rules and incentives that influence the decisions of regulators, financial institutions, and non-financial agents. Getting the incentives right is important for sound economic performance, and these incentives must adapt to a changing financial landscape. Several aspects of this issue were addressed at the conference, including the relationship between governance and financial sector soundness, the theoretical basis of bank regulations for capital requirements, and the implications of bank capital requirements for the transmission of monetary policy.

**Das et al.** study the relationship between regulatory governance and the soundness of the banking sector. They construct indexes of banking sector soundness, regulatory governance, and public sector governance for a large number of countries. They then test whether these indexes are related to the capacity of the banking sector to withstand shocks. Their regression results indicate that good regulatory governance has a statistically significant, positive influence on banking sector soundness. The results also

indicate that macroeconomic conditions, as well as the quality of political institutions and public sector governance also contribute to banking system soundness. The main lesson from this paper for policy-makers is that good regulatory governance will pay off in terms of soundness in the domestic financial system. The authors suggest that future work could extend these tests beyond the banking sector to the entire financial system.

**Dionne's** analysis of the optimal design of regulation for the banking sector is based on an extensive review of the literature. He argues that bank regulation can be justified in principle by the possibility that bank runs could prevent banks from playing their crucial role as the main provider of liquidity to the economy. The author views deposit insurance as one type of regulation capable of mitigating that risk. That said, Dionne thinks that national authorities should continue to improve deposit insurance by better aligning its pricing with individual bank risk. Authorities should also explore the possibility of using other regulatory tools such as subordinated debt and should work on improving bank governance. With respect to minimum capital-adequacy requirements, Dionne argues that there is little evidence that this approach reduces bank risk and some evidence that it may be the source of costly distortions.

**Gale** voices similar concerns about capital-adequacy requirements. He builds a simple model of an economy with a financial sector in which banks play a pivotal role. The main conclusion from this model is that imposing constraints on capital adequacy does not improve overall welfare. This is because market forces ensure that banks choose the right capital structure in equilibrium. Extensions of the basic model generate cases where the allocation of resources determined by the market is not necessarily optimal, but minimum capital requirements still do not seem to be welfare improving. While this work raises important questions, the applicability of its findings for policy may be limited by the simplicity of the model.

Changes in capital requirements can, in principle, affect how banks price risk and change the cyclical properties of bank capital. **Van den Heuvel** examines how capital-adequacy requirements alter the role of bank lending in the transmission of monetary policy. He constructs a dynamic model of bank asset and liability

management that incorporates risk-based capital requirements. This model shows that monetary policy effects on bank lending depend on the capital adequacy of the banking sector and that shocks to bank profits can have a persistent effect on lending. Bank capital affects bank lending even when the regulatory constraints on bank capital are not binding. Given new capital requirements under Basel II and their potential to change the dynamics of bank capital, more research in the area of the interaction between bank-capital standards and monetary policy is very important.

**Chant** focuses on the governance of Canadian banks, investigating whether linkages between bank boards and the boards of non-financial corporations influence the pattern and performance of bank lending. Based on a preliminary exploration of Canadian data on bank loans, board linkages, and credit ratings, he reaches four main conclusions: i) Canadian banks are more likely to lend to corporations with which they share board linkages than to corporations linked with other banks; ii) the tendency to lend to linked corporations is stronger where the link involves a corporate officer than where it consists of shared directors; iii) there is weak evidence that corporations that receive loans from banks linked by officers have a higher probability of experiencing a downgraded credit rating than corporate borrowers in general; and iv) there is no evidence that the credit-rating experience of borrowers linked to the lending bank through directors differs from that of other borrowers. The author points out that more work is needed to test the robustness of these results, particularly given the short sample period used in the analysis. Future research could also focus on the factors that may be driving these results, including the possibility that there may be informational advantages to banks from corporate links.

## Conclusions

The conference papers highlight the important interaction between financial governance and financial and economic activity. For example, there is compelling evidence that good regulatory governance is key to the sound functioning of the financial system. Also, there is evidence that regulation of bank capital can have important implications for the portfolio choices of banks

and for the monetary policy transmission mechanism.

As the conference panellists noted, however, the conference raised more good questions for future research than it provided clear policy recommendations. For instance, the papers presented by Dionne and Gale underscore the need for further research on the appropriate design and effects of bank-capital requirements. More work in the area of contagion is also needed to fully understand how shocks are propagated through the financial system.

In pursuing this work, it will be important to emphasize the development of theoretical and empirical models that include key real-world characteristics and that could be used to guide policy-makers.

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# Bank of Canada Workshop on Regulation, Transparency, and the Quality of Fixed-Income Markets

Lorie Zorn

In February 2004, the Bank of Canada hosted a two-day workshop, *Regulation, Transparency, and the Quality of Fixed-Income Markets*. The event brought together international academics, regulators, and market participants to discuss changes in fixed-income markets and how the regulatory environment, particularly with respect to the dissemination of trade-related information, might evolve in the context of rapid technological change. This article presents the highlights of this workshop.

## Background

Technological innovation in securities trading has presented opportunities for enhancing the quality of financial markets, partly by facilitating increased transparency. In this context, transparency refers to the ability of market participants to observe information regarding quotes, prices, and volumes. Technological changes have also provided challenges for the evolution of a regulatory regime that supports the liquidity and price-discovery aspects of market quality, while fostering innovation, competition, and market integrity.

Although the finance literature broadly supports the view that greater transparency leads to greater market liquidity and efficiency, regulators around the world have found that the application of theories to actual markets is complex. In the case of fixed-income markets, this is further complicated by the dearth of data and research on securities traded over-the-counter (OTC). Most studies have been based on exchange-traded equities. More recent research and market participants themselves have suggested that, at a certain point, a trade-off exists between greater transparency and the liquidity of fixed-income markets.

## Workshop Themes

To examine these issues and to facilitate the discussion, workshop participants were directed to consider three fundamental questions:

- **How has technological innovation affected transparency and market quality?** To support well-functioning financial markets, it is important to understand the effects of technological change on factors such as transparency, liquidity, and efficiency. Because these factors are interrelated, any discussion of one cannot be undertaken without also considering the others.
- **What is the role of financial market regulation in light of these developments?** Advances in trading technologies may not result in enhanced market quality overall. An assessment is needed of whether regulatory intervention is required and whether certain aspects of market quality and certain sectors of the marketplace require particular attention.
- **How can the regulatory framework support market quality and, at the same time, foster continued innovation?** Trade-offs exist not only in improving certain aspects of market quality, but also in addressing the differing needs of various markets and market structures. The regulatory framework should recognize and accommodate these differences.

The workshop presentations and discussions highlighted several key issues that should be considered in the near-term development of financial market regulation. These include the advantage of evolutionary change; ownership rights with respect to trade-related information; the relationship between market structure and

market quality; accessibility by the retail investor; the definition of best execution; and lessons drawn from the experience of other jurisdictions.

The opinions of workshop participants on these issues and, more generally, with respect to the underlying workshop themes, are outlined in this article. First, there is a brief overview of how electronic trading has evolved, particularly in the government bond markets of the United States, Europe, and Canada. This is followed by the key issues in fixed-income regulation raised at the workshop. Finally, suggestions are presented for the role of financial market regulation in the current environment.

## **The Evolution of Electronic Trading in Fixed-Income Markets**

Electronic trading systems have advanced more rapidly in the United States and Europe than they have in Canada. Presentations by workshop participants suggest that innovations in fixed-income trading have improved market quality. Although trading technologies have not significantly altered the traditional dealer-based structure of fixed-income markets, they have enhanced it.

The Bond Market Association (BMA) estimates that there are 77 electronic trading platforms in the United States and Europe, and these are most popular in the interdealer sector. Although electronic trading accounts for a sizable number of customer-dealer trades in government bond markets—i.e., the highly liquid issues of U.S. Treasuries and European government bonds—it does not represent the majority of trading by dollar value. For large trades and during times of market stress, clients still value the liquidity and the “market colour” that they can receive directly through an investment dealer.

Electronic interdealer broker (IDB) screens have been available to U.S. dealers since the mid-1970s. But it was not until the creation of GovPX in 1990 that IDB trade information became more broadly accessible. Over the subsequent ten years, electronic trading systems proliferated in the United States, enabling traders to access prices electronically and in many cases execute trades on-line.

According to Euro MTS, a major interdealer electronic trading system, technological changes in the past decade have had a greater impact on European government bond markets, because these markets were initially more fragmented across individual countries and were less transparent than those in the United States. Electronic trading systems have allowed quote information to be more broadly available and have also permitted the costs of trading and settlement to decline, which significantly increased turnover and liquidity.

Technological innovation in electronic trading has been comparatively slower to develop in Canada. While the four Canadian IDBs have electronic capabilities, trading still occurs via telephone. Since March 2001, CanPX has enabled subscribers to access some IDB trade data initially on government bond trades and later for trades in selected corporate debt. This system has the potential to significantly enhance the transparency of Canadian fixed-income markets. Three alternative trading systems (ATs) have been launched in Canada in the past few years. The volume of electronic trades is growing, but it is still too early to conclude whether or not these systems will be profitable or will be adopted by market participants.

Overall, the experience, particularly from the United States and Europe, indicates that technological changes have had positive effects on price discovery because of the greater availability and centralization of information. It was also suggested that the liquidity of fixed-income markets in benchmark issues of government bonds has benefited from these changes. Nevertheless, electronic trading platforms have not diminished the need for dealer services. Fixed-income markets are still largely decentralized, relying on dealers to provide a market-making function.

## **Highlighted Issues in the Regulation of Fixed-Income Markets**

### **Evolution versus revolution**

In the development of electronic trading systems and in the regulation of financial markets, it was suggested that success is linked to making

small, gradual changes, so that market participants can easily adapt.

In fixed-income trading, evidence suggests that those enterprises that have leveraged existing practices tend to be successful. Trading on electronic platforms has flourished on systems that have automated and electronically linked different stages of a trade, from the search for a counterparty through to clearing and settlement. Industry-driven improvements, such as the ongoing development of a common communications protocol and straight-through processing, have been built on existing practices. Although these changes have generally evolved by degrees, their qualitative impact on financial markets has been positive and significant.

In securities regulation, those changes that have incorporated extensive consultations with market participants and have allowed gradual modifications in requirements seem to have been successful. For example, the TRACE<sup>1</sup> project in the United States was implemented in three distinct stages over a two-year period. The preliminary evaluation of the program, from both regulators and market participants, is that it has improved market quality.

### **Ownership rights with respect to information**

A question implicit in examining the regulation of transparency is, Who should benefit from trade-related information? Although there was a general sense that more information is usually better for those who are uninformed, how to protect the interests of those who generate that information was unclear.

One view from the IDB perspective is that those outside a trading sphere should not be allowed to free ride. For example, interdealer brokers supply the quote and trade information published on CanPX, but they don't receive any direct benefits. It was suggested that the level of transparency should be appropriate to the

function and to the market served. It was also suggested that institutions servicing a market group should find their own solutions to meeting the information needs of that group. This implies that the dealers, not the IDBs, should develop ways to better inform their customers.

It was also established that trader identity is valuable information and that its publication could damage the ability of traders to manage risk. The general view at the workshop was that trader anonymity should be upheld.

### **Liquidity, transparency, and market structure**

Fixed-income markets rely on market-makers to provide liquidity. The appropriate level of transparency must therefore balance the desire for more information with the dealers' motivation to limit information so that they can continue to conduct market-making services profitably. This trade-off depends on how trading is structured. Two perspectives regarding the relationship between transparency, liquidity, and market structure emerged at the workshop:

i) At one extreme, in a traditional, quote-driven fixed-income market, dealers compete for customer order flow. The information that dealers receive in conducting their business affects their ability to make a profit. And their ability to conduct business profitably, in turn, affects the supply of market liquidity. If forced to give up all trade-related information, their incentive to compete to make markets will decline, and higher prices could result. This in turn affects the ability of customers to manage their investment needs. One view from workshop participants is that limits on the dissemination of trade-related information in the OTC fixed-income marketplace benefits market liquidity and overall market quality.

ii) At the other extreme, based on evidence from more centralized, order-driven marketplaces with higher transparency, the view is that the widespread availability of trade information motivates market-makers to be more competitive. It was suggested at the workshop that this type of trading structure can provide better price discovery and more efficient execution in terms of low cost and best price, resulting in improved liquidity overall. It was implied that this is particularly true for commoditized financial assets, such as government securities. As such, the

1. The Trade Reporting and Compliance System is a post-trade transparency system launched in July 2002. All National Association of Securities Dealers dealers and IDBs are required to submit the results of their trades in corporate bonds within a specified time. The information is then entered into a database used for market surveillance. Results with respect to the most liquid securities are publicly redistributed via TRACE in order to enhance transparency.

enhanced transparency offered by fixed-income ATSs could contribute to improved market quality.

