

ROSENBERG INSTITUTE GLOBAL FINANCE BRIEF

Do Loan-to-Value Ratio Regulation Changes Affect Canadian Mortgage Credit?

Jeremy Kronick, Department of Economics
International Business School, Brandeis University



Jeremy Kronick

One of the important factors that contributed to the Great Recession was the collapse of the housing market. In response to this collapse, policymakers around the world began looking for targeted ways of preventing the overheating of their domestic housing markets. One of these tools, the loan-to-value (“LTV”) ratio, which fits in the broader macroprudential regulation toolbox, has come to the forefront. The question then becomes how effective do we anticipate LTV ratio regulation changes to be in slowing down the rate of mortgage credit growth. To investigate this question, this Brief will analyze the Canadian housing market, as both the government and Bank of Canada continue to look for ways of creating a soft landing.

Introduction

The focus of this work is to investigate the effects of changes to regulatory maximum loan-to-value (“LTV”) ratios on residential mortgage credit in Canada as policymakers look to try and slow down a potentially overheated housing market. Given the endogeneity of macroeconomic variables, I use a structural vector autoregression (“SVAR”). While plenty of papers on the housing market have been investigated¹, few if any look specifically at the part of consumer credit dealing with the housing market, namely residential credit, in a SVAR setting. This is a relevant issue to study given the importance of mortgage credit on the housing market, and the housing market as a leading indicator of economic health. As Figure 1 indicates, the housing market as a leading indicator of the economy is true for Canada.

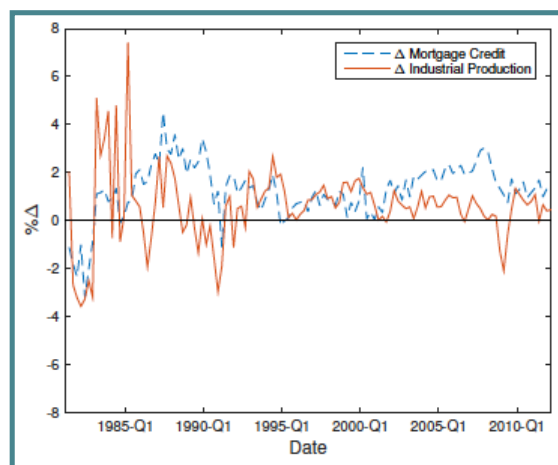


Figure 1. Mortgage Credit as Leading Indicator

The Rosenberg Institute of Global Finance

The Rosenberg Institute of Global Finance seeks to analyze and anticipate major trends in global financial markets, institutions, and regulations, and to develop the information and ideas required to solve emerging problems. It focuses on the policy implications of economic globalization. To this end, it sponsors informal exchanges among scholars and practitioners, conducts research and policy analyses, and participates in the School’s teaching programs. The Institute, founded in 2002, is named for Barbara C. Rosenberg ’54 and Richard M. Rosenberg.

1. Iacoviello (2002), Goodhart and Hofmann (2008), and Elbourne (2008)

Furthermore, the use of macroprudential regulation in housing market discussions within the SVAR framework is a relatively new area. While some papers have begun to investigate the relationship between LTV and the economy², none have been done, specifically for Canada, within the traditional SVAR framework, with a significant historical timeframe.

Results

Figure 2 below shows the pattern of mortgage credit growth with the vertical lines representing each LTV intervention. From this figure it appears that LTV does not necessarily have the effects one would expect; at least for the earlier regulation changes. The first change in 1982 was a tightening meant to slow down mortgage credit. It would appear the opposite occurred. Similarly, the change in 1992 was a loosening of mortgage credit, which seemed to cause mortgage credit to fall for the first bit of the period and only rise in the second half. The 2006 loosening as well as the 2008 tightening seemed to have the desired effects. The SVAR will allow me to assess whether the mixed results for the LTV effects hold true in a model-based framework.

