

The Big Banks' Big Secret

Estimating government support for
Canadian banks during the financial crisis

David Macdonald





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5	Executive Summary
8	Introduction
10	Sizing Up the Support
13	Breakdown By Program
	The U.S. Federal Reserve
	Bank of Canada
	Canada Mortgage and Housing Corporation
20	Overall Bank Utilization
	Royal Bank of Canada
	Toronto-Dominion Bank
	Scotiabank
	Bank of Montreal
	Canadian Imperial Bank of Commerce
30	Conclusion
32	Appendix 1: Methodology
	U.S. Federal Reserve Programs
	CMHC's Insured Mortgage Purchase Program (IMPP)
	Bank of Canada Programs
42	Notes

Executive Summary

EVER SINCE THE global financial crisis struck in 2008, Canadians have been subjected to a constant refrain: Canada has the “most sound banking system in the world”.¹ During the worst of the crisis — 2008 to 2010 — the official line was that Canada’s banks did not require the extraordinary bailout measures that were being offered in other countries, particularly in the U.S. We knew that as early as 2008 the federal government had made provisions to buy insured mortgage pools from Canada’s banks in order to keep credit flowing during recessionary times. The government was careful to call it a “liquidity support”, not a “bailout” but, as this report reveals, government support for the country’s biggest banks was far more generous than the official line would suggest. Support spanned the course of two years and Canada’s banks turned not only to the Canadian federal government and the Bank of Canada for help during this protracted period, they also took advantage of American bailout programs.

Uncovering the extent to which Canada’s big banks relied upon federal government support during the crisis requires considerable digging. While the details around the American bank bailout are fully available to the public (due to a legal challenge forcing this information into the open), the Canadian federal government and Bank of Canada offer far less transparency.

This report builds a composite picture of the extent of Canadian banks’ use of government support by combing through aggregate data provided by the federal government, the Office of the Superintendent of Financial Institutions (OSFI) and the Bank of Canada, as well as quarterly reports of the

FIGURE A Estimated Extraordinary Support Summary

Bank	Peak Support Date	Peak Support Value (\$bil)	Peak Support to Company Value (Date of Peak)
CIBC ²	March 09	\$21	148% (March 2009)
BMO ³	January 09	\$17	118% (Feb 2009)
Scotiabank ⁴	January 09	\$25	100% (Feb 2009)
TD Bank ⁵	September 09	\$26	69% (Feb 2009)
Royal Bank ⁶	March 09	\$25	63% (Feb 2009)

Source Estimates based on author's calculations (See Appendix 1 for methodology)

banks themselves. While the estimates contained within this report have been externally reviewed and are based on the best available data, they should nonetheless be considered approximations of the actual values, until those actual values are released by the Bank of Canada and CMHC (or by the banks themselves).

Examining the aid from this perspective shows the extraordinary measures that were taken to support Canadian banks. It reveals that between October 2008 and July 2010, Canada's largest banks dipped into programs provided by the U.S. Federal Reserve, the Bank of Canada and the Canada Mortgage and Housing Corporation (CMHC) — all at the same time. Both the U.S. Federal Reserve and the Bank of Canada offered short-term collateralized loans which peaked at \$33 billion and \$41 billion Canadian dollars respectively.⁷ CMHC was buying mortgages directly from the banks after they had been converted to mortgage-backed securities. By the end of this program, CMHC had purchased \$69 billion worth of mortgages.

At its peak in March 2009, support for Canadian banks reached \$114 billion. To put that into perspective, that would have made up 7% of the Canadian economy in 2009 and was worth \$3,400 for every man, woman and child in Canada.

Figure A summarizes how much each Canadian bank received in peak support. It also calculates how much that support was worth as a proportion of the stock market value of the company at that point in time. Larger banks were more likely to need more support and so the peak support to company value column more fairly examines the extent of support.

Three of Canada's banks — CIBC, BMO, and Scotiabank — were at some point completely under water, with government support exceeding the value of the company. In March 2009, CIBC stood out for receiving support worth almost one and a half times the value of all outstanding shares. It would

have taken less money to have simply bought all the shares in CIBC instead of providing it with support.

Over the aid period (from the fourth quarter of 2008 through the second quarter of 2010), the Canadian banks remained profitable, reporting \$27 billion in total profits between them. Only two banks saw a single quarter with losses, CIBC and RBC. All the other banks were consistently profitable throughout the period of government aid.

To top it off, the CEO of each of Canada's big banks ranked among the highest paid 100 CEOs of Canada's public companies and at the height of government support between 2008 and 2009 each CEO of each bank received raises in total compensation. For instance, Edmund Clark of TD Bank saw his overall compensation jump from \$11.1 million in 2008 to \$15.2 million in 2009.

Three smaller banks (National Bank, HSBC and ING) may have also accessed the Bank of Canada and CMHC programs, although their involvement is less certain. Unfortunately, the amounts accessed by all three peaked below \$4 billion and due to the small amount, it is difficult to determine exactly how much each of these three accessed, although it appears that National Bank received more aid than the two foreign banks.

The details uncovered in this report fly in the face of repeated assurances that Canadian banks did not need extraordinary support. Nothing could be further from the truth. Three of Canada's banks drew support that was worth (at peak) more than the total value of their company.

While this report sheds some light on the extraordinary nature of the support for Canada's banks, due to government secrecy, it raises more questions than it is able to answer. Furthermore, the estimates in this report are based on partial information provided by Canadian public institutions and analysis of the banks' own financial reports. As such, the estimates in this report should be considered as estimates until the actual values are released by the private banks themselves or by Canada's public institutions.

A healthy and resilient banking sector cannot be based on secrecy; it must be based on transparency and a willingness to learn from the past. Details of Canada's massive support from 2008 to 2010 should to be released by CMHC and the Bank of Canada in the name of transparency and accountability. Research should be done to determine why some banks needed so much more support than others. Lessons from that research should be used to strengthen financial sector regulation to prevent the need for similar extraordinary measures in the future.

Introduction

“...we have not had to put any taxpayers’ money into our financial system in Canada, nor do I anticipate that we’ll be obliged to do so.”

—**Jim Flaherty, Minister of Finance**⁸

“Without wanting to appear arrogant or vain, which would be quite un-Canadian...while our system is not perfect, it has worked during this difficult time, I don’t want the government to be in the banking business in Canada.”

—**Jim Flaherty, Minister of Finance**⁹

“It is true, we have the only banks in the western world that are not looking at bailouts or anything like that...and we haven’t got any TARP money.”

—**Stephen Harper, Prime Minister**¹⁰

THE OFFICIAL STORY of the 2008 financial crisis goes like this: American and international banks got caught placing bad bets on U.S. mortgages and had to be bailed out. But not in Canada. Through the financial crisis, Canadian banks were touted by the federal government and the banks themselves as being much more stable than other countries’ big banks. Canadian banks, we were assured, needed no such bailout.

However, in contrast to the official story Canada’s banks received \$114 billion in cash and loan support between September 2008 and August 2010. They were double-dipping in not only two but three separate support programs, one of them American. They continued receiving this support for a protracted period while at the same time reaping considerable profits and providing raises to their CEOs, who were already among Canada’s highest paid. In fact, several banks drew government support whose value ex-

ceeded the bank's actual value. Canadian banks were in hot water during the crisis and the Canadian government has remained resolutely secretive about the details.

This report examines the nature and extent of government support to Canada's big banks, estimated on the basis of partial information provided by Canada's public institutions, and an analysis of the banks' own financial reports. It shows which Canadian banks drew on government support programs, how much they drew, and for how long. It sheds light on information the government refuses to make publicly available and raises plenty of new questions in the process.

Sizing Up the Support

“It was a good thing we didn’t press pause when we provided over \$30 billion of liquidity to the Canadian banking system. It was a good thing the government of Canada didn’t press pause when it provided...very timely and effective term liquidity to the Canadian banking system.”