In Canada, a large portion of trading in the secondary market is conducted through the major bank-owned dealers. CanDeal, a fixed-income ATS in Canada, has automated the traditional dealer-based trading structure and has increased transparency for institutional investors. It has also offered a new source of liquidity to smaller institutional investors by enhancing their access to the dealers. However, it is not currently available to the retail sector. The trading platforms under CollectiveBid (BondMatch) and Bloomberg (BondTrader) have also provided institutional investors with greater access to information. Moreover, these systems offer an alternative trading model that could potentially provide a new source of market liquidity, since clients are able to trade with each other. In practical terms, only BondMatch offers retail investors access, via a broker, to a broader number of dealer counterparties.

### **Retail access**

During the workshop, it became apparent that the retail sector has played a smaller role in the transparency debate than the wholesale sector. Retail investors typically represent a small proportion of the volume of fixed-income trading, but changing demographics may bring an increase in retail participation and focus more interest in retail issues. Accessibility to information and investment expertise is one such issue.

To date, fixed-income trading activity has been relatively concentrated, dominated by a small number of high-value transactions undertaken by a few highly skilled participants. These are usually large institutional customers, such as pension funds. Retail customers constitute a very small percentage of the volume of fixed-income trading. In contrast, retail transactions account for a much larger volume of equity market trading. Because the retail trading volume is relatively small in fixed-income markets, retail investors are relatively less informed than institutional investors.

One opinion echoed by many workshop participants was that fair markets require access to both information and to comparable levels of investment expertise. For the retail investor, this refers not only to price, but also to other market-

moving information. Sources of information accessible to the retail investor are limited, and it was suggested that, in some cases, even retail brokers do not have access to all available information. In terms of expertise, retail investors are usually considered to be less sophisticated, having limited experience and limited resources for analysis relative to institutional investors.

Because of this lack of sophistication and resources, retail investors appear to be price-takers in fixed-income markets and will likely pay more to transact than their institutional counterparts. A study of the U.S. municipal bond market, for example, indicated that not only are transactions costs higher for retail versus institutional customers, but that they are high considering the minimal level of credit risk. Government securities are on the opposite end of the credit spectrum from common equities, but despite their lower credit risk, retail costs are greater for bonds than for equities. It was suggested that the broader dissemination of trade-related information for equities might contribute to this discrepancy.

This would suggest that transparency in fixed-income markets could be increased. As some institutional investors acknowledge, they can afford to share information as long as the supply of liquidity from the dealers is not affected. With more information, there can be more confidence in valuing trades, and trading by the retail public would likely increase. In particular, as the aging baby-boomer population becomes more conservative in its portfolio management, it has the potential to increase its participation in the fixed-income market. However, many workshop participants conceded that any increase in trade-related information should also be accompanied by more education, if the retail investor is to become more sophisticated and more active in fixed-income markets.

### **Best execution**

Given the diverse needs of investors, many workshop participants were of the opinion that the term “best execution” should refer to the process surrounding a trade. However, best execution is most often considered in the context of a client receiving the best price in a transaction. In centralized equity markets, where transparency is fairly high, there is less risk of price misjudgment than in fixed-income markets, where

most of the market is decentralized and transparency is limited.

Best execution does not appear to be an issue for the experienced and informed institutional investor, particularly the larger ones. These market participants can threaten to withdraw business from a dealer if they perceive that they have been treated unfairly. Market forces will therefore likely ensure that these institutional investors receive best execution.

Workshop participants felt that on the retail side, investors are not as sophisticated, nor as powerful. Although wealth-management professionals realize their obligation to provide best execution to their customers, this service is not accessible to all. This implies that trade data are critical in order for regulators to assess market integrity and to protect all retail investors.

In the United States, both investors and brokers feel that the TRACE project has helped them to gauge whether they are getting fair prices and quality service. The data from this project have also made U.S. regulators aware that perceptions in the marketplace are not always accurate; i.e., individuals may know less about the marketplace than they think they do. This applies not only to investors, but also to brokers, dealers, and regulators.

### **Lessons from the international perspective**

Four key lessons can be drawn from the experiences of non-Canadian regulators participating at the workshop:

- i) Regulators need to work with market participants to manage change in a gradual and thoughtful manner. Crisis-driven change is not desirable. Regulators should focus on the net long-term benefits, while being aware of the potential damages that may occur in the process.
- ii) Canadian regulators can benefit from the experiences of other regulators. Although markets differ, there are similarities on which Canadian regulators should focus. The U.K. Financial Services Authority (FSA) has supported a functional approach to transparency, where information requirements are microstructure specific. However, the FSA is now also considering requirements for fixed-income markets that differ from those for equity markets. In contrast, the U.S. approach is that transparency requirements

should be imposed uniformly across a market, regardless of the trading mechanism.

iii) Thorough study and evaluation are key. The information requirements of the marketplace should be assessed before mandating change, and the impact of change should be studied before further changes are implemented. In addition, because certain potential users of this information may not be aware of its availability or applicability, it was suggested that enhanced transparency initiatives should be supported by investor education.

iv) Consideration should be given to the costs of transparency reporting. Ideally, those who receive the value from the information should pay, but often this is not practical. Under the TRACE system, the National Association of Securities Dealers collects fees from those who report and from those to whom the data are sold. In Canada, it was suggested that the small number of market-makers might be unduly burdened by such a system.

## **The Role of Financial Market Regulation**

Workshop participants seemed to agree that for well-functioning markets regulators need to focus on two key objectives: promoting fairness and protecting the interests of investors.

The balance of opinion would suggest that fairness in the marketplace refers to investor access to information and trading opportunities, as well as to fairness in terms of competition. While investors should not be allowed to free ride on the information of other traders, they should have better decision-making ability. Regulation should support an increase in transparency, with special consideration for retail investors. At the same time, regulation needs to recognize the property rights of traders, the value of trade information, and the importance of trader anonymity. Regulation could also facilitate customers' ability to trade without a dealer.

In terms of fairness in competition, it was suggested that regulators allow specialization to occur, even if it appears as fragmentation of the marketplace. To level the playing field, similar rules should be established for competitors performing the same activities. Support of one group may be justified, however, in order to better develop the market.

It was generally agreed that investor protection should be aimed mainly at the retail investor. Large institutional investors are able to look after their own interests, and market forces will generally guide the best outcomes for this market segment. Retail investors do not have the same level of resources or knowledge, and best-execution rules are not always sufficient. Some investors will place more importance on factors other than price, such as the speed of execution. Regulators should bolster the “know-thy-client” requirements for retail brokers and monitor this aspect of intermediary activity.

## **Insights for the Canadian Fixed-Income Market**

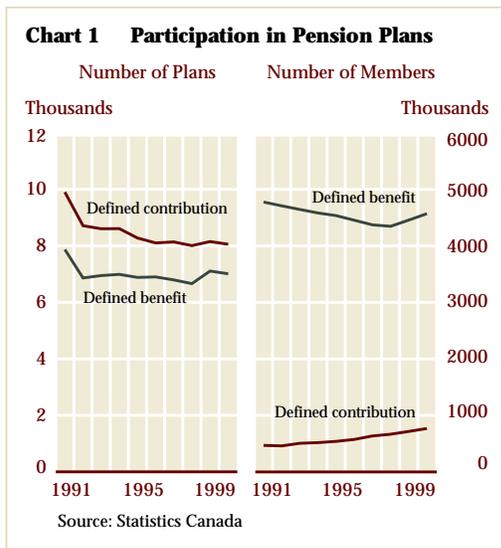
Evidence from foreign jurisdictions and limited academic research, plus acknowledgement from institutional investors themselves, suggests not only that enhanced transparency is required, but also that the market will adapt to it, support it, and ultimately benefit from it in the longer term. But every market has unique characteristics, which determine the amount and kind of information that is needed. The optimal level of transparency is not necessarily full transparency.

Although the participants agreed that the status quo does function well overall, particularly for the dealers and their large institutional clients, it would appear that improvements can be made to benefit smaller institutional investors and retail investors. Competitive forces might eventually bring about these required changes, but, given the characteristics of the Canadian fixed-income market, change will occur more quickly if supported by regulatory action.

The best results are likely to occur when regulatory changes are well thought out, implemented in measured steps, and when effects are evaluated thoroughly before proceeding further. It is the responsibility of all stakeholders to take a more active role in transparency issues going forward in order to help protect their interests and shape desirable outcomes.

# What Is the Funding Status of Corporate Defined-Benefit Pension Plans in Canada?

*Jim Armstrong*



In recent years, the funding adequacy of defined-benefit pension plans—in Canada and in other industrial economies—has deteriorated markedly, reflecting financial market developments that have adversely affected both fund assets and liabilities. Unfunded pension obligations can adversely affect the financial condition of the sponsoring corporation, representing a potential drain on cash flow and a reduction in the net worth of the firm. In the extreme, this could have implications for financial stability.

A *defined-benefit* pension plan provides plan members with a predetermined level of pension income when they retire—the exact level depends on variables such as income and years of plan membership—and employer sponsors tend to assume a large proportion of the risk of meeting that benefit. This contrasts with *defined-contribution* plans, where employer and employee contributions are defined (often as a fixed percentage of employee income), and employees typically assume most of the risk of achieving a certain level of pension income. In Canada, defined-contribution plans account for a greater number of *plans*, but defined-benefit plans account for a much larger share of plan *members*, reflecting the fact that many of the largest plans are of the defined-benefit type (Chart 1).

## Background

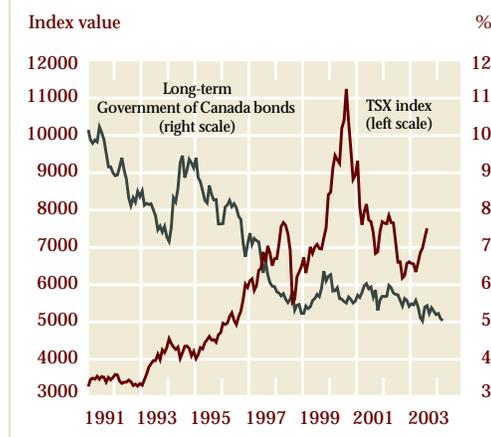
Weak equity markets from 2000 through late 2002 initially raised concerns about the deteriorating funding condition of corporate defined-benefit pension plans. This is because the typical large Canadian corporate pension fund has 50 to 60 per cent of its assets invested in equities, a proportion that has tended to rise in

recent years.<sup>1</sup> Furthermore, pension plan funding positions have also been adversely affected by the decline in long-term interest rates, which increases estimates of pension plan actuarial liabilities that reflect mainly the present value of future retirement benefits.<sup>2</sup> Chart 2 presents the trend in the equity market and the yield on long-term bonds in Canada over the period in question.

Compounding the funding problem has been the fact that many plan sponsors took contribution holidays when plans were in surplus during the rising equity market of the late 1990s. These contribution holidays were, to some extent, a matter of choice by sponsors, although they also reflected regulations imposed under the Income Tax Act related to the maximum allowable surplus.<sup>3</sup>

Demographic and employment trends suggest that, in five to ten years, some companies might have one retiree for every active employee. Thus, the underlying growth in pension liabilities is continuous and may be accelerating. When the asset base stops growing and actually declines, as it did during the latest bear market, large funding gaps can arise very quickly. The additional boost to plan liabilities from declining interest rates aggravates the funding problem.