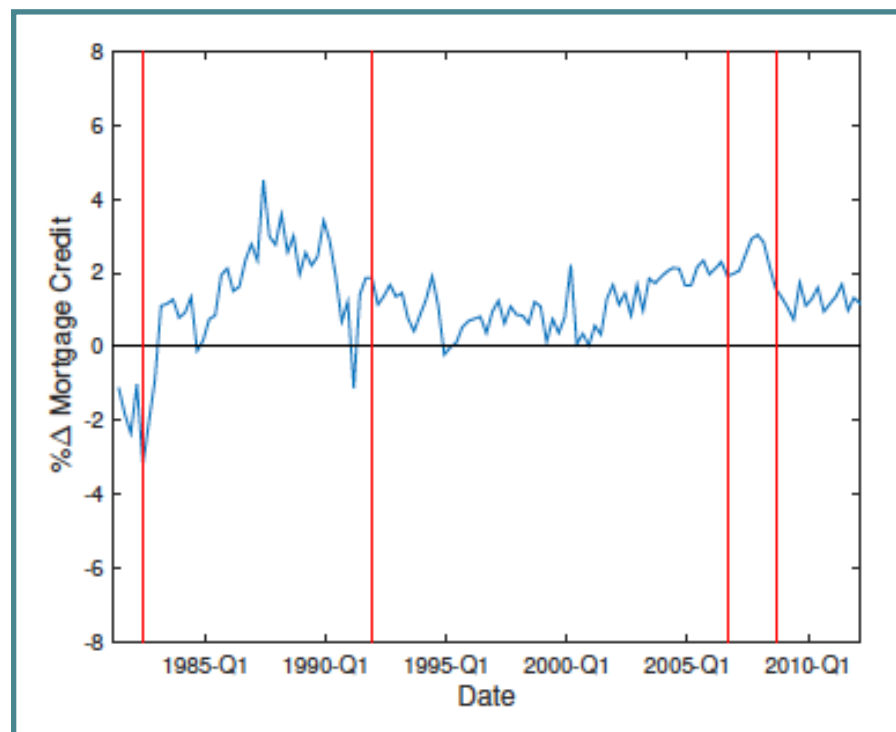


Figure 2. Mortgage Credit and LTV Regulation Changes

The SVAR model has the following format:

$$Cy_t = g + D_1 y_{t-1} + \dots + D_x y_t + M_1 x_{t-1} + Bs_t$$

where the y vector includes a crude oil price index, Canadian industrial production ("IP")³, Canadian real effective exchange rate, an index representing total compensation per hour worked, Canadian house prices, the Bank of Canada's real bank rate, Canadian mortgage credit, and the US' real federal funds rate. The x variable

2. Lamont and Stein (1999), Almeida, Campello, and Liu (2006), Kuttner and Shim (2013)

3. Represents the Canadian real economy as at a monthly frequency GDP is not available.

includes the four major LTV ratio regulation changes implying that the coefficients of interest come from the vector M. However, when evaluating the M matrix, the resulting coefficients and standard errors are with respect to the base period, i.e. the period before the first LTV change. As the interest here is how mortgage credit changes from one LTV ratio regulation to the next, the coefficients and standard errors need to be adjusted accordingly.

	(1) Percent
LTV_1	0.671** (2.372)
LTV_2	-0.087 (-0.736)
LTV_3	0.035 (0.394)
LTV_4	-0.257* (-1.713)
Observations	362
t statistics in parentheses	
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$	

Table 1. SVAR LTV Coefficients (in percent)

As Table 1 indicates, three of the four LTV coefficients are either insignificant in terms of their effects on mortgage credit, or cause mortgage credit to move in the opposite direction to what is expected; the 1982 tightening should have caused mortgage credit to fall but according to these results it increased significantly. The one significant LTV regulation change in the appropriate direction is the 2008 tightening, which caused a weakly significant fall in mortgage credit. The overall implication is that changes to LTV ratio regulation are unlikely to have the desired significant effects on mortgage credit. How can these results be explained in the context of the Canadian housing market?

One possible explanation for why LTV effects are largely insignificant or in the wrong direction is it may be difficult to account for all demand and supply-side shocks occurring simultaneously. As Figure 2 showed earlier, and as Table 1 supports, despite tightening in LTV regulation in 1982, there is a period of increasing mortgage credit followed only towards the end by a tapering off. One possible reason for the increases in the early part of the period was the introduction by CMHC of NHA mortgage-backed securities, which provided people owning NHA insured mortgages the ability to aggregate and sell these products to investors. This program allowed for a substantial increase in available funds for mortgages in Canada.