—**Mark Carney, Bank of Canada governor**¹¹

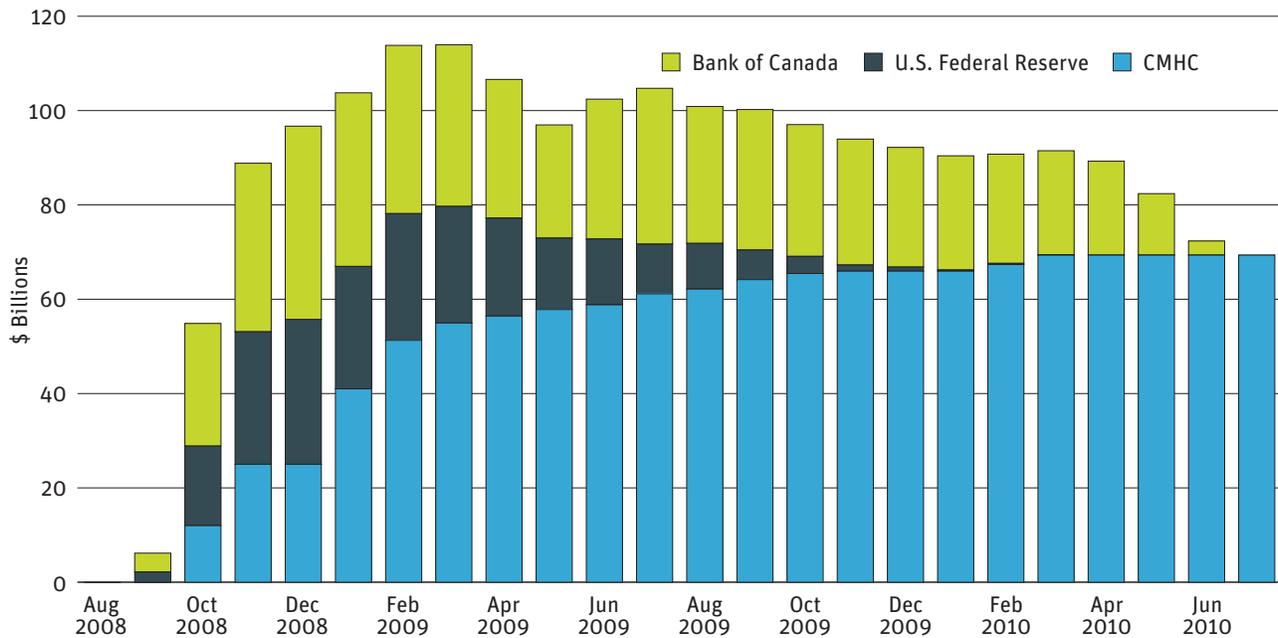
DESPITE ALL THE rhetoric about the stability of Canada’s bank system, research into several key sources reveals Canada’s big banks started receiving American and Canadian government help in September 2008 and continued to draw on government help well into 2010.

Between September 2008 and the peak of government support in March 2009, Canada’s banks were the recipients of \$114 billion in support from the U.S. Federal Reserve, the Bank of Canada and Canada Mortgage and Housing Corporation (CMHC). A small portion of this support likely went to National Bank and two international banks with holdings in Canada: ING and HSBC.

It should be noted that the “Extraordinary Financing Framework” was prepared to spend up to \$200 billion to aid the banks and other industries. In other words, while the sums reported in this report are enormous, there were even more funds to be disbursed if the banks needed them.

It was the collapse of Lehman Brothers that started the massive support for Canadian banks from both American and Canadian governments, as shown in *Figure 1*. Massive loans from the liquidity programs of the U.S. Federal Reserve and the Bank of Canada provided the bulk of the initial support for the big Canadian banks.¹²

FIGURE 1 Total Support to Canadian Banks



Source Bloomberg, CMHC, Bank of Canada

However, it was the third support from CMHC’s Insured Mortgage Purchase Program (IMPP) that did the heaviest lifting. In contrast to the loans of the first two programs, CMHC was providing direct cash infusions to Canada’s banks, although it took longer to ramp up. The program provided its first cash to the banks in October 2008. Within four months’ time, Canada’s big banks requested and received a whopping \$50 billion in cash in exchange for mortgage-backed securities. By March 2009, government supports to Canada’s banks peaked at \$114 billion. At this point, support for Canadian banks was equivalent to 7% of Canada’s 2009 GDP. That support represents a subsidy worth about \$3,400 for every man, woman and child in Canada.

By late-2009, the U.S. Federal Reserve began to wind down its support for Canadian banks. The Bank of Canada’s support for Canadian banks continued until the spring of 2010. Interestingly, the global financial crisis subsided by the end of 2009, but CMHC cash injections to Canada’s big banks didn’t wrap up until April 2010. The recession appeared to be behind us but Canada’s big banks were still taking cash from this federal program in the fall of 2010.

By February 2010 and July 2010, all of the U.S. Federal Reserve and Bank of Canada loans had been respectively repaid. While these funds were repaid in full, it is clear that the banks benefitted enormously from public financing when private funds were unavailable. In addition, had the rapid and enormous deployment of public funds not been available, most, if not all, Canadian banks would have encountered serious difficulty.

Breakdown By Program

The U.S. Federal Reserve

Despite the U.S. Federal Reserve preference to keep its loan details secret, it has been far more transparent than the Canadian government – in large part due to enterprising journalists and a two-year legal battle to make the details public. U.S. Federal Reserve bailout details, broken down by bank, are available online.¹³

At their peak, Canadian banks borrowed \$33 billion from the U.S. Federal Reserve in December 2008 (all American dollar figures are converted to Canadian dollars).

As shown in *Figure 2*, all five of Canada's big banks dipped into the U.S. Fed programs between September 2008 and April 2010 – some more than others.

Both CIBC and Bank of Montreal made relatively sparing use of the U.S. Fed programs. Their peak borrowing stayed below \$2.7 billion. However, RBC, Scotiabank and TD Bank made significant use of the U.S. bailout program. RBC and TD Bank drew more than \$8 billion each from the U.S. Federal Reserve. At its peak, Scotiabank had drawn almost \$12 billion in support. The National Bank did not use U.S. bailout money.

The average outstanding balance provides a slightly different perspective. While Scotiabank received the most U.S. bailout support, it was TD Bank that drew on bailout help for the longest period of time. TD Bank had an

FIGURE 2 U.S. Federal Reserve Programs (\$ Billions)

	Average Daily Balance (Between 9/1/2008 and 4/8/2010)	Peak Day
Scotiabank	\$3.6	\$11.9
Royal Bank	\$3.6	\$8.8
TD Bank	\$4.2	\$8.4
CIBC	\$0.8	\$2.7
BMO	\$0.5	\$2.2

Source Bloomberg

average outstanding balance of \$4.2 billion from September 2008 through April 2010, when the U.S. Fed programs were wound down.

Canada's big banks relied on the U.S. Fed programs almost as heavily as they did Canadian aid programs during and after the global financial crisis.

Bank of Canada

In stark contrast to the U.S. Federal Reserve, the details of the Bank of Canada's loans to Canada's big banks remain a secret. Despite Access to Information requests for the data, the Bank of Canada refuses to release it. However, the Office of the Superintendent of Financial Institutions (OSFI) keeps detailed monthly balance sheets on all banks operating in Canada. By using telltale fingerprints, it is possible to estimate the impacts of the Bank of Canada programs. For the full methodology, see Appendix 1.

At its peak, Canadian banks borrowed over \$41 billion by December 2008 from the Bank of Canada programs.

Participants in the Bank of Canada's bank programs had to be either Primary Dealers of Government of Canada bonds/treasury bills or be part of the Large Value Transfer System (LVTS). *Figure 3* outlines all the banks and financial institutions that would have access to these supports.

While the list of potential participants in the Bank of Canada's bank programs is mostly Canadian, some major international banks were also eligible. In fact, several of the biggest users of the U.S. Federal Reserve programs also had access to Bank of Canada programs. *Figure 4* examines how these banks accessed U.S. Fed programs.

The Bank of America was a particularly heavy user of U.S. programs. State Street, for its part, made extensive use the AMLF program, where the

FIGURE 3 Who Had Access to the Bank of Canada Programs

Canadian	LVTS	Primary Dealer	Country
Bank of Montreal	x	x	Canada
Scotiabank	x	x	Canada
Canadian Imperial Bank of Commerce	x	x	Canada
Royal Bank of Canada	x	x	Canada
The Toronto-Dominion Bank	x	x	Canada
Alberta Treasury Branches	x		Canada
La Caisse centrale Desjardins du Québec	x	x	Canada
Central 1 Credit Union	x		Canada
Laurentian Bank of Canada	x	x	Canada
National Bank of Canada	x	x	Canada
Casgrain & Company Limited		x	Canada
Non-Canadian			
Bank of America, National Association	x		United States
Merrill Lynch Canada Inc.		x	United States
State Street Bank and Trust Company	x		United States
Deutsche Bank Securities Limited		x	Germany
BNP Paribas (Canada)	x		France
HSBC Bank Canada	x	x	UK
ING Bank of Canada	x		Netherlands

Source Bank of Canada¹⁴

U.S. Fed acted as an intermediary for mutual funds holding Assets Backed Commercial Paper.¹⁶ Deutsche Bank and Merrill Lynch were both heavy users of the U.S. mortgage-backed securities repo programs.