**Chart 2 Key Variables Affecting Pension Deficits in Canada**



1. Greater investment in equities by pension plans has been motivated by the belief that they will earn returns 2 to 3 per cent higher than those on bonds over the long run. Equities can, however, impart considerable risk, in the form of volatility, to portfolio returns because they represent a “mismatch” with plan liabilities, which tend to move with interest rates.
2. Lower bond yields should be favourable for bond holdings (which typically comprise about 40 per cent of pension plan assets) but unfavourable for the present value of liabilities, which comprise 100 per cent of the balance sheet. Therefore, the net effect is substantially unfavourable. This problem is amplified by the fact that the duration of bond holdings tends to be shorter than the duration of liabilities.
3. Under Section 147.2 of the Income Tax Act, employer contributions to registered pension plans must stop when a certain maximum allowable surplus is reached. Excess surplus is defined as the lesser of a) 20 per cent of liabilities and b) the greater of 10 per cent of liabilities and twice the annual service cost.

## Pension Funding Regulations and the Corporate Sponsor

Pension plans in Canada are regulated at either the federal or provincial level, depending on whether employees work in areas that fall under federal or provincial jurisdiction. The Office of the Superintendent of Financial Institutions (OSFI) oversees the plans of businesses under federal jurisdiction, such as banking, transportation, and communications, as well as those of federal Crown corporations under the Pension Benefit Standards Act, 1985 (PBSA). Each province, in turn, has its own pension legislation and regulations; however, the legislation tends to be reasonably similar across provinces.<sup>4</sup>

Canadian pension plans must file an actuarial valuation report at least once every three years with their regulator (be it federal or provincial). Both a *going-concern* and a *solvency* valuation are required. The going-concern assessment can be based on either market values or long-run values for plan assets, the latter being derived from smoothing or modelling procedures; liabilities are calculated as the present value of the expected stream of pension payments, factoring in the effect of variables such as salary increases. A going-concern deficit (i.e., liabilities exceed assets) must be funded by the employer over a maximum of 15 years.

A solvency assessment is made on the assumption that the plan is wound up on valuation day. This method typically uses market value or fair value for plan assets and windup values for plan liabilities.<sup>5</sup> A solvency deficit must be funded over a maximum of five years.

In the current environment, many pension plans are facing solvency deficits. If a valuation report has been filed showing a deficiency, the regulators would normally require annual contributions sufficient to cover current service costs and,

at the same time, close the solvency shortfall over the mandatory five-year time frame.

The existence of pension deficits, particularly of the *solvency* variety, and the requirement for additional pension contributions, can pose financial hardship for the sponsoring corporation. The degree of potential stress for the sponsor depends on the magnitude of the required payments relative to the size of the firm, as well as on the firm's own financial condition. Indeed, a pension obligation, although "off-balance-sheet," is a legal liability, which can ultimately force a firm into bankruptcy if the contributions required by the regulator cannot be met. Thus, pension deficits represent a potential claim on the earnings and net worth of the corporation.<sup>6</sup>

## Recent Developments in Pension Funding

Many of Canada's largest, publicly traded corporations offer their employees defined-benefit pension plans.<sup>7</sup> In aggregate, these plans have fallen heavily into deficit since 2000 (see Table 1). For example, National Bank Financial has estimated that the 79 companies in the TSX large-cap and mid-cap indexes with defined-benefit plans went from an aggregate *surplus* of about \$18 billion at the end of 2000 to an aggregate *deficit* of \$20 billion at the end of 2002 (National Bank Financial 2003).<sup>8</sup> This translates to a deterioration in the funding ratio—the ratio of plan assets to liabilities—of 28 per cent, that is, from 114 per cent to 86 per cent.<sup>9</sup>

A more recent study that examines a different sample of 68 large defined-benefit plans (including both public and private sector plans) over a somewhat longer time span (from 1999

4. Many of the largest plans are licensed in Ontario. The Financial Services Commission of Ontario supervises plans licensed in Ontario through its Pension Plans Branch. It is responsible for supervising about 47 per cent of all plans in Canada and 35 per cent of plan members.

5. Since under this exercise the plan is hypothetically being wound up, solvency liabilities are calculated by determining the cost of securing the promised benefits elsewhere—for example, through purchases of annuity contracts—on the valuation day.

6. In 2003, General Motors in the United States completed a US\$18 billion bond issue for the sole purpose of covering funding shortfalls in its pension plans.

7. While some companies have converted their defined-benefit plans to defined-contribution plans, this has not been the norm in Canada. Instead, more firms are offering their employees a defined-contribution option and are often requiring that new employees take this option. Large corporations frequently have several pension plans operating in various jurisdictions.

8. Other studies by UBS Warburg and the UWO Ivey School of Business arrive at similar estimates to the end of 2002 using slightly different survey samples.

9. Note that these data are based on the accounting or Canadian GAAP measure of pension deficits as opposed to the regulatory funding measure that is used through the rest of this report.

to 2002) estimates that the aggregate funding ratio of those plans has deteriorated by about 30 per cent (Ambachtsheer 2004).

Monitoring the trend in pension funding can be difficult because most public companies report the funding situation for their pension plans only once a year, at fiscal year-end. However, more current information can be gleaned from “synthetic” indexes, which model on a monthly basis the cumulative impact of market movements on the funding position of a “typical” Canadian corporate defined-benefit pension plan. Such measures suggest that the funding situation for the average defined-benefit plan barely improved in 2003 in spite of very strong equity markets in that year.<sup>10</sup> This can be explained by the fact that liabilities grew almost as fast as assets, partly because of declining interest rates. Chart 3 presents the components of the Watson Wyatt Pension Barometer, which are indexes of pension liabilities, assets, and the funding ratio (i.e., the asset/liability index) over the past ten years for a representative pension fund. It indicates that in 2003, a plan with an asset mix of 60/40 equity/fixed income would have seen its assets grow by 14.5 per cent in 2003. But these gains were largely neutralized by the 12.5 per cent growth in liabilities. In terms of this liability growth, about 7.1 percentage points represented normal growth. The remaining 5.4 percentage points resulted from a decline of 36 basis points in the discount rate—proxied by the yield on long-term Canada bonds—over the year. The net result is that the funding ratio improved by only a modest 2 per cent in 2003.<sup>11</sup>

## Distribution of the Funding Problem

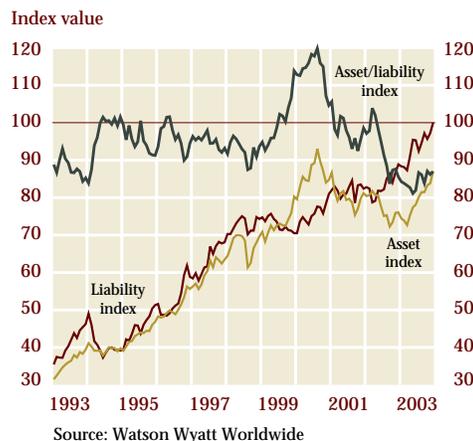
Discussion about the condition of an average or representative pension plan is useful only up to a point. To more accurately assess the financial stability implications of pension funding

**Table 1**  
**Statistics for Corporate Defined-Benefit Plans**

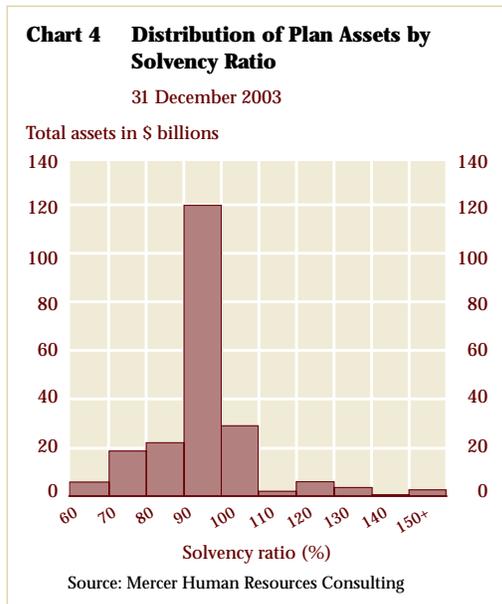
	2000	2001	2002	2003 (est.)
Number of overfunded companies	57	27	13	16
Number of underfunded companies	22	52	66	63
Plan liabilities (\$ billions)	122.8	134.0	140.9	158.5
Funding position (\$ billions)	17.8	-2.5	-20.3	-19.0
Funding ratio – assets/liabilities (%)	114.0	98.0	86.0	88.0
Median discount rate (%)	7.0	6.75	6.5	6.14

Source: National Bank Financial, except for 2003 which are estimates produced by Bank of Canada staff. These estimates assume the same sample of firms as in the preceding years.

**Chart 3 Pension Barometer**



10. The TSX increased 24 per cent in 2003.  
 11. Improvement in pension funding for Canadian plans was also constrained in 2003 by the strong appreciation of the Canadian dollar, which adversely affected returns on plan holdings of foreign equities. Most pension funds do not hedge against foreign exchange risk. For example, the U.S. S&P 500 Index rose 26.4 per cent in 2003, but in Canadian-dollar terms it rose just 4 per cent.



deficits, information about the distribution of these deficits (and surpluses) is required.

In this context, Mercer Human Resources Consulting has provided the Bank of Canada with information drawn from its client database of about 850 plans—both private sector and public sector—and aggregated to protect confidentiality. Using Statistics Canada data as a benchmark, Mercer estimates that its client base represents about 30 per cent of the assets of registered defined-benefit pension plans in Canada.

For each plan in the database, Mercer extrapolates the plan's financial condition on both a going-concern and solvency basis, from the last actuarial valuation up to 31 December 2003, taking into account actual market returns, the plan's asset mix, and estimated funding contributions.

### Distribution of solvency ratios

Chart 4 presents the distribution of plan assets on a solvency basis as of 31 December 2003. It indicates that two-thirds of assets were in plans that were only moderately underfunded, with a solvency ratio (assets/liabilities) between 90 and 99 per cent. Only a small proportion of assets—about 10 per cent—are accounted for by plans with solvency ratios of 80 per cent or lower.<sup>12</sup> Similarly, a small proportion of assets appear to have positive solvency ratios at this point. Most of these assets fall in the 100 to 110 per cent range.

### Funding projections to the end of 2008

In a forward-looking exercise, Mercer uses a model to project solvency ratios five years ahead to 31 December 2008 under three economic scenarios: baseline, pessimistic, and optimistic.<sup>13</sup>

The *baseline* scenario is essentially a continuation of the current low-inflation environment over the projected horizon. The *optimistic* scenario assumes financial market developments that are more favourable for pension plan valuations—that is, higher inflation, higher interest rates, and higher equity returns. This scenario

12. These represent about 220 of the 850 plans.

13. Projections are derived from a stochastic model that incorporates key economic variables and rates of return on major asset classes.

uses the 5-year 25th percentiles of these variables under Mercer's stochastic model. The *pessimistic* scenario is characterized by lower inflation, lower interest rates, and lower equity returns and employs the 5-year 75th percentiles of these variables. Table 2 presents the assumptions used in the projections, while Table 3 presents the total portfolio returns for each year under each economic scenario, assuming a representative asset mix of 57 per cent equities (domestic and foreign) and 43 per cent fixed-income assets.<sup>14</sup>

Mercer makes this projection (Tables 4 and 5) for two sets of plans—the group of plans in deficit and the group in surplus, as at 31 December 2003.

The solvency projections incorporate the projections for market returns, as well as the regulatory rules for funding. Plans in solvency deficit as at 31 December 2003 are assumed to be put on a contribution schedule that would eliminate those deficits over five years. The solvency position is reassessed at the end of each year and the contribution schedule revised, if required. Plans in surplus at the starting point are assumed to make contributions to cover normal pension-service costs unless the surplus exceeds the limits imposed by the Income Tax Act, at which point contributions must stop.

