

# **Assessing the Macroeconomic Impact of Stronger Capital and Liquidity Requirements in Canada: Insights from ToTEM**

**By José Dorich and Yang Zhang**

## **Executive Summary**

This paper assesses the macroeconomic impact of higher capital and liquidity requirements for the Canadian banking system. In particular, it quantifies the output losses that the transition towards these higher requirements may cause. We evaluate two different proposals: (i) an increase of 1-percentage point in the bank capital ratio and (ii) an increase of 25 per cent in the liquid-asset ratio. Each of these proposals is evaluated under different assumptions with respect to the implementation period (two and four years) and the response of monetary policy (an endogenous response vs. no monetary policy response). Different implementation periods are evaluated to assess how rapidly the new requirements can be achieved without causing a quantitatively important output loss. Regarding monetary policy, the main motivation for studying an endogenous response is that monetary policy is very likely to react to tighter regulation in order to dampen its effects on inflation and output. The case in which monetary policy does not react is evaluated to assess the direct effects of regulation. Moreover, this evaluation is useful to explore the scenario in which the policy rate cannot be reduced because it is at the effective zero lower bound.<sup>1</sup>

The methodology followed in this paper to evaluate the two different regulatory proposals is the two-step approach suggested by the Macroeconomic Assessment Group (MAG) of the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB). First, we use satellite models to measure the impact of the regulatory policies on interest-rate spreads faced by households and firms in Canada. Second, we use these results to assign a path for the spreads and conduct simulations using a modified version of the Bank of Canada's main macroeconomic policy model for the Canadian economy, ToTEM. This model is a multi-sector, open-economy dynamic stochastic general-equilibrium (DSGE) model that tells coherent and internally consistent stories about the current and expected evolution of the Canadian economy. The modified version allows long-term interest rates to play a meaningful role in expenditure decisions, over and above the traditional role of short-term rates. Moreover, the modified version also includes long- and short-term exogenous interest rate spreads faced by households and

---

<sup>1</sup> Even if the policy rate is at the zero lower bound, a central bank could adopt unconventional monetary policy measures to dampen the macroeconomic impact of tighter regulation.

firms.<sup>2</sup> The introduction of these spreads allows the model to capture variations in the effective interest rates faced by households and firms as a consequence of the regulatory changes.

In the model, higher interest rate spreads are transmitted to the real economy through several channels. First, the increase in the spreads causes an increase in the effective interest rates faced by households. This gives households an incentive to postpone consumption, which causes a decrease in the demand for consumption goods. Second, this reduction in consumption also reduces the demand for capital by firms that produce consumption goods and, therefore, investment demand declines. Third, the increase in spreads leads to an increase of the effective rate at which firms discount future real profits, which means that the net present value of future profits is reduced; and consequently, the demand for investment is additionally reduced. Fourth, the decline of consumption and investment generates downward pressures on output and prices, which cause monetary policy to cut the policy rate in order to stabilize inflation and the output gap. Fifth, on the trade side, the reduction in the policy rate generates a real exchange rate depreciation, making Canadian manufactured and commodity exports cheaper for the rest of the world. This leads to an increase in exports. Moreover, the real depreciation of the Canadian dollar, combined with the decline in the demand for finished consumption and investment goods, causes a decrease in imports. Finally, the decrease in consumption and investment, partially offset by the increase of net exports, leads to a decline in GDP.

Our results suggest that a 1-percentage-point increase in the bank capital ratio, implemented over four years, will cause a decline in output of 0.26 percentage points eight years after the start of the implementation of the increase.<sup>3</sup> There are two issues that have not been explored in this paper regarding the transmission of the regulatory proposals on economic activity. These issues can potentially affect our estimates of the output losses. First, the possibility of a global tightening of regulatory requirements could amplify the effects of the regulatory requirements in Canada. The analysis presented in this paper assumes that conditions in the rest of the world are fixed. An analysis performed by de Resende, Dib, and Perevalov (2010) quantifies the effects of global tightening of regulatory requirements for Canada using the BoC-GEM-FIN model. They find that tighter regulatory requirements in the rest of the world increase the impact of a 1-percentage-point increase in the capital ratio by 0.05 percentage points (in the case in which the increase in capital is implemented over four years and monetary policy endogenously reacts). This leads to a total effect of 0.31 percentage points on output.

On the other hand, the availability of alternative sources of financing for non-financial corporations may weaken the impact of changes in the banking sector on economic activity. In this paper, we have assumed that the higher spreads will be passed on to all households and firms. However, large corporate firms could have the scope to obtain their funding from non-banking sources at a lower cost.

---

<sup>2</sup> The spread is defined as the difference between the effective rate and the risk-free rate. For instance, the long-term spread for households is the difference between the effective long-term rate faced by households and the risk-free, long-term rate.

<sup>3</sup> Changes in the liquidity requirements yield very similar quantitative results.