Despite having access to the Canadian programs and being heavy users of the U.S. Fed programs, most of the Canadian subsidiaries of the banks in *Figure 4* did not access the Bank of Canada support programs. In almost all cases, the Canadian dollar repurchase agreements liability line on the balance sheet was zero, the telltale sign of accessing the Bank of Canada programs.

The only two banks that had non-zero values for their Canadian repurchase agreements and saw spikes during the Bank of Canada loan program were ING and HSBC.

Despite American and international bank involvement in the Bank of Canada programs, *Figure 5* suggests a uniquely Canadian story. It shows the

FIGURE 4 Utilization of U.S. Fed Programs by Bank of Canada Eligible International Banks (\$ Millions)¹⁵

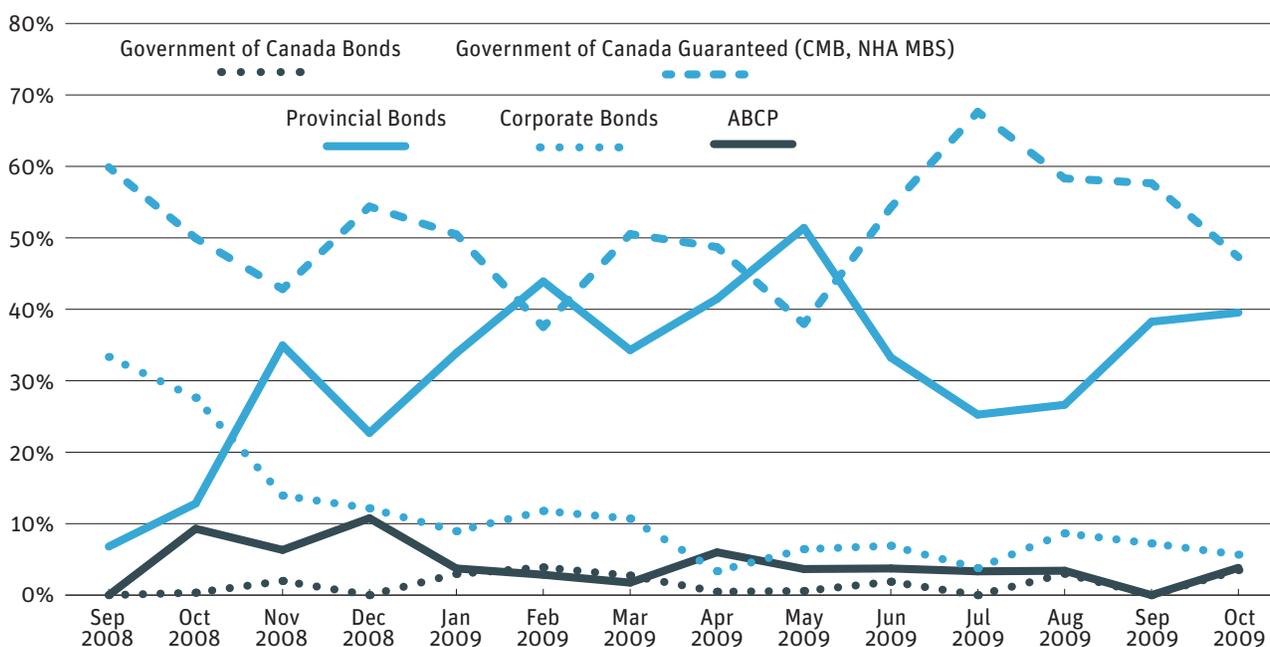
	Term Auction Facility	Commercial Paper Funding Facility	Term Securities Lending Facility	Single Tranche Open Market Operations	Primary Dealer Credit	ABCP & Money Market Liquidity Function	Mutual Fund	Discount Window
Bank of America Corp.	\$15,632	\$1,338	\$2,122	\$595	\$936	\$70		\$20
BNP Paribas SA	\$3,143	\$301	\$863	\$2,663	\$87	\$0		\$7
Deutsche Bank AG	\$3,204	\$0	\$6,459	\$2,818	\$0	\$0		\$6
HSBC Holdings Plc	\$152	\$225	\$80	\$4	\$0	\$0		\$0
ING Groep NV	\$0	\$978	\$0	\$0	\$0	\$0		\$0
Merrill Lynch & Co. Inc.	\$0	\$722	\$4,194	\$341	\$3,075	\$0		\$0
State Street Corp.	\$2,205	\$1,269	\$0	\$0	\$0	\$3,665		\$1

Percentage of Total Program

Bank of America Corp.	9%	2%	4%	3%	7%	1%		0%
BNP Paribas SA	2%	0%	2%	11%	1%	0%		0%
Deutsche Bank AG	2%	0%	12%	12%	0%	0%		0%
HSBC Holdings Plc	0%	0%	0%	0%	0%	0%		0%
ING Groep NV	0%	1%	0%	0%	0%	0%		0%
Merrill Lynch & Co. Inc.	0%	1%	8%	1%	24%	0%		0%
State Street Corp.	1%	2%	0%	0%	0%		35%	0%

Source Bloomberg and author's calculations

FIGURE 5 Collateral Used for Bank of Canada Programs



Source Bank of Canada¹⁷

FIGURE 6 Estimated Utilization of Bank of Canada Programs (\$ Billions)

	Average Monthly Balance (September 2008 to July 2010)	Peak Month
BMO	\$6.8	\$9.2
CIBC	\$6.6	\$9.2
Scotia	\$6.4	\$9.2
RBC	\$3.3	\$5.0
TD	\$2.0	\$5.5

Source Author's estimates based on methodology in Appendix 1¹⁸

collateral used for the Bank of Canada loans. By the time serious money was doled out in November 2008, corporate bonds and asset-backed commercial paper had fallen to the wayside in terms of collateral. Uniquely Canadian assets like mortgage backed securities and provincial bonds became the primary collateral.

Mortgage-backed securities played a particularly important role in accessing emergency cash for Canada's banks. Not only were they the primary means of collateral for Bank of Canada programs, they were also the only means of accessing cash through CMHC's window. The practice of securitizing and selling mortgages to investors has exploded in Canada since the introduction of Canada Mortgage Bonds in 2001. This trend has accelerated as mortgage-backed securities became the key means for banks to access emergency programs.

Figure 6 shows the estimated utilization of the Bank of Canada aid loans from September 2008 to the date when all of the funds were repaid on July 8, 2010.

One of the wrinkles of the Bank of Canada program was that no single bank could receive more than 25% of the available funds. In addition, no single bank could receive 25% of the funds in a single auction.¹⁹ CIBC, BMO and Scotiabank all hit both limits between September 2008 and July 2010. In fact the much lower utilization of TD and RBC may well have limited the amounts that CIBC, BMO and Scotiabank took as the 25% ceilings effectively stopped just three banks from withdrawing even more funds.

For TD Bank, the Bank of Canada support in both average and peak utilization were used more sparingly than those of the U.S. Fed. RBC had similar average utilization between the Bank of Canada and U.S. Fed programs, although its U.S. Fed peak was much higher. For CIBC, BMO and Scotiabank, the Bank of Canada loans were much more important. It is estimated

that these three banks hit the 25% ceiling put in place to limit the amount of cash that could be loaned out to any individual bank. All three of these banks hit peak utilization of \$9.2 billion, i.e. the ceiling. Average utilization for these three during this period was over \$6 billion.

The National Bank, Canada's sixth largest bank, and two foreign banks HSBC and likely also accessed the Bank of Canada program. All three combined drew under \$4 billion at peak. Due to the small size for these final three participants, it is difficult to accurately estimate precisely how much each of these smaller banks received.

Canada Mortgage and Housing Corporation

The federal government also extended cash injections to Canada's big banks through CMHC's Insured Mortgage Purchase Program (IMPP). This program was by far the largest in terms of support with just over \$69 billion in mortgages purchased from Canada's banks.

CMHC was not providing loans that needed to be paid back, as was the case with the other two aid programs. CMHC was buying mortgages and, as such, the banks did not need to pay this money back. The CMHC program was thus a straight cash infusion for Canada's banks. It was CMHC that was left to decide what it was going to do with \$69 billion worth of mortgages.