It can be seen from Table 4 that under the baseline scenario, plans that have solvency deficits as at 31 December 2003 are expected, in aggregate, to remain slightly in deficit as at 31 December 2008, even if special solvency payments are made. The reason for this is that the baseline return on assets (around 6 per cent for a typical asset mix) is not sufficient to cover the growth in liabilities.<sup>15</sup> Under the baseline projection, the aggregate solvency ratio for this group of plans does, however, improve materially from 89 per cent to 97 per cent.<sup>16</sup> Under the

14. The actual asset mix of each plan in the sample is used in the projection.
15. Under the assumed scenario for interest rates and return on assets, liabilities grow more than assets each year. The special solvency payments are calculated annually based on the current deficiency and are not based on a forward-looking assessment of the trend.
16. Furthermore, under the baseline projection the number of plans in deficit drops from 603 in 2003 to 519 in 2008.

**Table 2**  
**Economic Assumptions Used in the Mercer Projection**  
Per cent

Economic variable	Initial level (January 2004)	Scenario		
		Baseline	Pessimistic	Optimistic
Inflation	2.34	2.34	1.59	3.34
Yield on treasury bills	2.58	3.46	2.72	4.47
Yield on Government of Canada bonds (10 years+)	5.13	5.13	4.38	6.13
5-year equity return	8.20 <sup>a</sup>	8.15	3.60	13.20
Risk premium on equities <sup>b</sup>	2.95	2.95	2.95	2.95

a. Canadian equity return. Projected returns assume equal mix of Canadian, U.S., and international equities.  
b. Spread over yields on long-term Canada bonds  
Source: Mercer Human Resources Consulting

**Table 3**  
**Portfolio Returns Incorporated in Mercer Projection**  
Per cent

Year	Scenario		
	Baseline	Pessimistic	Optimistic
2004	5.85	3.59	8.29
2005	5.91	3.59	8.45
2006	5.98	3.59	8.61
2007	6.04	3.59	8.76
2008	6.11	3.59	8.92

Source: Mercer Human Resources Consulting

**Table 4**  
**Projected Solvency Position in 2008 for Plans in Deficit as of 31 December 2003**  
\$ billions

	Estimates as of 31 December 2003	Scenario		
		Baseline	Pessimistic	Optimistic
Number of plans	603	603	603	603
Total solvency assets	166.2	239.7	223.0	256.2
Total solvency liability	186.2	246.1	251.4	238.4
Total solvency surplus/(deficit)	(20.0)	(6.5)	(28.4)	17.9
Solvency ratio (%)	89	97	89	107

Source: Mercer Human Resources Consulting

Table 5

**Projected Solvency Position in 2008 for Plans in Surplus as of 31 December 2003**

\$ billions

	Estimates as of 31 December 2003	Scenario		
		Baseline	Pessimistic	Optimistic
Number of plans	244	244	244	244
Total solvency assets	43.1	51.1	47.2	56.8
Total solvency liability	38.5	47.1	49.2	44.3
Total solvency surplus/(deficit)	4.6	4.0	(2.0)	12.5
Solvency ratio (%)	112	108	96	128

Source: Mercer Human Resources Consulting

pessimistic scenario, the aggregate ratio for these plans does not improve.

For the group of plans starting the period in surplus (Table 5) the solvency ratio actually declines under the baseline scenario—from 112 per cent to 108 per cent. This is explained by the fact that under this exercise, some plan sponsors use a portion of their surplus to take contribution holidays.

## Projected Burden of Funding Contributions

Funding contributions comprise the required employee contributions and the employer contributions, which include both the current service cost and special contributions, if any.

Table 6 shows that plans in deficit at the end of 2003 face the need to make substantial contributions that are relatively high as a share of payroll. Under the baseline scenario, the group of companies with plans in deficit at the start of the period will be paying between 19 and 21 per cent of their payroll over the projection period, compared with 4 to 5 per cent of payroll for companies with plans in surplus at the end of 2003. Under the pessimistic scenario, contributions in aggregate for the plans in deficit are about 22 to 25 per cent of payroll.

Table 6

**Funding Contributions as a Percentage of Payroll: Baseline Scenario**

	Plans with solvency deficit as of 31 December 2003 (603 plans)		Plans with solvency surplus as of 31 December 2003 (246 plans)	
	Employer: Current service	Employer: Special payments	Employer: Current service	Employer: Special payments
2004	10	11	4	0
2005	10	11	4	0
2006	10	10	5	0
2007	10	10	5	0
2008	10	9	5	0

Source: Mercer Human Resources Consulting

## Conclusions

In spite of strong equity markets in 2003, the majority of defined-benefit pension plans in Canada are still facing moderate deficits, and a minority are facing more severe deficits.

It is possible to conclude that only a handful of plans are so severely underfunded that the requirement to make pension contributions may well call the viability of the sponsoring firms into question. A large number of firms will, however, need to make substantial contributions in order to close funding gaps, even in a generally benign financial market environment.

One interpretation of this result is that while difficulties in funding pensions may not pose meaningful risks for the stability of the financial system, they may represent a prolonged drain on corporate earnings and cash flow. This, in turn, could leave firms vulnerable to other shocks, such as an economic slowdown that significantly reduces cash flow.

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# The Organizational Structure of Financial Market Regulation: Highlights from the Literature

*Christine Fay and Nicolas Parent*

*The structure of securities market regulation in Canada is the focus of much debate among the federal and provincial governments, provincial securities commissions, industry participants, and academics. While the Bank of Canada is not directly involved in this debate, it has an interest in the efficiency of Canada's securities markets. This note reviews some of the issues raised in the academic literature regarding the organizational structure of financial market regulation.*

**R**apid technological change, the globalization of markets, and the increasing complexity of financial innovations are just a few of the factors that have dramatically altered the global financial environment. Given the magnitude of changes in the financial landscape on both a domestic and global scale, many countries have begun to question whether their current regulatory structures are still appropriate, and some have already implemented major reforms.

Canada's financial services sector underwent rapid changes in the 1980s, which led to a number of reforms.<sup>1</sup> More recently, however, the focus of reform has turned to the regulation of securities and, more generally, financial markets. In the past decade, provincial regulators and others have put forward various initiatives covering not only the development of financial markets, but also the harmonization of securities regulations across different jurisdictions in Canada. More recently, there has been a call for significant restructuring of the current regulatory structure for securities markets to better reflect the changing domestic and international environment. (See Box 4 on page 24.)

With so many complex developments unfolding, it is instructive to step back and ask whether we can gain any insights from a review of the academic literature. This article highlights some of the issues in the literature on regulatory structure that are relevant to the debate surrounding the

regulation of securities and financial markets. Although some of the literature presented is broad and encompasses the entire financial sector, our focus is on lessons for the structure of securities market regulation.

This article begins with a discussion of why the institutional structure of regulation matters. Following this, the three main approaches to the structure of regulation are outlined: institutional, functional, and objectives-based. Another aspect of the organizational structure of regulation concerns regulatory competition, which is related to the number of regulators (or agencies) covering a particular area within the financial market. This aspect is addressed through a discussion of the pros and cons of having a measure of regulatory competition instead of a single agency. In the final section, some of the unique issues related to self-regulatory organizations (SROs) are introduced.

## Why Does Structure Matter?

Goodhart et al. (1998) state that, above all, regulatory structure has an impact on the overall effectiveness of regulation and supervision because of the expertise, experience, and culture that develop within particular regulatory agencies. Other major considerations when determining the appropriate regulatory structure include effectiveness in handling conflicts, the different costs of structures, and the issue of overlaps (unnecessary duplication) and gaps (aspects of businesses or institutions that may fall through the regulatory net).

1. See Freedman and Goodlet (2002) and Daniel (2002–03).

Structural reform is not an end in itself, however, and does not guarantee more effective regulation. Effectiveness also depends, to a substantial extent, on the skill and judgment of the regulators themselves (McDonald 1996). As well, the structure itself might not be the most critical factor for success. Factors such as the clarity of roles and responsibilities and the sharing of information among agencies may, in practice, be more essential.

Finally, there is no single “perfect” structure for regulation. There can be many different but appropriate structures for the same economy, as well as across countries, and the appropriateness of these structures may change over time, as both the domestic and global financial landscapes evolve.

## Alternative Approaches to the Regulation of Financial Services

The literature has identified three broad approaches to regulating financial markets: the institutional approach, the functional approach, and the objectives-based approach. In practice, regulation can also be organized as a combination of these three approaches.

### Traditional approaches

The two main organizing principles that have been traditionally used in the structure of regulation are the institutional approach (by type of firm) and the functional approach (by type of activity).<sup>2</sup>

In the institutional approach, regulation covers each individual category of financial intermediary, which has made this approach particularly appropriate when considering prudential issues. Traditionally, each category of institution is assigned to a distinct agency for regulation of its entire range of activities. Since each intermediary has only one regulatory authority as a counterpart, duplication can be avoided, and the costs of regulation can potentially be reduced.

2. The debate on institutional versus functional regulation for financial institutions is an old one in Canada. It was raised with regard to financial institutions in 1976 by the Economic Council of Canada, and by the federal government in its 1985 Green Paper and its 1986 Blue Paper. (See references.)

However, with growing integration and the blurring of distinctions between different types of intermediaries, the obvious risk is that institutions performing similar functions can be regulated differently, which raises the issue of competitive neutrality.

The functional approach, on the other hand, focuses on the business undertaken by firms. Proponents of the functional approach include Macey and O’Hara (1999), Merton and Bodie (1995), and Steil (2001). Macey and O’Hara argue that the functional approach provides three main benefits: it applies the same rules to all intermediaries who perform the same activity; it allows firms to select the precise services they wish to offer; and it best supports the process of financial innovation, because it provides competitors with the maximum amount of flexibility consistent with regulatory objectives. Others argue, however, that the functional approach may lead to excessive specialization of competencies across regulatory agencies, and that the position of an institution as a whole may be obscured.

Goodhart et al. (1998) argue that a strict dichotomy between these two approaches is misleading because the two serve different purposes. In practice, it is the institution that can fail, so the institution itself needs to be regulated for safety and soundness; that is, for prudential reasons. Functional regulation, on the other hand, is concerned with how intermediaries conduct various aspects of their business and how they behave towards customers. For competitive neutrality to be maintained, this type of regulation, known as “conduct-of-business regulation,” must apply to particular aspects of business regardless of which type of institution conducts the business. So, while prudential regulation may be conducted by different agencies, conduct-of-business regulation needs to be equitable to all firms.

### The objectives-based approach

An approach that has been examined more recently is the objectives-based approach, which is advocated by Taylor (1995, 1996), Goodhart et al. (1998), and Di Giorgio and Di Noia (2001), among others, and has been the organizational approach used for Australia’s regulatory system. This approach postulates that all intermediaries and markets be subject to control by more than one authority, each of which is

responsible for one objective of regulation regardless of both the legal form of the intermediaries or of the activities they perform. The aim is to create a structure that reflects the objectives of regulation and, at the same time, promotes those objectives most effectively and efficiently. This approach is “*particularly effective in a highly-integrated market context and in the presence of poli-functional operators, conglomerates and groups operating in a variety of different business sectors.*” (Di Giorgio and Di Noia 2001).

Taylor (1995) provides an example of the objectives-based approach in his proposed twin-peaks model for the financial system (including financial markets) of the United Kingdom. This model consisted of only two regulatory agencies: one responsible for ensuring the soundness of the financial system and one focusing strictly on consumer protection. He argues that this model should have several benefits including eliminating regulatory duplication and overlap, providing for greater clarity in the objectives of regulators, establishing mechanisms for resolving conflicting objectives, and encouraging a regulatory process that is open, transparent, and publicly accountable.

In response to Taylor’s twin-peaks model, McDonald (1996) notes that the argument regarding the number of regulators seems to depend on the view that each must have only one objective, but it appears that the concepts of investor protection and systemic risk cannot be so easily separated. Goodhart et al. (1998) claim that Taylor’s model is too all-encompassing. In their view, major differences still exist between different types of firms, and although firms have diversified, a dominant core business usually remains. They argue that the risks across business lines are sufficiently different to warrant a differentiated approach to prudential regulation. Instead, Goodhart et al. argue for a larger number of regulatory bodies. They suggest no fewer than six separate agencies: a competition authority, together with five others to cover systemic risk; non-systemic prudential regulation; retail conduct of business; wholesale conduct of business; and financial exchanges.