The insignificance of the 1992 loosening can also be explained by the introduction of the mortgage-backed securities, as well as by the 1988 Basel Accord. First, the spike in mortgages during the 1980s due to these mortgage-backed securities, may have allowed people, who otherwise would have had to wait for a loosening of LTV regulation, to buy early, reducing the effectiveness of the LTV increase. Second, the

introduction by the Canadian government in 1988, and enforced by law in 1992, of the Basel Accord, forced chartered banks to hold a certain amount of capital depending on the riskiness of their assets, including privately-insured mortgages. This made privately-insured mortgages more expensive than CMHC-insured mortgages, damaging that side of the market.

The insignificance of the 2006 loosening may be explained using the Great Recession, which began in the third quarter of 2007. As Table 2 indicates, after the 2006 loosening, mortgage credit growth increased in 2007 compared with 2006 as expected, however there were no continued gains in the 2008 period before the tightening. Therefore analyzing the whole period may not produce enough LTV-related growth to create significance from the 2006 loosening. The uniqueness of the Great Recession could imply that accounting for the real economy variables that I have in the SVAR analysis is unlikely to capture all the demand and/or supply-side shocks occurring during this time that may have affected mortgage credit.

Year over Year	2006	2007	2008
percent	8.29	9.45	9.60

Source: Statistics Canada

Table 2. Mortgage Credit Growth After 2006 Loosening

It is perhaps true that if it was possible to account for all these demand and supply shocks, you would see LTV have a significant effect on mortgage credit, and in the direction one would expect. However, there is reason to suspect that this still may not be true. It could be the case that lenders adjust their lending rates after a LTV regulation change. Specifically, if LTV is tightened, lenders will lose out on loans that were given to people at the old maximum LTV ratio. In reaction to this, lenders may decrease rates to stimulate demand for people who can afford larger downpayments. If they do lower rates, mortgage credit may appear to not change at all. A similar story could emerge if LTV regulation is instead loosened. The new market obtained by lenders when LTV is loosened will likely be riskier. To compensate for this additional risk, lenders would like to charge a higher interest rate. If their ideal rate is not possible due to strong competition for this new market, lenders may increase interest rates at other LTV ratio levels, thereby negating some of the loosening effect. Without disaggregated mortgage credit data by size of downpayment, investigating this option further is not currently feasible.

No matter where one falls on the possible explanations described in this section for the insignificant effects on mortgage credit of LTV regulation changes, it appears unlikely that they will be effective in slowing down mortgage credit.

Given the ineffectiveness of LTV regulation changes on mortgage credit, I look to see whether monetary policy could be used to cause the desired slowdown in the housing market. Figure 3 shows the effect on mortgage credit from an exogenous monetary policy shock created by my SVAR identification setup. This figure shows that mortgage credit does indeed fall, though with a lag and with no significance. Figure 4 indicates that the housing market can be significantly slowed with monetary policy shocks if housing prices are evaluated. However, Figure 4 also indicates that even if slowing down the housing market is considered a success according to the mortgage credit and housing prices figures, they come at the expense of a decrease in the real economy. Therefore, replacing LTV regulation changes with monetary policy in order to potentially slow down a housing market bubble will have to be weighed against the economic contractions that will occur.