In the same way that the Bank of Canada loan programs mirrored those of the U.S. Federal Reserve, the CMHC program resembled the U.S. Troubled Asset Relief Program (TARP). For both Canadian CMHC and U.S. TARP programs, government agencies bought assets, largely mortgage-backed securities, from the banks. In the U.S., the underlying mortgages were considered "troubled." However, in Canada, all of the underlying mortgages were insured by CMHC so whether they were "troubled" or not, the banks were never on the hook.

As with the Bank of Canada supports, the details for the CMHC support for individual banks remain a secret. The details revealing which banks received how much cash and when are not publicly available, although the aggregate totals have been released by CMHC. The banks themselves publish detailed information on the value of securitized mortgages that they hold and sell. Since the IMPP program provided cash for securitized mortgages, an estimate of how much each bank received in CMHC support can be pieced together from the banks' own quarterly financial reports. For full details see Appendix 1.

FIGURE 7 Estimated Utilization of CMHC Programs (\$ Billions)

	Total Mortgages Sold as of Final Auction (March 24 th , 2010)
TD Bank	\$21.9
RBC	\$14.7
CIBC	\$11.8
Scotiabank	\$9.0
BMO	\$6.7

Source Estimates based on the financial Statements of CIBC, BMO, RBC, Scotiabank, TD Bank and author's calculations as described in Appendix 1

According to our estimates, the heaviest users of the CMHC program were likely CIBC, RBC and TD Bank. The heaviest user, TD Bank, received almost \$22 billion in cash from CMHC between October 16, 2008 and the final auction on March 24, 2010.²⁰ Each of these three banks used securitization as an important means of funding their mortgages.

Despite its smaller size relative to the other banks, TD Bank was a particularly heavy user of the CMHC program. As we'll see later, TD Bank may have relied more heavily on the CMHC program as it took very few Bank of Canada loans in 2009. In essence, it decided to sell its mortgages to CMHC instead of use them as collateral for Bank of Canada loans.

It appears that having a larger stock of securitized and retained mortgages was related to the amount of cash received from CMHC for two possible reasons: (1) banks that rely more heavily on investors instead of depositors to fund mortgages needed more cash when the crisis hit; and/or (2) those with more mortgage-backed securities had the only means of accessing the CMHC program, which encouraged banks to exchange them for cash. Either way, banks that relied on securitization to fund their mortgages were more likely to draw a greater amount of cash from the CMHC program.

For instance, BMO and Scotiabank both relied less heavily on securitization and both seemed to draw less heavily on the CMHC program. BMO also has a smaller mortgage portfolio than other banks, which led to fewer securitized mortgages.

Finally, National Bank may have also accessed the CMHC program but much more sparingly utilizing under \$500 million, if at all. The small amount makes it difficult to say definitively if National Bank did receive CMHC monies and how much.

Overall Bank Utilization

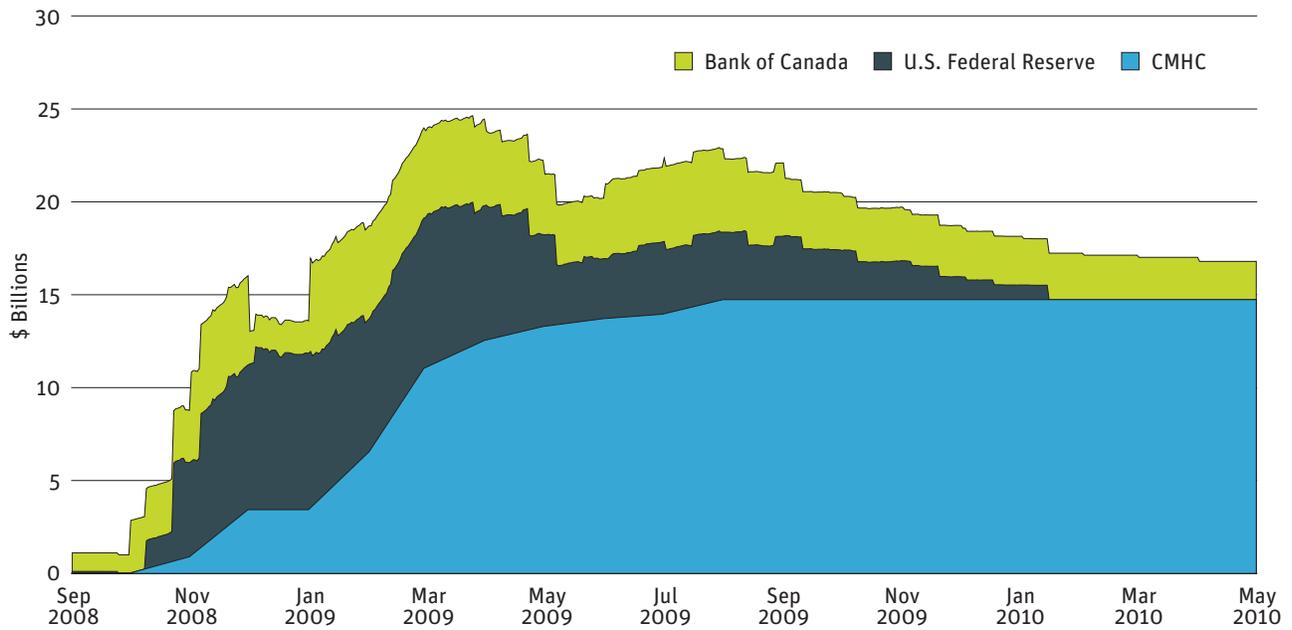
THE FOLLOWING IS a breakdown of the biggest Canadian banks' reliance on the three forms of government aid discussed in this paper. This section looks at the banks by market capitalization or the total value of all of their stock. It examines the banks' peak support, with some commentary on the three main programs. It also looks at how much each bank received in support relative to its size.

Royal Bank of Canada

RBC is the largest bank in Canada. It is also the largest publicly traded company in Canada, according to market capitalization. Over the support period from the fourth quarter of 2008 to the second quarter of 2010, its corporate profits were \$7.8 billion.²¹ It showed positive earnings in six of the seven quarters in which it was accessing government funds. Its CEO Gordon Nixon was the 18th highest paid CEO in the country in 2008, taking in \$9.6 million that year, which includes the base salary, bonus payments, stock options, shares granted and pension contributions.²² In 2009, he jumped to the 9th highest paid CEO and received a significant raise putting total compensation at \$12.1 million.²³

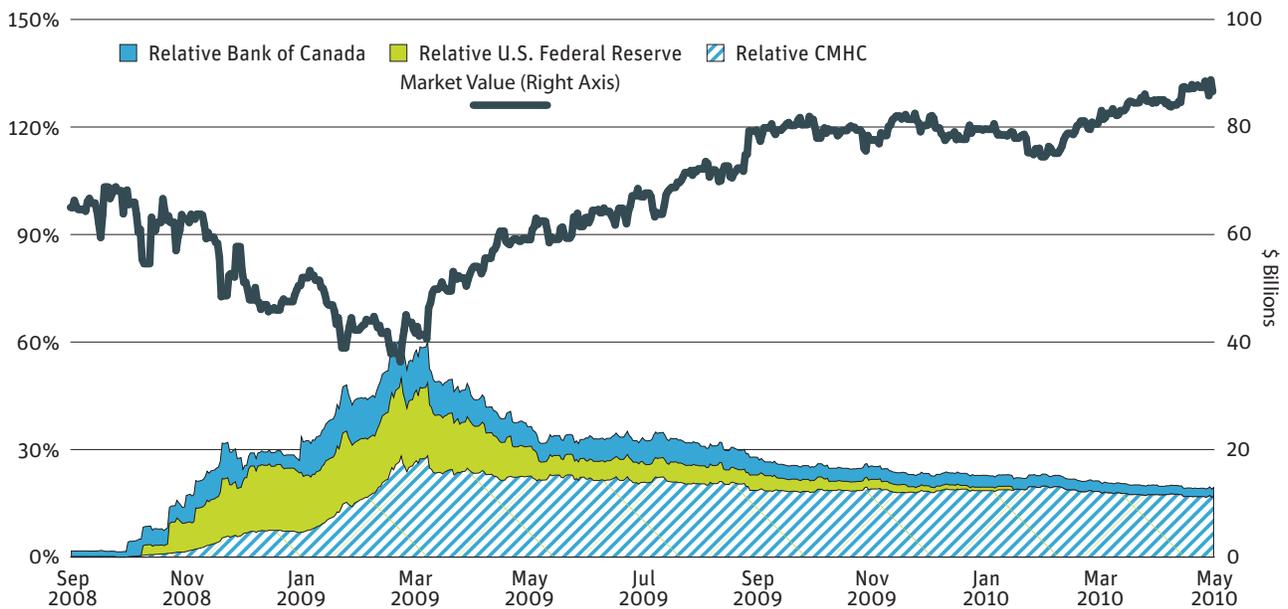
RBC, like other banks, started to draw significant support in September 2008. In the early months of the financial crisis, RBC relied heavily on loans from the U.S. Federal Reserve. It was only in February 2009 that sup-

FIGURE 8 Estimated Royal Bank of Canada Total Support



Source Bloomberg, OSFI, Royal Bank Financial Statements, Bank of Canada and author's calculations

FIGURE 9 Estimated Royal Bank of Canada Relative Support



Source Bloomberg, OSFI, Royal Bank Financial Statements, Bank of Canada and author's calculations

port from CMHC picked up steam. It is estimated that RBC drew relatively little from the Bank of Canada programs.