Briault (1999) notes that the rationale for objectives-based models of regulation is superficially attractive, but it does not resolve inefficiencies, nor the communication and co-operation problems that exist whenever there is more than one regulatory body. He criticizes Taylor’s approach

in particular, arguing that the distinction between prudential and conduct-of-business regulation is not as neat and simple in practice as the Taylor model might imply. With respect to the structure proposed by Goodhart et al., he notes that it looks very similar to a functional approach, partly because many firms would be subject to regulation by more than one regulator.

## **The Debate over the Optimal Number of Regulators and Regulatory Competition**

Two interesting trends are emerging in the debate over the optimal number of regulators. On the one hand, academics are debating the merits of greater consolidation, and a number of countries have adopted reforms to reduce the number of regulators with responsibilities for financial institutions. An example of this is the United Kingdom’s adoption of a single-regulator model for their entire financial system, including securities markets. On the other hand, a body of literature is developing in the United States on the merits of allowing greater competition among jurisdictions in the area of securities market regulation.

### **A single agency**

The single-agency model has typically characterized early stages of financial development, but has re-emerged in developed economies, notably in the United Kingdom.

Goodhart et al. (1998) list several advantages that a single regulator can provide. These include:

- Efficiency gains: economies of scale and scope (synergies), which should lead to reduced regulatory costs (although institutional costs are likely a small part of total regulatory costs). There is also the ability to allocate scarce regulatory resources efficiently and effectively, thus lowering the monitoring costs imposed on firms, since they need to deal with only one agency.
- Greater transparency and accountability, because a simple regulatory structure should be easily understood and recognized by regulated firms and consumers and should make regulators more accountable (if for no other reason than that it is more difficult to pass the buck).

- Better monitoring of diversified firms.
- Possible avoidance of problems such as competitive inequality, inconsistency, duplication, overlaps, and gaps.
- Easier retention and utilization of expertise.

According to the literature, however, some of these benefits may not be achieved in practice. For instance, economies of scale and efficiency gains may not arise because specialist divisions will exist within a single agency, creating potential problems in communication, coordination, and consistency.

The arguments made against a mega-regulator include:

- Too much power and overly bureaucratic (Goodhart et al. 1998).
- Might not have a clear focus on objectives and the rationale of regulation and might not make the necessary differentiation between different types of institutions (Goodhart et al. 1998).
- Incompatibility of objectives and cultural conflicts, stemming from the fact that the needs of sophisticated wholesale market participants and those of retail consumers differ significantly, and the style and techniques appropriate to prudential and conduct-of-business regulation are profoundly different (Taylor 1995).
- Conflicting objectives are better resolved at a political level, because resolution involves judgment about public policy issues (Taylor 1995; Goodhart et al. 1998).
- Potential moral hazard resulting from the public perception that the risk spectrum among financial institutions has disappeared or become blurred (Goodhart et al. 1998).
- If a single regulator adopts an inappropriate regulatory regime, the costs of compliance and the structural costs of regulation could rise even though the pure institutional costs of regulatory agencies might be lower.

Two recent papers have reviewed the experiences of countries that moved towards more integrated regulation. Taylor and Fleming (1999) conclude that after a decade, the three Scandinavian countries that moved to a single-regulator model have achieved efficiency gains and economies of scale, but have made only limited

progress on improving coordination of the supervision of conglomerates. Briault (2002) reviews the experience of the U.K. Financial Services Authority (FSA) and finds initial indications to be encouraging, although he notes that it is too early to draw conclusions. For instance, the FSA has benefited from economies of scale and has achieved a valuable degree of integration. Also, in his opinion, the experience of the FSA has demonstrated that, in most cases, there is no conflict between the conduct-of-business and prudential regulatory objectives, since both seek to protect consumers. According to Briault, when conflicts did arise, the FSA struck the right balance within an appropriate framework of objectives and accountability.

### Regulatory competition

Some researchers have argued that regulation may not be at optimal levels since it is imposed by an authority and not through a market process. Regulators are often monopolistic, and so information is lost about the type and extent of regulation that consumers demand, and about how much consumers are prepared to pay for regulation. Some therefore believe that regulatory competition may help to define the optimal level of regulation. They also feel that there is merit in having a degree of competition and diversity in regulation so that lessons can be learned from the experience of different approaches (Goodhart et al. 1998).

The debate among academics on the merits of greater competition between regulators of securities markets rests on the “race-to-the-top” versus the “race-to-the-bottom” scenarios.

Those in favour of greater competition point out that competition provides incentives for responsive and innovative regulation, as well as guarding against an excessive regulatory burden. This is the race-to-the-top scenario. Kane (1987), a proponent of competition in the regulation of financial services, also points out that regulatory competition will tend to smooth out “bubbles” of overly severe regulation that would develop in response to intermittent financial services crises and scandals if regulatory barriers to entry were more significant.

Others, however, believe that competition will result in a “race-to-the-bottom” outcome as individual agencies will excessively relax their rules in order to attract greater regulatory clientele.

In a seminal paper, Romano (1998) provides a case for allowing states to compete with the United States federal government in two main areas of securities regulation: registration of securities and a disclosure regime for issuers; and antifraud provisions. In this proposal, an issuer would be able to choose which regime (federal or state) applies to its capital markets activities and then deal only with that jurisdiction, thus effectively creating a market for regulation. According to Romano, this system would produce rules more aligned with the preferences of investors, whose decisions drive the capital market, because no government entity can know better than market participants what regulations are in their interest. Such a system provides an incentive for innovation and, finally, if there are significant differences in the characteristics of firms such that the most suitable regulatory regime differs significantly across firms, then firms and investors can self-select the more appropriate scheme.

Competition in itself will not necessarily reduce international harmonization. In fact, Romano suggests that if diversity is not preferred by issuers and investors, then competition will produce uniform regulatory outcomes without the need for government agreement mandating harmonization. That is, competitive federalism would not necessarily increase differences between regulatory regimes. For example, the most desirable disclosure regimes would likely spread across states.

MacIntosh (2002) argues in favour of a passport system for Canadian securities markets by suggesting that the single-regulator system exhibits all of the problems commonly associated with monopolies. He concurs with Romano that there is no case for a race to the bottom. He concludes that we have had a mutual-reliance system in the closely allied field of corporate law for more than 100 years and argues that securities regulation is not functionally distinguishable from corporate law.

One of the most vocal critics of regulatory competition is Fox (2001). He believes, in particular, that abandoning the current mandatory system of federal securities disclosure in the United States would lead to a race to the bottom and would likely lower U.S. welfare. Fox focuses on the interfirm costs that arise when a disclosed item of information can put an issuer at a disadvantage relative to its competitors. Thus,

if issuers were allowed to choose, they would likely select a regime requiring a level of disclosure that is less than socially optimal because the issuer's private costs of disclosure are greater than the social costs of such disclosure.

Coffee (1995) makes a case against regulatory competition by looking at the experience of the Securities and Exchange Commission and the Commodity Futures Trading Commission. He concludes that within the increasingly competitive international environment, gains from competition in domestic regulation are likely to be modest, while costs can be substantial and may have been under-recognized. He agrees that, in theory, regulatory competition could bring benefits, but for these benefits to occur, a number of conditions need to hold. These include the ability of regulated firms to migrate between regulatory agencies at low cost in order to restrain inefficient regulation; the secure delineation of regulatory agencies by clear lines of jurisdiction that they cannot exceed; and the existence of competition between agencies rather than collusion. He finds that in practice many of these conditions are not met and notes that proponents of regulatory competition focus only on benefits that rival regulators can provide to attract clientele.

## Self-Regulatory Organizations versus Public Oversight

Self-regulatory organizations are prevalent in many countries, including Canada, and have played an important role in the securities market landscape. As many countries enact reforms however, there is debate as to whether or not SROs should be included (or maintained) in these new regulatory frameworks. The United Kingdom, for example, has eliminated SROs completely in its new regulatory framework. In view of this, it is important to look at the pros and cons of SROs, their role in regulation, and the type of environment to which they are best suited.

In theory, self-regulation works best when participants in a transaction possess approximately equal knowledge, information, and bargaining power. All investors, whether professional or private, have an interest in a fair, appropriately transparent, orderly and efficient market that is free from abuse and misconduct. Professionals have a clear interest in market integrity. For this

reason, a large degree of self-regulation has typically been seen as appropriate for the general regulation of exchanges. It is important, however, for a competition agency to monitor the self-regulation of exchanges for any anticompetitive behaviour.

Aggarwal (2001), and Domowitz and Lee (1998) list several arguments in favour of SROs relative to government agencies. Their arguments include the following:

- SROs linked to the business interests of participants have a more direct and stronger interest in maintaining market integrity than any government agency.
- The presence of market practitioners may enhance the knowledge and experience of the regulatory authority.
- It is easier for a market to police itself, and self-imposed rules are easier to accept.
- SROs may have better resources (government agencies may not have either the financial resources or the human resources necessary to carry out all aspects of their regulatory function).
- Their close proximity to markets enables them to more effectively monitor many types of conduct and activity that lie beyond the reach of the law. And they are more flexible than governments in responding to market needs and creating appropriate rules.

Nevertheless, self-regulation does present some challenges. The most interesting is the conflict arising from the multifunctional roles of SROs: they may regulate markets to their own advantage, thereby acting against the public interest. The conflicts of interest inherent in SROs require regulatory oversight of SRO practices, particularly their governance structures.

## Conclusions

From this summary, it is apparent that the literature on the organizational structure of financial markets regulation offers many different points of view on the optimal means of regulation. While it helps to put the current debate surrounding the regulation of securities markets in perspective, the literature does not point to a single “optimal” solution. On the one hand, there is the trend of combining regulatory

responsibilities within one or a few regulatory bodies. The theoretical pros and cons of this approach are well known. But research on the practical implications is still in its infancy. Other academics have made a number of strong theoretical arguments with respect to the benefits of greater regulatory competition, but little research has been done on its impact in practice.

Many questions remain unanswered, and economic theory seems to provide limited guidance as to how to organize the complex world of securities regulation. As more data are collected from countries that have implemented reforms, future research and empirical studies should shed more light on these issues.

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**P**olicy and  
**I**nfrastructure  
**D**evelopments



# Introduction

**T**he financial system and all of its various components (institutions, markets, and clearing and settlement systems) are supported by a set of arrangements, including government policies, that influence its structure and facilitate its operation. Taken together, these arrangements form the financial system's infrastructure. Experience has demonstrated that a key determinant of a robust financial system is the extent to which it is underpinned by a solid, well-developed infrastructure. This section of the Review highlights work in this area, including that related to relevant policy developments.

A key element of a well-functioning financial system is investor confidence in financial reporting and auditing standards.

Since 2001, a series of revelations regarding questionable corporate accounting practices have damaged investor confidence in financial statements, corporate governance, and auditing standards. Since then, there has been a worldwide effort to improve this situation. One example is the report of a task force established by the International Federation of Accountants. The task force was chaired by John Crow, former Governor of the Bank of Canada. In *Rebuilding Public Confidence in Financial Reporting: An International Perspective—Report on a Report*, John Crow outlines the key challenges that the task force faced and how these were approached. Mr. Crow also provides his views on the challenges associated with restoring investor confidence and on the progress currently being made at the international level.



# Rebuilding Public Confidence in Financial Reporting: An International Perspective —Report on a Report

*John Crow\**

**I**n late 2002, the author agreed to chair an international task force sponsored by the International Federation of Accountants (IFAC). The objective was to examine the loss of credibility in corporate financial reporting and disclosure, and to make recommendations as to how the situation could best be improved.

This was a broad order, but with the help of the IFAC and its 159 member organizations, we were able to persuade a number of experienced individuals from around the world (Australia, Canada, France, Japan, the United Kingdom, and the United States) to participate. Besides our multinational provenance, the seven task force members were expected to contribute through a mix of professional backgrounds. These were in finance, law, economics, auditing, accounting, regulation, public policy, and corporate governance, among others, and the range proved invaluable.

What did this ex-central banker bring to the table? For one, the chair was a “non-expert,” which meant that the Report minimized the use of specialized jargon. For another, the Report, while commissioned by the IFAC, was to be “independent” in its assessment.