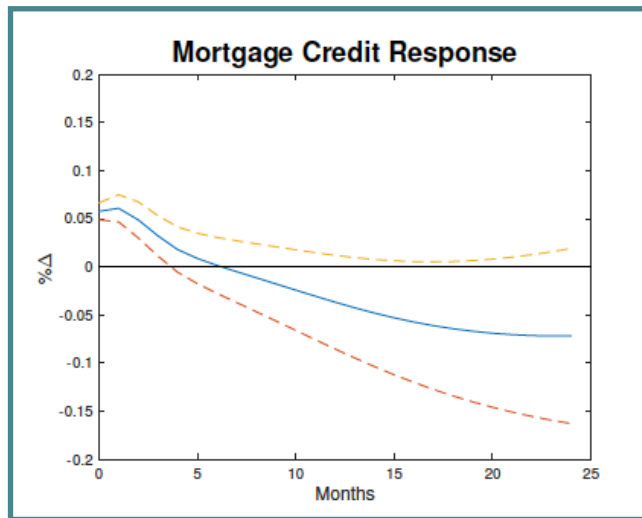


Figure 3. Mortgage Credit Reaction to Contractionary Monetary Policy Shock

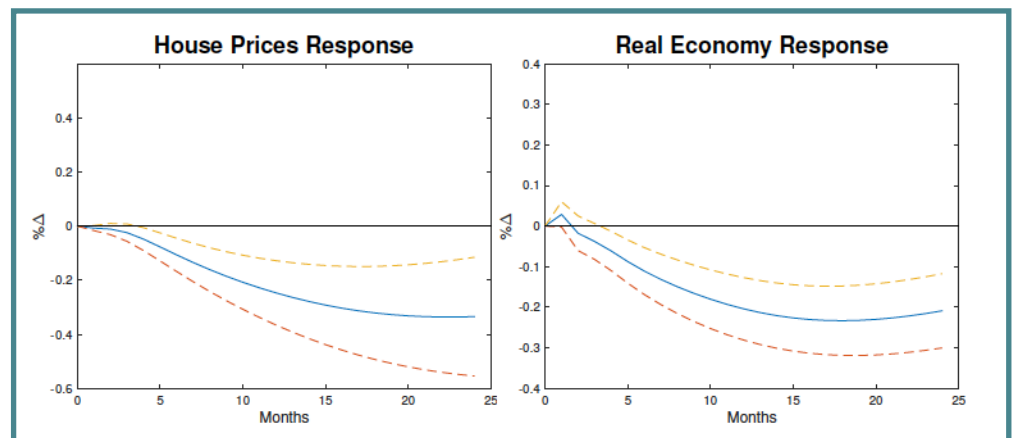


Figure 4. Real Economy Reaction to Contractionary Monetary Policy Shock

Summary

Given the increased use of macroprudential regulation following the Great Recession, understanding what we can expect for the success of these tools in one of the more important sectors of the economy, the housing sector, is vital. I evaluate whether the four major LTV regulation changes in Canada during the 1981-2012 period had significant effects on mortgage credit and caused it to move in the expected direction.

Results indicate that adjustments to the LTV ratio had either no significant effects on mortgage credit, or caused it to move contrary to expectations, in three of the four regulation changes: the 1982 tightening, 1992 loosening, and 2006 loosening. Only the 2008 tightening had significant effects on mortgage credit in right direction; however, the significance was weak. The implication is that, whether the insignificance is due to unaccounted demand and supply shocks or adjustments by mortgage lenders to lending rates, it does not appear to be the case that LTV regulation will be effective in slowing down mortgage credit. Therefore, some other tool will have to be looked at in order to achieve this goal. As monetary policy was also shown to have drawbacks, other options including debt-to-income ratios and countercyclical capital requirements, which both target housing without affecting the economy as a whole, should be investigated.

References

- Almeida, Heitor, C.H. Liu, and Murillo Campello (2006). "The Financial Accelerator: Evidence from International Housing Prices". *Review of Finance*, (10) 1-32 2006.
- Cushman, D.O., and T. Zha (1997). "Identifying monetary policy in a small open economy under flexible exchange rates." *Journal of Monetary Economics* 39: 433-448.
- Elbourne, A. (2008). "The UK housing market and the monetary policy transmission mechanism: An SVAR approach." *Journal of Housing Economics*, vol. 17(1): 65-87.
- Goodhart, Charles A.E., A.K Kashyap, and Richard Berner (2011). "The Macroprudential Toolkit". *IMF Economic Review* Vol. 59, No.2.
- Iacoviello, M. (2002). "House Prices and Business Cycles in Europe: a VAR analysis." *Boston College Working Papers in Economics* 540.
- Kim, S. and N. Roubini (2000). "Exchange rate anomalies in the industrial countries: A solution with a structural VAR approach." *Journal of Monetary Economics* 45: 561-586.
- Kuttner, K. and I. Shim (2013). "Can Non-Interest Rate Policies Stabilise Housing Markets? Evidence From a Panel of 57 Countries." *BIS Working Papers* No. 433.
- Lamont, Owen and J.C. Stein (1999). "Leverage and House-Price Dynamics in U.S. Cities". *RAND Journal of Economics*, The RAND Corporation, vol. 30(3), pages 498-514, Autumn.
- Peterson, Brian (2012). "Fooled by Search: Housing Prices, Turnover and Bubbles". *Bank of Canada Working Paper* 2012-3
- Sims, C. (1980). "Macroeconomics and Reality." *Econometrica*, 48:1-49.

For more information about the Rosenberg
Institute of Global Finance contact:

**Rosenberg Institute of
Global Finance**

Brandeis International Business School

Mailstop 032

Waltham, MA 02454-9110

781-736-2178

<http://brandeis.edu/global/world-ready/centers>

ibscenters@brandeis.edu