RBC hit its first peak borrowing in March 2009 at approximately \$25 billion. A second peak appeared in July of 2009, hitting just under \$23 billion. RBC received the third highest level of support for Canadian banks after TD Bank and Scotiabank.

After a rapid ramp up in February 2009, CMHC support slowly increased through to October 2009, almost a year after the initial crisis broke out. As with the other Canadian banks, CMHC supports eventually dwarfed support from other government sources for RBC.

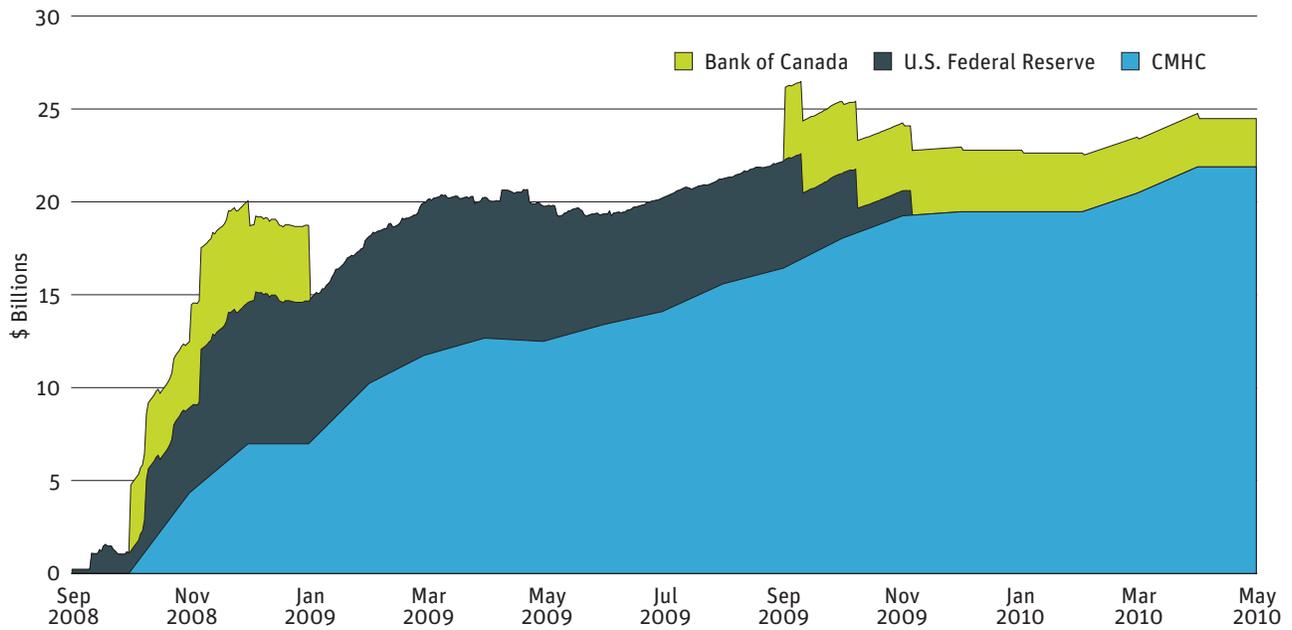
RBC is the largest of the Canadian banks so, in a relative sense, RBC borrowed less than other Canadian banks compared to its market capitalization. But the amount that it borrowed — \$25 billion at its peak — is an incredibly high amount considering the official view at the time was that Canada's banks did not require a "bailout." At the relative peak, RBC received support worth 63% of its market cap in February 2009. This level of support declined quickly from this high by April 2009.

Toronto-Dominion Bank

TD is the second largest bank in Canada. Over the emergency support period from the fourth quarter 2008 to the second quarter of 2010 its corporate profits were \$6.6 billion.²⁴ It showed positive earnings in all seven of the quarters in which it was accessing government funds. Its CEO Edmund Clark was the 14th highest paid CEO in the country in 2008, taking in \$11.1 million that year, which includes the base salary, bonus payments, stock options, shares granted and pension contributions.²⁵ In 2009 he jumped to the 4th highest paid CEO and received a significant raise, putting total compensation at \$15.2 million.²⁶

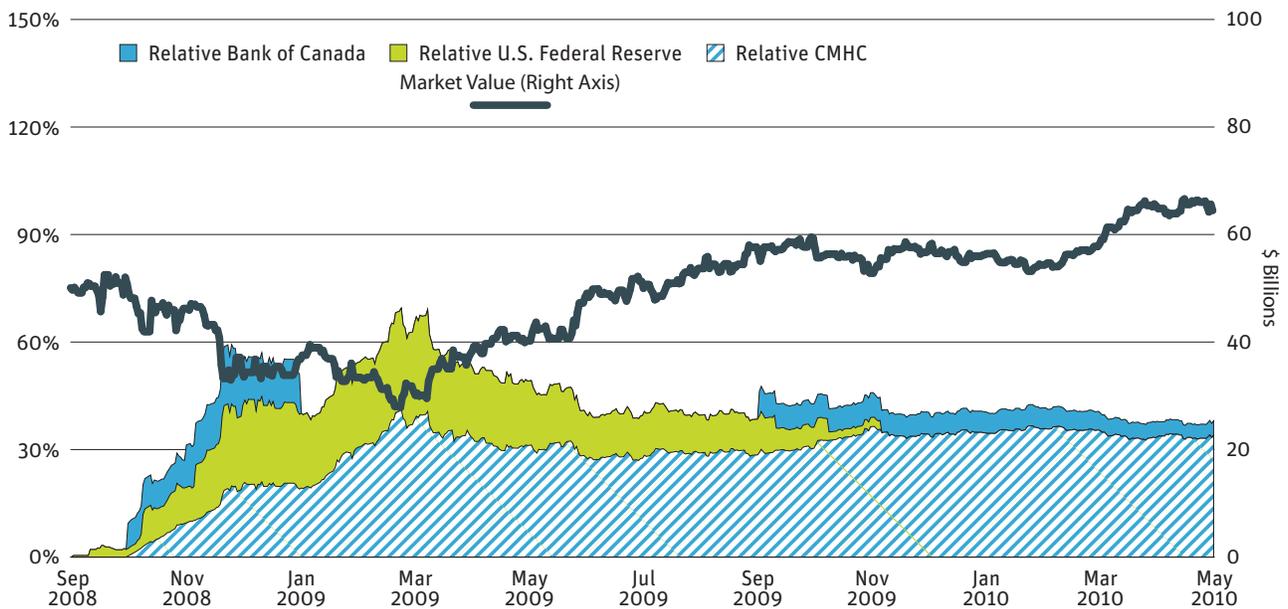
Once the financial crisis started in earnest, TD Bank drew support from the U.S. Federal Reserve and CMHC. Cash from the Bank of Canada provided some early support, however TD Bank almost completely dropped out of the Canadian repo markets between January 2009 and August 2009. The only repos it appeared to have been involved in during that period were related to U.S. Federal Reserve programs. TD Bank compensated for this dramatic drop in short-term loans by selling mortgages to CMHC. While it didn't use the Bank of Canada programs at all during much of 2009, it was by far the heaviest user of CMHC support.

FIGURE 10 Estimated TD Bank Total Support



Source Bloomberg, OSFI, TD Bank Financial Statements, Bank of Canada and author's calculations

FIGURE 11 Estimated TD Bank Relative Support



Source Bloomberg, TD Bank Financial Statements, Bank of Canada and author's calculations

Interestingly, while the other Canadian banks saw their support peak in the early months of 2009, support for TD Bank hit \$26 billion, its maximum value, in September 2009 — almost a year after the crisis first hit. The ability to sell its large reserves of securitized and retained mortgages may explain this late peak.