Our work was to be at a “high level.” That is to say, given the range of issues to be dealt with, we were bound to consider them more at the level of principle than in any particular degree of detail—either technical or national. Furthermore, taking a broader view was not only necessary but also the appropriate way to go. Most of the authoritative material that has appeared on these matters soon narrows in on particular, specialized issues. Besides being somewhat

technical, it is largely national in focus, that is, addressing matters very much as a reflection of specific local regulatory structures and market traditions.

But the task force aimed to look behind local features to more central forces. At the same time, taking this global viewpoint did not mean that we would ignore the way different styles of market regulation and organization or legal approach might influence outcomes in particular jurisdictions. What we would need to do would be to evaluate the reasons for those differences, and their consequences, in reaching our broader conclusions and recommendations. This also meant focusing on mounting cross-border issues.

We also aimed to craft a document that, while authoritative, was as accessible as we could make it for non-specialists, such as politicians, journalists, and interested laypersons. For this reason among others, we needed to keep our narrative as short and to the point as a committee could. This helped to keep our group focused, as did the fact that one person, hired for the committee, held the drafting pen.

Our Report, bearing the same title as this article, was published in the summer of 2003. It can now be found on the IFAC’s Web site at <[www.ifac.org/credibility](http://www.ifac.org/credibility)>.

## Building Blocks

### A loss of credibility?

How had the mighty fallen! Given the landscape in late 2002–early 2003 (Enron, World-Com, Royal Ahold, HealthSouth, to name some of the more egregious instances), the task force had no difficulty agreeing that there must have been a loss of credibility in financial reporting.

Where the discussion became more interesting was over the question of whether that loss had

\* Mr. Crow was Governor of the Bank of Canada from 1987 to 1994. The views expressed in this article are those of the author. No responsibility for them should be attributed to the Bank of Canada.

occurred everywhere. Certainly, the largest and most high-profile reporting scandals had occurred predominantly in the United States. But then again, the United States was also the largest, most high-profile economy—by a wide margin—so U.S. events, even if U.S. focused, also tended to cast a large shadow globally. At the same time, there were features of the American scene that seemed to exert particular pressure on good financial reporting, such as reliance on detailed rules in accounting/auditing decisions (encouraging more conformity to the letter than to the spirit of the exercise) and the mushrooming of executive compensation in the form of options (which, to the extent that they promised large short-term payoffs, increased the incentives for manipulating information so as to immediately enhance the share price).

Nonetheless, we readily agreed that the records in our own countries indicated that complacency or “I told you so!” reactions were to be discouraged. For Canada, for example, Guylaine Saucier (the other Canadian member) and I were able to cite a goodly list of problem cases, even if nothing as seismic as in the United States. Instances from the Canadian litany that made it into the Report included the Canadian Commercial Bank, Castor Holdings, and Roman Corporation, and there were plenty of others to call on if they had been needed. More recent reporting headlines—e.g., Adecco, our own Atlas Cold Storage and Nortel, and Parmalat—would only confirm that it was wise to avoid complacency as to what could happen in your own backyard.

### **The costs**

The damage from losing credibility is seen most clearly in the direct consequences for corporations where reporting problems are surfacing. Investors have now shown themselves exceedingly quick to dump positions at the first whiff of an issue of this kind. It has come to the point, at least in North America, where corporations strain every sinew to avoid having to restate earlier financial reports, given that a restatement itself, however inconsequential in reality, carries a bad odour to the marketplace.

More generally, the cost would show up as a hike in the cost of business capital and a loss of productivity and economic growth overall, as investors backed away from corporate finance.

The present lofty levels for price-earnings ratios in many markets would suggest that investors still have considerable trust in the system. However, no one is likely to want to press the recent experiences in misleading reporting to the point where there would be such a broad retreat. That in itself explains the efforts made in virtually every jurisdiction to tighten rules and procedures in this area.

### **A broad view of responsibilities and participants**

Our approach was based upon two premises. First, corporate reporting is public reporting and therefore very much a public-interest activity. Second, there is a range of different actors participating in that public process.

Those directly involved do not accept these premises as readily as one might hope. The reason seems to be twofold: a concern about incurring costly liability if things go wrong; and a worry that participants might all too often find themselves in a conflict position—over duty to a client or constituent on the one hand and the broader responsibility to the investing public on the other.

The task force was very aware of the challenges its view presented. One that engaged it for some time, for example, was how to reconcile the well-established duty of a director to a corporation with any responsibility that director might have to the public at large. In the end, however, we agreed that the reporting issues and abuses were sufficiently serious that the only credible position to take was indeed that “a duty to ensure that public reporting presents the information fairly should override all other duties of the individuals and firms concerned.”

As for the individuals and firms involved, we saw reporting as a process flow. It starts with management under the general direction of the board of directors, brings in the auditors for an independent opinion, and then the media, etc., who distribute the information, along with the analysts and credit-rating agencies, who evaluate it. Alongside this flow are the standard setters, who set the rules; the regulators, who enforce them; and those, such as investment bankers and lawyers, who provide ongoing advice to the other participants. The important point for us was that they all had an inescapable public responsibility for fairness in reporting.

## Ethics standards and codes of conduct

Since fairness in presentation implies strong principles, it also leads quickly into a consideration of ethics and codes of conduct for the different actors on the reporting scene.

In this regard, it is often said that one “cannot legislate morality.” The task force would probably agree with this, but it did not therefore believe that there was no point in emphasizing the importance of “the tone at the top” for a corporation’s ethical outlook and the relevance of codes of conduct for all the participants, whether they were within or outside corporations. Frequent and careful reminders of the broader responsibilities for those involved in reporting, together with explicit guidance as to how to deal with challenging situations, can help improve underlying attitudes. No doubt, stronger after-the-event protection of “whistle-blowers” (something that has recently been provided through legislation and regulation in some countries) will also help by making it easier to follow through on difficult matters of principle.

## Aligning expectations

What you expect to receive and what you get may be two different things. Gaps between what investors may expect a participant to supply in the reporting process and what is actually required professionally have been a persisting source of tension. Viewed from this angle, what the task force was aiming to do was to narrow those differences. We wanted both to clarify what the various actors in the process might be expected to be accountable for, and to explore ways in which the required standards of reporting and disclosure might be improved in light of the understandable, even if challenging, expectations of the marketplace.

This expectation-gap issue has been particularly apparent with regard to the external audit function. Indeed, Canada’s accounting profession was sufficiently concerned back in the 1980s to commission an independent and comprehensive public study on the matter. Our Report, building on this study and on other material worldwide, highlighted two features—accounting judgment and precision, and the detection of fraud. As regards the former, we were at pains to point out that corporate financial statements, while perhaps appearing at first blush to be very

exact, are, in fact, a combination of estimates and judgments, and therefore have to be understood and analyzed in this light. As regards fraud, it must be recognized more clearly and more generally that an external audit cannot reasonably be expected to guarantee that internal fraud does not happen. At the same time, we also noted that auditors can probably do more to check for signs of fraud through their particular procedures without huge additional cost.

## Main Messages

### Corporate management and governance

Not surprisingly, the task force saw ample room for increased use of best practices with regard to corporate procedures. In particular, we saw the need for greater attention to controls in financial management, underlining the special role of the chief financial officer (CFO) and of the internal audit in this regard. Given the increased involvement of CFOs in such areas as strategic planning, information technology, financing, and investor relations, their direct responsibility for the quality of a corporation’s financial numbers appears to have slipped in recent years. We wanted to stress that a good grasp of, and attention to, issues of financial control and reporting is still a core competency for a CFO.

In the same vein, we devoted appreciable time and space to the role of the internal audit—including to what extent an internal audit department might be necessary, and if it appeared not to be, how the important oversight function that internal audit supplies might still be provided. This last point is particularly important for Canada, which seems to have a relatively large number of small public companies, since these are likely to find the responsibilities of tight financial control relatively costly.

As regards the corporate board, our main focus was on the membership, role, and effective operation of the audit committee. And a key emphasis of our focus was on the shift in general understanding that needed to take place regarding where this body fits into the reporting and control process. That is to say, we had the clear impression that in the past, the audit committee had all too often been more a passive observer of the process than a central player. But the committee does have a uniquely important role

as the immediate (in the end, of course, reporting to the full board) representative of the shareholders' interests. It has a further, still broader, duty to see to it that reporting is fair for investors at large. So, instead of the process for reporting being largely bilateral, involving only the management and the external auditor, it needs to be more a threesome, with the audit committee also well involved. This means that many audit committees should be greatly increasing their direct contact with, and oversight of, the external auditors, as well as checking on management's progress and performance.

### **External audit**

While the Report does underline the range of players involved, there is no doubt that external audit—with its anticipated seal of approval in relation to generally accepted accounting principles (GAAP)—provides an absolutely crucial element. After all, it is specifically charged with supplying a form of credibility.

In this regard, one question that preoccupied us was the matter of the auditor's so-called "independence." This question has two levels. The one that has garnered most attention recently has been how auditor independence might be affected by the size of fees for non-audit services. These could become so large that concern over losing them might distort an auditor's judgment in relation to the audit itself. The situation at Enron is widely thought of as a classic case where things went wrong in this regard (as well as in others). While this concern implies quantitative limits on non-audit work, the task force took the view, after quite some discussion, that limits on the amounts payable would be arbitrary. It did, however, emphasize the need for qualitative constraints (to be monitored by the corporation, as well as by the auditors) to ensure, for example, that auditors in their consulting mode are not creating systems that they themselves will need to verify.

Another, deeper and more structural, issue is also the fact that the corporation pays for its own audit. This "paymaster" situation puts the auditor in an undeniable conflict. Because of this, the task force spent some time exploring possible alternative sources of payment. However, those alternatives seemed too ingenious and/or bureaucratic to be credible now. For example, a "government agency" solution would, among other considerations, run counter to the

generally accepted need for auditors to stay very conversant with ever-evolving business structures and practices.

Accordingly, we focused considerable attention on the various safeguards that could be put in place to mitigate threats to auditor independence, given client payment, whether that threat came from outside the audit firm or from within. This is quite an involved, detailed area (even at the level of principle) that took up considerable space in our Report, and those arguments are not reproduced here. One aspect worth emphasizing, however, is that it was apparent to us all that, above and beyond the particular "threats and safeguards" considerations for auditor independence, having an involved and truly independent audit committee would be invaluable support for good audit assurance.

### **Other private sector participants**

We spent less time and space on the other actors. They have a less central role and therefore there was not as much detail to deal with. As already indicated, however, we wanted to see to it that their responsibilities for appropriate public reporting were recognized and also to examine how those responsibilities might be incorporated into their work. In the main, our recommendations revolved around the desirability of codes of conduct (e.g., for investment analysts, lawyers, and investment bankers) that, in each case, would set out their responsibilities regarding fair public reporting and also what procedures would satisfy them. Such codes should be monitored both within the firms and externally.

We were aware, given the additional liability implied, that identifying broader responsibilities would be controversial. Controversy did not imply, however, that changes in procedures would not be very beneficial for fair disclosure.

Because they are paid by the client being evaluated, credit-rating agencies also suffer from independence issues similar to those facing auditors. One way to mitigate this kind of conflict would be to have agencies increase their disclosure as to how they go about their operations. This is something we also recommended, in some detail and in a broader context, for auditors.

## Regulators

This section is relatively short, not because there is not a lot of detailed regulation in this area, but rather because the way forward is probably not so much through more regulation as through better recognition and enforcement of the principles behind it and through an improvement in the incentives facing market participants. The Parmalat case appears likely to reinforce this view of priorities.

The feature that particularly attracted our attention in the regulatory area was the question of self-regulation and how far it should go. The great and indispensable advantage of professional self-regulation is that it brings real understanding directly to bear on the matter at hand. An obvious disadvantage is that without effective external oversight, it can degenerate into an exercise of mutual insider forbearance. The task force considered that the risks of inadequate discipline in the area were sufficiently great and widespread, and the dangers to professional credibility sufficiently serious, that moves to enhance public-interest oversight in a mixed system were constructive, even if professionals might, understandably, be anxious to mitigate their more intrusive effects.

## International Aspects and Concerns

Besides being able to bring a range of national experiences to our discussions, another important feature of the task force was that we were able to review more fully than most the difficult issues that are arising because corporate reporting rules are determinedly national, while business is increasingly international.

Those difficulties are particularly apparent at present, when so many countries (or groups of countries such as those in the European Union) are overhauling their domestic reporting requirements. It is only too evident that differing national or regional approaches to corporate-governance issues, accounting issues, auditing standards, or regulatory oversight, can lead to costly overlaps and divergences that businesses have to pay for—with no evident offsetting gain in overall fairness or market transparency.

As in instances beyond financial reporting, Canada is caught in the middle—between its general support of the use of international standards

and, at the same time, its natural concern to maintain access to the all-important U.S. market, even when U.S. standards part company with professedly more international ones. Canada is also awkwardly caught by its inability to get its own act fully together, given the persisting differentiations in securities market regulations from one end of the country to the other. This adds domestic costs to those incurred across national borders.

The international divergence receiving the most focus at present has to do with accounting standards. International standards for accounting, promoted and guided by the quasi-public International Accounting Standards Board, clearly answer a need in a globalizing world. Furthermore, they have, at least in principle but not without controversy over some of the details, been adopted by the European Union for implementation in 2005. The challenge is to reconcile these emerging international standards with, in particular, the U.S. approach. I am happy to report that there seems to be authoritative good will on both sides. But this does not mean that getting an appropriate reconciliation will not still be a major challenge for all concerned—particularly if the issues take on a political cast, as they are all too prone to do.

## Conclusions

In conclusion, let me emphasize that the above is just a brief overview of the task force Report and is by no means a substitute for the real thing—not even for its executive summary. It should also be added that in the months that have elapsed since the Report was completed, nothing has happened to suggest that the concerns it addresses have gone away.

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Research

Summaries



## Introduction

**B**ank of Canada staff undertake research designed to improve overall knowledge and understanding of the Canadian and international financial systems. This work is often pursued from a broad, system-wide perspective that emphasizes linkages across the different parts of the financial system (institutions, markets, and clearing and settlement systems). Other linkages of importance may include those between the Canadian financial system and the rest of the economy, as well as those with the international environment, including the international financial system. This section summarizes some of the Bank's recent work.

Empirical studies tend to find that a well-developed banking sector and a well-developed financial system are important in promoting economic growth. Similarly, a competitive or contestable banking sector is important to the efficiency of the financial system. In light of the worldwide trend towards consolidation in the financial sector, understanding the nature and measurement of banking competition has grown in importance. *Competition in Banking* examines the approaches taken in the theoretical and empirical literature to explore this issue, and provides an overview of some of the major findings.

A liquid market—generally viewed as one that accommodates trading with the least effect on price—is an important factor contributing to the efficiency of fixed-income markets. Indeed, volatility in liquidity is a key factor that affects whether investors enter a market or not. As well, understanding the two-way causality between financial market crisis and market liquidity is critical to the Bank of Canada's objective of promoting financial stability. *Liquidity in the Market for Government of Canada Bonds: An Empirical Analysis* summarizes two papers that aim to enhance the understanding of liquidity in the Canadian bond market. The first paper examines appropriate measures of market liquidity, and

the second looks at the effects of public news on liquidity.

Numerous Canadian firms list their shares on U.S. stock exchanges in addition to listing on a Canadian exchange. Studies on such cross-listing have shown that the share prices of firms that do so are positively affected. These positive effects lead to a reduced cost of equity financing, thus providing a strong motivation for firms to cross-list. In the article *International Cross-Listing and the Bonding Hypothesis*, the authors attempt to identify the mechanism by which cross-listing on U.S. exchanges affects the valuation of Canadian firms. The article supports the bonding hypothesis, in that markets reward firms that succeed in attracting share turnover in the United States.



# Competition in Banking

*Carol Ann Northcott\**

*The worldwide trend towards consolidation of the financial sector has focused the attention of policy-makers on the potential implications for the economy. This article contributes to the debate by reviewing some of the issues raised in the theoretical and empirical literature on competition in the banking sector.*

**A** well-functioning banking sector is important to any economy. Banks facilitate economic growth by, among other things, providing a means to hold and exchange financial assets and by supplying credit to businesses and consumers. The potential benefits of competition in banking are similar to its benefits for other industries. It can improve allocative, productive, and dynamic efficiencies (e.g., by promoting innovation), with the ultimate benefit being stronger economic growth.

The basic question traditionally asked when assessing the competitiveness of a market appears simple: Can firms exert market power? This article examines the approaches taken in the theoretical and empirical literature to explore this issue in the context of the banking sector. Competition in banking may not be as simple as it first appears.

## Concentration

The traditional approach to assessing competition has been to associate a larger number of firms with more price competition and fewer firms with less-competitive behaviour. This comes from a classic industrial organization argument, which assumes that there is a causal relationship running from the structure of the market (e.g., firm concentration) to the firm's pricing behaviour, to the firm's profits, and to its degree of market power.<sup>1</sup> That is, a higher

number of firms causes firms to price competitively (marginal-cost pricing), which minimizes the degree of market power that any one firm can exert.

Since pricing behaviour is not easily observable, the emphasis in the literature is on establishing a relationship between the structure of the market and market power. Structural variables include measures of concentration, the number of sellers, and entry conditions. Market power is measured using accounting data on profits and costs.

While traditional studies using this approach are based on cross-industry data, there is a large body of literature that applies the paradigm to one particular industry over time. In the case of the banking sector, the majority of the early literature used U.S. data to examine the relationship between bank profitability (or prices) and concentration. These early studies often found a positive relationship between concentration and loan prices (e.g., Hannan 1991). However, the results of studies using more recent data and taking into account other factors, such as differences in efficiency between banks, have been more ambiguous. In addition, recent work using panel data indicates that potential negative effects of concentration can be largely mitigated by efficient legal systems, open entry and the presence of foreign banks, and by high levels of financial and economic development.

There are several difficulties with the traditional approach. For example, from a measurement perspective, accounting data on profits and costs may not provide an accurate measure of economic profits and market power. As well, the measurement of a structural variable such as concentration requires clear definition of the

1. In the literature, this approach is called the Structure-Conduct-Performance (SCP) paradigm.

\* This is an extract of the issues explored by the author in a forthcoming Bank of Canada working paper.

relevant market. All products that are substitutes and all firms that supply substitutable products must be included in the market definition. This can be difficult to assess in practice, especially in a market without homogeneous products, such as banking. A vast range of substitutable products exists—products supplied not just by banks but by other financial and non-financial firms as well.<sup>2</sup>

## Contestability

To address some of these pitfalls, new approaches have been developed that focus on the behaviour of the firm, regardless of the structure of the market.<sup>3</sup> The aim of these approaches is to estimate market power based on firm behaviour. That is, they estimate the “effective competition” or “contestability” of the market.

Two widely used techniques are those developed by Bresnahan (1982) and Lau (1982) and by Panzar and Rosse (1987). Based on theoretical models of oligopoly, each approach attempts to measure the competitive conduct of banks without explicitly using information on the structure of the market. They do this by estimating the deviation from marginal-cost (competitive) pricing. Behaviour is characterized as a continuum between perfectly competitive and monopolistic. This relatively new literature consistently finds that banking markets around the world fall between the two extremes and that the number of banks in the market is not necessarily a good indication of competitive behaviour.

Indeed, a recent study using the Panzar and Rosse technique on cross-country panel data finds a *positive* relationship between concentration and contestability (Claessens and Laevan 2003). In this work, as in other studies, the banking market in the Netherlands is found to be the most contestable despite its high level of concentration, and Canada scores higher than countries such as Germany and the United States, which have a much larger number of banks. This and other empirical studies also confirm that contestability is associated with a

greater presence of foreign banks, open entry and exit, few restrictions on permitted activities, and well-developed legal and financial systems.<sup>4</sup>

## Non-Price Competition

While the contestability literature avoids some of the problems associated with the traditional concentration approach (in that market power is estimated directly, not with accounting data, and a robust definition of the market is not required), a major problem remains. Both approaches assume a homogeneous product market. But firms may also compete by differentiating their products. While differentiation has traditionally been viewed as a way for firms to maintain some degree of market power, it may also have some social benefits.

Banks differ in many ways, such as reputation, product offerings, and the extensiveness and location of their branch network. Indeed, branch networks are a particularly important feature of bank competition.<sup>5</sup> Allen and Gale (2000) exploit this particular characteristic of the banking sector to show how two large banks with branch networks can provide a more competitive outcome than a large number of small banks without branches (a unitary banking system).<sup>6</sup> Other studies show how branch networks can increase the effective size of the market by increasing the geographical scope of competition. In this context, branches can decrease the degree of market power exerted in remote locations relative to a unitary banking model. This can lead to more uniform pricing across urban and remote locations (e.g., Calem and Nakamura 1998). Some theories argue that banks can also compete through innovation: the potential to temporarily gain market power through the introduction of new products provides an incentive to innovate.

2. See Church and Ware (2000) for a more thorough critique of the traditional SCP paradigm.

3. These approaches are loosely called the New Empirical Industrial Organization approach.

4. Activity restrictions refer to the degree to which banks' activities in underwriting securities, insurance, real estate, and in owning shares in non-financial firms are limited. Canada does relatively well by this measure. It is more restrictive than the United Kingdom and Germany but freer than the United States.

5. Branches can be interpreted broadly as any node that allows for the distribution of primary services.

6. Competitiveness in this sense is measured as the sum of the producers' and consumers' surplus.

## Discussion

Because the banking sector does not produce homogeneous products, it may not be possible to completely eliminate market power. But as discussed above, some degree of market power may be consistent with other social benefits. For example, an extensive branch network may mitigate market power in remote areas. Furthermore, some theories suggest that where there is market power, banks are encouraged to engage in relationship lending, which benefits small and risky borrowers.<sup>7</sup> Other theories argue that some degree of market power can decrease a bank's incentives to engage in risky behaviour by increasing the opportunity cost of going bankrupt. Therefore, the overall objective for banking policy may be to facilitate an environment that promotes competitive behaviour while realizing that some residual market power may have certain social benefits.

So, how should competition in banking be assessed? The approaches discussed here indicate that concentration, or the number of banks, may not in itself be a good indicator of competitive behaviour. Market power can be affected by many factors, such as the branching structure of the industry, efficient legal systems, high levels of financial and economic development, low barriers to entry, and openness to foreign banks. At the very least, competition in the banking sector may not be as simple as it first appears to be.

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7. In relationship lending, banks grant credit based on established long-run relationships, rather than solely on the net present value of a particular project (e.g., Petersen and Rajan 1995).



# Liquidity in the Market for Government of Canada Bonds: An Empirical Analysis

*Chris D'Souza\**

**A** liquid financial market is one in which participants can rapidly execute large transactions with only a small impact on prices. Market liquidity contributes importantly to the efficiency of fixed-income markets. In particular, it has an impact on security prices because investors will pay a premium to hold more-liquid bonds. Around the world, government debt managers are keen to foster liquidity to minimize the cost of public funds. Liquidity is important in government bond markets because these securities are used as benchmarks for the pricing and hedging of other fixed-income securities.

From a financial system perspective, where the promotion of efficient and resilient financial markets is an objective of the Bank of Canada, one concern is the two-way causality between shocks to financial markets and sharp reductions in market liquidity. This article provides a short description of the structure of the Government of Canada fixed-income market and a summary of the results of two recent research papers that may contribute to a more complete understanding of liquidity.

## The Structure of the Canadian Bond Market

The market for Government of Canada securities is the largest fixed-income market in Canada, with some \$256 billion in bonds (par value, not including Real Return Bonds) and \$117 billion in treasury bills outstanding as at the end of December 2003.<sup>1</sup> Average daily trading volumes for Government of Canada bonds and

bills in 2003 were \$17.5 billion and \$4.9 billion, respectively.<sup>2</sup> Like most sovereign securities markets, the market for Government of Canada securities is primarily a wholesale, institutional market, where a number of professional participants (securities dealers, pension funds, investment managers, insurance companies, and mutual funds) conduct very large trades (often in excess of \$25 or \$50 million) on a relatively infrequent basis. The market is generally described as being divided into the primary market, where Government of Canada securities are sold through auctions, and the secondary market, where transactions are either customer-dealer or interdealer in nature.