TD Bank had a second smaller peak in March 2010, a year-and-a-half after the crisis struck. As the other programs were winding down, TD Bank drew an additional \$2.4 billion in support from CMHC. In essence, TD Bank grabbed the last cash available before the emergency supports from all three government sources closed up shop.

While TD Bank received the most in support during the crisis, as the second largest bank in Canada it did not require the most relative support. Peak relative support for TD Bank was 69% of the value of all of its stock, similar to RBC.

Scotiabank

Scotiabank is the third largest bank in Canada. Over the support period from the fourth quarter 2008 to the second quarter of 2010 its corporate profits were \$5.9 billion.²⁷ It showed positive earnings in all seven of the quarters in which it was accessing government funds. Its CEO Richard Waugh was the 20th highest paid CEO in the country in 2008, taking in \$9.2 million that year, which includes the base salary, bonus payments, stock options, shares granted and pension contributions.²⁸ In 2009 he moved to the 19th highest paid CEO and received a slight raise, putting total compensation at \$9.9 million.²⁹

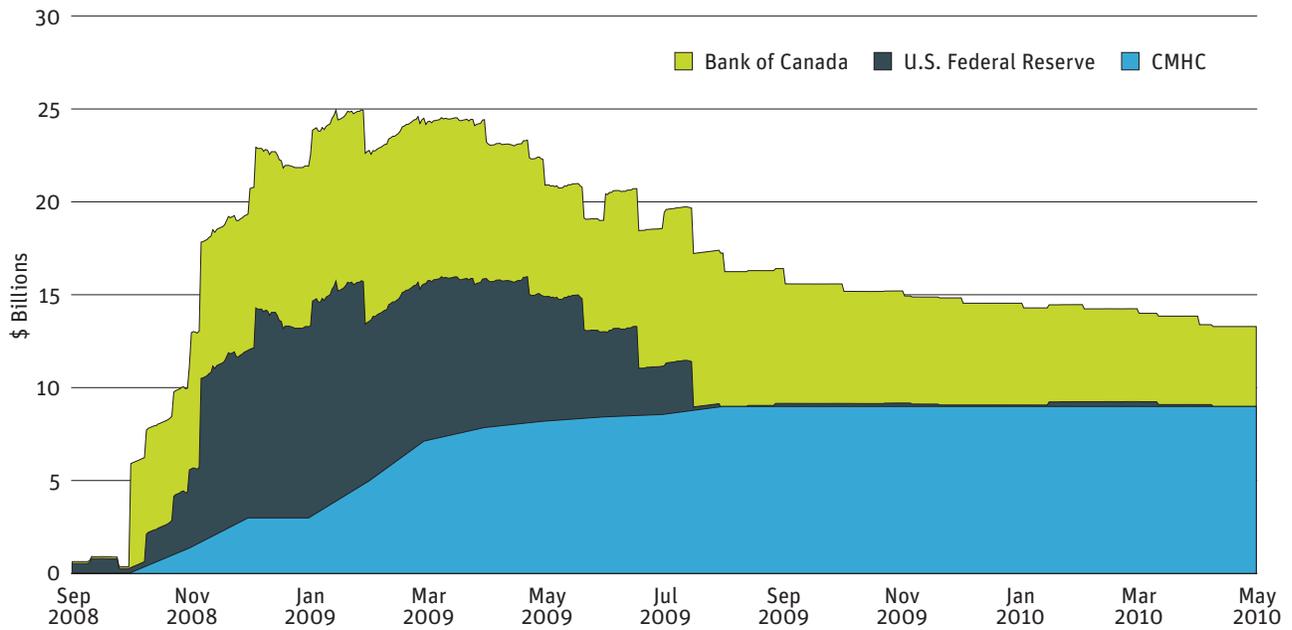
When the crisis hit, Scotiabank relied heavily on the loans provided by the Bank of Canada and the U.S. Federal Reserve. CMHC played a much smaller role in supporting Scotiabank compared to other Canadian banks.

Peak support for Scotiabank hit approximately \$25 billion in January 2009, the third highest among Canadian banks. Most of the support was heavily concentrated in the early months of the crisis.

Scotiabank also received the third largest relative support, totalling 100% of market cap in February 2009. In fairness, Scotiabank was only at 100% of market cap for one day after which its relative support receded somewhat. In the end, it spent 43 days taking support worth 80% or more of the value of the company.

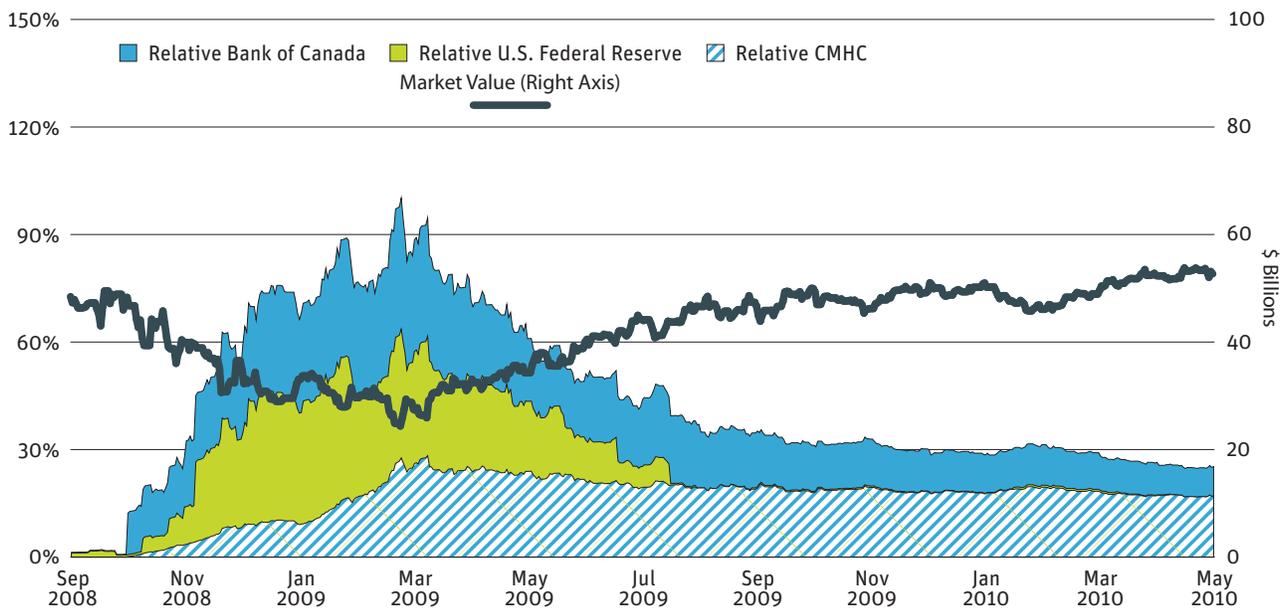
Scotiabank is one of three Canadian banks (along with Bank of Montreal and CIBC) to receive support totalled more than the value of the company,

FIGURE 12 Estimated Scotiabank Total Support



Source Bloomberg, OSFI, Scotiabank Financial Statements, Bank of Canada and author's calculations

FIGURE 13 Estimated Scotiabank Relative Support



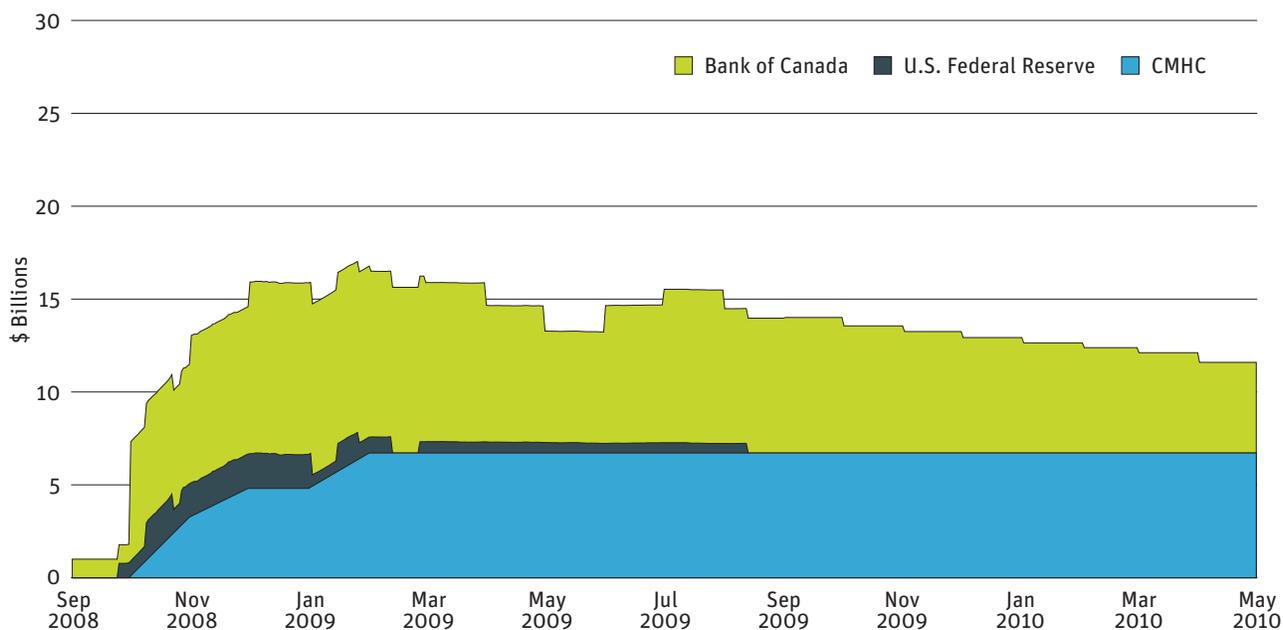
Source Bloomberg, OSFI, Scotiabank Financial Statements, Bank of Canada and author's calculations