Institutional investors typically trade with securities dealers on a bilateral, over-the-counter basis. The results of these bilateral customer-dealer trades are known only to the two counterparties rather than to the entire market, thus limiting the impact of large trades on prices.<sup>3</sup> Given the unpredictable inventory shocks that dealers face in their large trades with customers, interdealer debt markets have developed to facilitate inventory management and risk-sharing. While historically these interdealer markets were also direct and bilateral in nature, the introduction of interdealer brokers (IDBs) has significantly reduced the role of direct interdealer trading.

The current Canadian IDBs are screen-based voice brokers, which allow dealers to trade anonymously with each other. Each participant has a screen where bids, offers, and trade outcomes are posted. Participants post quotes and make trades by communicating with the broker

1. Gravelle (1999) provides a detailed discussion of the structure of the Government of Canada securities market.

\* This article discusses two recently published Bank of Canada working papers (D'Souza, Gaa, and Yang 2003; D'Souza and Gaa 2004).

2. Source: Investment Dealers Association of Canada <www.ida.ca>. The data exclude repos.

3. More recently, electronic platforms have been introduced in Canada. One offers simultaneous multiple-dealer quote inquiries and trading; another offers order-driven trading.

over the telephone. The level of transparency in the IDB market was enhanced with the 20 August 2001 introduction of CanPX.<sup>4</sup> CanPX is a data service that consolidates and disseminates to interested subscribers anonymous trade and quotation data submitted by Canada's fixed-income interdealer brokers.

While studies of conditions in the intraday U.S. Treasury market have told us a great deal about the U.S. government securities market (e.g., Fleming 2001), the first such examinations for Canada are addressed in D'Souza, Gaa, and Yang (2003) and D'Souza and Gaa (2004). The first paper empirically measures liquidity in the Canadian bond market, using a number of indicators proposed in the literature, and describes price and trade dynamics in the secondary market for Government of Canada bonds. The second paper analyzes how fixed-income markets in Canada provide liquidity when new information arrives in the market. Findings suggest that the Canadian brokered interdealer fixed-income market is relatively liquid, and that its liquidity dynamics are comparable to those of the U.S. Treasury market. The empirical analysis of both papers focuses on the benchmark (or "on-the-run") 2-, 5-, 10-, and 30-year Government of Canada bonds.

## Measuring Liquidity

The challenge of measuring liquidity has been exacerbated by a lack of data. D'Souza, Gaa, and Yang (2003) construct and evaluate a range of indicators for activity and liquidity in the market for Canadian government bonds, using a new dataset. Bid-ask spreads, trading volume, trade frequency, quote size, trade size, and price-impact coefficients are analyzed at intraday frequencies in the interdealer-broker market. The price-impact coefficient measures how much prices adjust to reflect the information content of trades.<sup>5</sup> Their results suggest that bid-

ask spreads and price-impact coefficients are the most appropriate indicators of liquidity, followed in approximate order by trade size, quote size, trading volume, and trade frequency.

## The Effect of Public News Events

One important feature of government debt markets is the extent to which they are driven by public news, particularly the scheduled release of macroeconomic data. D'Souza and Gaa (2004) examine the role of public information and the relationship between activity, price volatility, and liquidity by exploring the impacts of i) Canadian and U.S. announcements of macroeconomic news, and ii) Government of Canada bond auctions. The determination of liquidity in the market for Canadian government securities is examined from an event-study perspective.<sup>6</sup>

It is usually argued that, given the nature of fixed-income government securities, there is little scope for insider information to affect markets. Kim and Verrecchia (1994) argue that *informed* traders possess an informational advantage after an event because of their ability to better interpret the announced information. Liquidity will remain low as long as the informed traders maintain their interpretation advantage. Traditional models of market microstructure predict that liquidity will deteriorate around the release of an anticipated announcement and will return to normal afterwards (Admati and Pfleiderer 1988; and O'Hara 1995). After the news announcement, there may be a period of abnormally high trading activity as information is processed and traders rebalance their portfolios. Volatility may also increase temporarily as investors adjust their beliefs. After an adjustment period, liquidity will revert to normal, and volatility will subside.

When macroeconomic news is announced, a two-stage adjustment process is observed in the Government of Canada securities market. This finding is consistent with the asymmetric information interpretation of market liquidity and with U.S. evidence (Fleming and Remolona 1999). In the first stage, bid-ask spreads widen in the five-minute intervals before and after an

4. Zorn (p. 39 of this *Review*) elaborates on recent discussions between regulators, academics, and market participants associated with the issue of transparency and regulation in Canadian fixed-income markets.  
5. Price-impact coefficients are suggested by Kyle (1985). They measure "the rise (fall) in price that typically occurs with a buyer-initiated (seller-initiated) trade" (Fleming 2001). Price-impact coefficients can be used to characterize liquidity in financial markets since liquid markets are those that accommodate trades with the least impact on prices.

6. See MacKinlay (1997) for a survey on event-study methodology.

announcement. In an extended second stage, price volatility, quotation and trading activity, and price-impact coefficients increase to higher-than-normal levels in the time period following the release of news and the first stage, with statistically and economically significant effects persisting up to 15 minutes after the event, in some cases.

Similarly, in the half-hour following the release of the auction results, volatility, trading volumes, trade and quote frequency, and price-impact coefficients are all larger than normal as investors adjust their beliefs to information from the auction results.<sup>7</sup>

Overall, the results of D'Souza, Gaa, and Yang (2003) and D'Souza and Gaa (2004) are consistent with survey results for G-10 countries presented by Inoue (1999),<sup>8</sup> and suggest that the Canadian fixed-income market is relatively liquid, and that it reacts to news in a manner consistent with theoretical predictions and with U.S. evidence.

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7. In Government of Canada bond auctions, dealers bid for themselves and may also submit bids for their clients. Dealer information about their client demands is private and may reflect information about the fundamental value of the security that is to be auctioned.

8. The BIS Study Group on Market Liquidity (Committee on the Global Financial System) conducted the survey, using a common questionnaire, on the structural features of 11 government securities markets: Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States. The survey was based on the understanding that the degree of market liquidity is at least partly affected by market structure.



# International Cross-Listing and the Bonding Hypothesis

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**W**ith more than 180 listings in 2003, Canada has the largest number of cross-listed shares on U.S. stock exchanges. Canadian firms cross-list using an ordinary listing, meet all the same filing and disclosure requirements as a U.S. firm, and are subject to supervision and enforcement by the Securities and Exchange Commission. Studies of cross-listing find a positive price effect associated with this act, linked to the greater liquidity and better investor recognition of firms traded on a U.S. stock exchange. These positive effects lead to a lower cost of equity, providing a strong motivation for firms to cross-list.

Recent research suggests an alternative motivation for cross-listing that is based on investor protection. Coffee (1999) suggests that a foreign firm from a jurisdiction featuring potentially weaker investor protection can increase its valuation by bonding itself to the U.S. securities regime through cross-listing (the “bonding hypothesis”). The cross-listed firm signals its desire to respect the rights of shareholders by listing in a jurisdiction with more intense scrutiny, tougher regulation, and better enforcement. This added protection makes investors more willing to buy the shares of a foreign firm that has tied its hands in this way, thus raising its valuation. Siegel (forthcoming) qualifies this hypothesis, and concludes that bonding operates through a reputational mechanism, not through the courts. Reese and Weisbach (2002), Doidge, Karolyi, and Stulz (2004) and Doidge (forthcoming) find support for the bonding hypothesis, using cross-country data that include Canada.

This paper provides an alternative test of the bonding hypothesis using a sample of Canadian

and U.S. firms. Because bonding cannot be observed directly, researchers have designed proxies that attempt to capture this effect indirectly. Here we use a proxy for bonding based on share turnover in the U.S. market.

It is a stylized fact that cross-listing leads to an increase in trading volumes in both the domestic and foreign markets. If this increase in trading volumes is absent, then firms that incur the costs required to cross-list would not experience the benefits of a lower cost of equity and higher returns. Failure to generate significant share turnover in the U.S. market may signal that bonding has not occurred, indicating that U.S. investors do not believe that their minority rights will be respected by this firm. This hypothesis is examined here.

## Methodology

The impact of cross-listing on a firm’s valuation is tested through a series of regressions, where the dependent variable is a measure of the valuation of a firm’s equity. The book-to-market ratio is used in one specification and the earnings-to-price ratio in a second specification. Explanatory variables consist of company-specific variables and a set of dummy variables that capture remaining systematic effects. Company-specific variables include firm size, profitability, cost of equity, past sales growth, share turnover, and industry membership. A dummy variable is used to identify the nationality of the firm, while a second dummy identifies whether the Canadian firm is cross-listed or not.

Given that many factors affect investor protection, some of which cannot be quantified, this study uses a dummy-variable approach to capture systematic effects of differences in investor protection indirectly through the choice of sample and the inclusion of control variables in each

\* This article summarizes a recently published Bank of Canada working paper (King and Segal 2004).

regression. We examine a large sample of Canadian firms listed exclusively on the Toronto Stock Exchange (TSX), U.S. firms listed on U.S. exchanges, and Canadian firms cross-listed on both the TSX and a U.S. stock exchange over this period.

## Outline of Findings

The first set of regressions compares the relative valuation of all three categories of firms. After company-specific and market-specific factors are controlled for, the results indicate that Canadian firms are valued at a discount to U.S. firms. This discount exists despite controlling for the size, profitability, cost of equity, sales growth, and industry membership of these firms. Cross-listing mitigates this discount, and leads to valuations that are closer to or on a par with U.S. firms.

The second set of regressions looks at the relative valuation of cross-listed Canadian firms and Canadian firms listed only on the TSX. The results support the general finding that cross-listed Canadian firms have a higher valuation than other Canadian firms. This result is consistent with the bonding hypothesis, because it suggests that the cross-listed firms, which are exposed to the scrutiny of the U.S. markets, have a higher valuation, despite controlling for firm size, profitability, industry membership, and growth opportunities. These regressions do not prove the bonding hypothesis, however, since the effect could be caused by other factors that are not controlled for directly in these regressions.

A key part of the cross-listing story revolves around share turnover. In line with the studies reviewed in Karolyi (1998), higher valuations are associated with greater share turnover for all firms that cross-list. This finding, however, does not say anything about the location of share turnover, which is important for stock exchanges that compete to attract the secondary trading in a firm's shares. An examination of the share turnover of cross-listed Canadian firms shows a wide divergence in where the trading in these firms actually takes place. Not all Canadian firms that cross-list attract trading on U.S. stock markets. Instead, many of these firms continue to be traded predominantly on the home market.

We argue that the relative amount of trading on the U.S. stock market is a proxy of the degree of reputational bonding to the U.S. regulatory regime, since it indicates the degree of investor confidence that shareholder rights will be respected. We split the sample of cross-listed Canadian firms into two groups based on the ratio of U.S. share turnover to Canadian share turnover, and re-estimate our regressions. The results show a different picture from previous studies of cross-listing. The cross-listed firms that attract a higher share of trading on U.S. exchanges receive an increase in valuation over and above the impact of higher share turnover. Cross-listed Canadian firms that continue to trade predominantly on the TSX do see some benefit if their overall share turnover increases. This result is consistent with previous studies of firms cross-listing on two exchanges within the same country. In some cases, however, Canadian firms cross-list in the United States but do not see an increase in share turnover. These firms are valued similarly to other non-cross-listed firms.

## Conclusions

This paper attempts to identify the mechanism by which the bonding hypothesis affects valuation, and is the first to argue that bonding may be proxied by the location of share trading. Cross-listed Canadian firms that succeed in attracting share turnover in the United States realize the benefits from cross-listing in terms of an increase in valuation. When firms cross-list but continue to trade predominantly at home, these benefits are limited. These results are consistent with the bonding hypothesis that suggests that investors in U.S. markets do not value all cross-listed firms similarly, but rather reward some and withhold the benefits from others. Future research will explore why some cross-listed Canadian firms attract U.S. sponsorship while others do not.

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