as measured by market cap. To put it another way, it would have required less money in February 2009 to have bought every single share of Scotia-bank than to provide the emergency aid that the bank received. When put in this relative perspective, the magnitude of the cash injections into Canada's banks become crystal clear.

Bank of Montreal

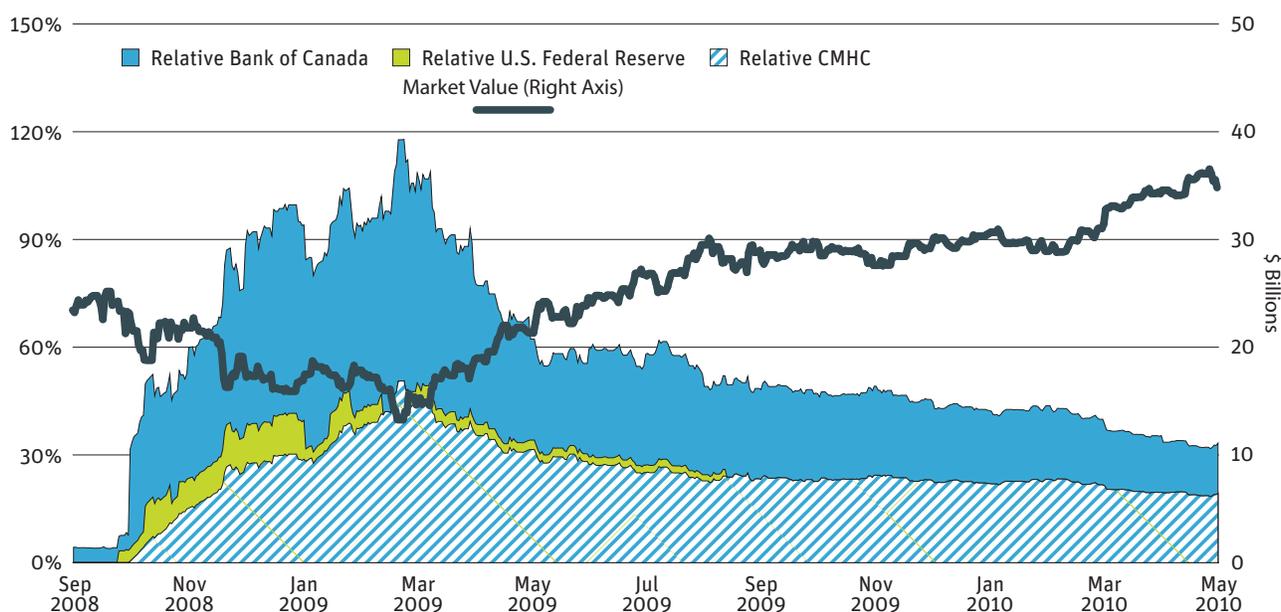
BMO is the fourth largest bank in Canada. Over the government support period from the fourth quarter of 2008 to the second quarter of 2010, its corporate profits were \$3.7 billion.³⁰ It showed positive earnings in all seven of the quarters in which it was accessing government funds. Its CEO, William Downe, was the 43rd highest paid CEO in the country in 2008, taking in \$6.4 million that year, which includes the base salary, bonus payments, stock options, shares granted and pension contributions.³¹ In 2009, he moved to the 33rd highest paid CEO, received a raise and putting total compensation at \$7.6 million.³²

FIGURE 14 Estimated Bank of Montreal Total Support



Source Bloomberg, OSFI, Bank of Montreal Financial Statements, Bank of Canada and author's calculations

FIGURE 15 Estimated Bank of Montreal Relative Support



Source Bloomberg, OSFI, Bank of Montreal Financial Statements, Bank of Canada and author's calculations

BMO drew the second least amount of support of all the Canadian banks. Once the crisis hit in earnest, BMO drew relatively little from the U.S. Federal Reserve programs. It drew dramatically more from the Bank of Canada programs. CMHC support to BMO ramped up quickly in late-2008 but by January 2009 no further cash injections were taken from the CMHC program.

Peak support for BMO of \$17 billion is lower than the other Canadian banks.

Given BMO's smaller size, its relative support is second highest, at 118% of market cap. The high level of relative support continued for an extended period, with the bank spending 128 days above the 80% support level. In fact, for almost a month BMO was completely underwater: for 27 days it was at or above the 100% ratio of support to market capitalization.

Canadian Imperial Bank of Commerce

CIBC is the fifth largest bank in Canada. Over the government support period from the fourth quarter of 2008 to the second quarter of 2010, its corporate profits were \$2.9 billion.³³ It showed positive earnings in six of the seven quarters in which it was accessing government funds. Its CEO, Gerry

McCaughey, was the 45th highest paid CEO in the country in 2008, taking in \$6.3 million that year, which includes the base salary, bonus payments, stock options, shares granted and pension contributions.³⁴ In 2009 he moved to the 40th highest paid CEO and received a raise, putting total compensation at \$6.7 million.³⁵

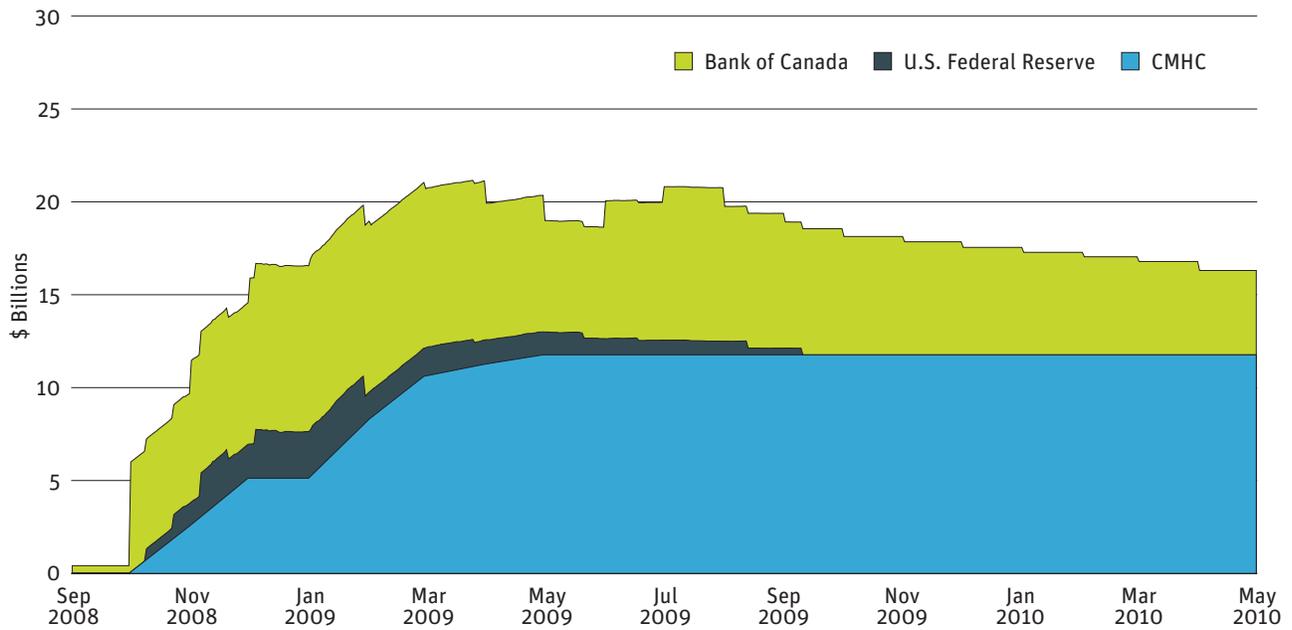
When the financial crisis hit, CIBC drew sparingly upon U.S. Fed bailout programs. Instead, it turned to CMHC's mortgage purchase program and Bank of Canada programs.

CIBC received peak support of \$21 billion in March 2009. In fact, Bank of Canada support to CIBC remained at a high level for an extended period of time. As much of its support came from the mortgage purchase program at CMHC, overall CIBC maintained a fairly steady level of support valued at approximately \$20 billion well through 2009.

It is in terms of relative support that the CIBC situation becomes extraordinary. Although it is the smallest of Canada's Big 5 banks, it drew support that rivalled RBC's, Canada's largest bank. Due to this relatively higher level of support, CIBC peaked at a shocking 148% of its market capitalization in March 2009. Total support for CIBC was worth almost one and a half times the value of all the company's shares in March 2009. In fact, almost every day from mid-January 2009 and the end of April, CIBC was completely "underwater," receiving support worth more than the value of the company. In total, the company spent 255 days with a support ratio of 80% or higher and 95 days with a support ratio of 100% or higher.

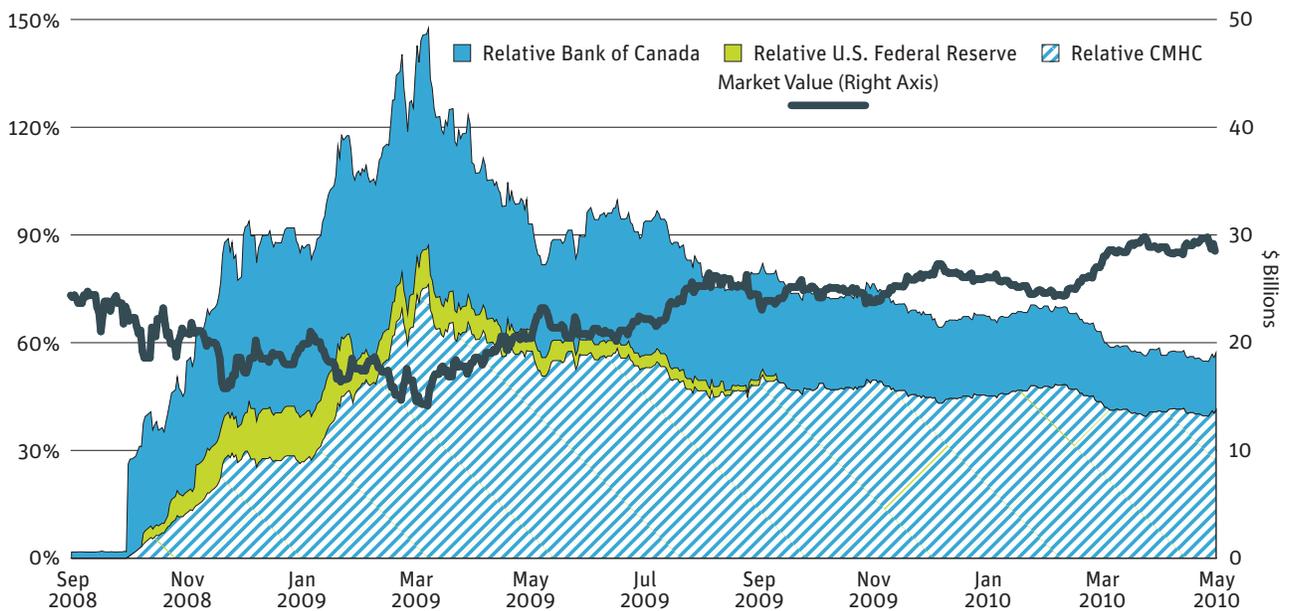
Of all the Canadian banks, CIBC illustrated the incredible lengths that the Canadian and American governments went to in order to ensure that Canada's banks could survive the financial crisis. Although it's much smaller than other Canadian banks, CIBC was allowed to borrow far more than its actual value for an extended period. Such large relative support also illustrates the tremendous take-up of massive cash infusions and loans to Canada's banking system during this period.

FIGURE 16 Estimated CIBC Total Support



Source Bloomberg, OSFI, CIBC Financial Statements, Bank of Canada and author's calculations

FIGURE 17 Estimated CIBC Relative Support



Source Bloomberg, CIBC Financial Statements, Bank of Canada and author's calculations

Conclusion

“Canadian fixed income markets, the Repo markets, the core funding markets seized up during the crisis, and that’s not acceptable. It’s not an acceptable state of business.”

—**Mark Carney, Bank of Canada governor**³⁶

THE OVERALL PICTURE painted by this examination of Canadian banks’ use of government support programs during and after the global financial crisis of 2008–10 stands in stark contrast to both government and bank claims that Canada’s banks were somehow immune from the need for such extraordinary measures. It also raises more questions than answers, due to government secrecy.

As this examination makes clear, some Canadian banks drew much more government aid than others during the financial crisis. It’s important for Canadians to know why some banks were more vulnerable than others. By keeping the details of this support secret, it is much harder for Canadians to evaluate what happened, why it happened and what can be done to prevent the need for such massive support in the future. It also casts a shadow upon the official line that Canada’s banking system is among the most robust in the world.

Unfortunately, the veil of secrecy is also obscuring an obvious reality: Canada’s big banks are too big to fail. The Government of Canada, the Bank of Canada and the big banks themselves understand that Canada’s banks will be bailed out irrespective of the cost. The CEO of TD Bank Edmund Clark concluded as much at the height of the financial crisis, noting to investors:

FIGURE 18 Summary of Estimated Canadian Bank Support

Bank	Peak Support Date	Peak Support Value (\$Bil)	Peak Support to Market Cap (Date of Peak)
CIBC	March 09	\$21	148% (March 2009)
BMO	January 09	\$17	118% (Feb 2009)
Scotia	January 09	\$25	100% (Feb 2009)
TD	September 09	\$26	69% (Feb 2009)
RBC	March 09	\$25	63% (Feb 2009)

Source Bloomberg, Bank Financial Statements, Bank of Canada and author's calculations

“Maybe not explicitly, but what are the chances that TD Bank is not going to be bailed out if it did something stupid?”³⁷

What’s clear from this examination of the government support programs is that the Bank of Canada and CMHC need to make public the details of their support to the country’s banks. A concerted effort should be made to understand why some banks required so much more support than others. The circumstances that allowed some Canadian banks to be less reliant upon government support should be replicated throughout Canada’s financial sector using strong government regulation.

A healthy financial system cannot be based on massive government support for which the details remain secret. It is only through an honest and transparent examination of what occurred and how it can be avoided in the future that a stronger financial system can be built, which is in everyone’s best interest.

Appendix 1: Methodology

U.S. Federal Reserve Programs

In contrast to the other two programs, the amounts taken out by Canadian banks in short-term loans from the U.S. Federal Reserve have been published in full by Bloomberg.³⁸ The values from the U.S. Federal Reserve programs come directly from this source and are converted to Canadian dollars at the end of day exchange rate as provided by the Bank of Canada.

The U.S. Federal Reserve provided repurchase agreements or “repos” which are similar to short-term collateralized loans. As with other collateralized loans, the banks put up assets, usually long-term assets like long-term government bonds or mortgage-backed securities that are difficult to sell quickly in large numbers. In return the U.S. Federal Reserve provided a loan against those assets in cash. The terms for repos are short, and can be as little as overnight or as long as a year. At the end of the term, the bank “repurchases” its long-term asset from the U.S. Fed for the original cash value plus an additional amount of interest.

The U.S. Federal Reserve provided repos to American banks but Canadian and many other international banks also had access to these supports. The big five Canadian banks accessed three of the various programs available: the Term Auction Facility (TAF), the Commercial Paper Funding

Facility (CPFF) and the Discount Window (DW).³⁹ National Bank did not access any of these programs.

The TAF was the most heavily used by Canadian banks. The CPFF facility was used by the Bank of Montreal, the Bank of Nova Scotia and the Royal Bank of Canada. This facility allowed these three banks to receive repos against a specifically for a type of short-term corporate bonds. Finally the Bank of Montreal, the Bank of Nova Scotia and the Toronto-Dominion Bank made sparing use of the U.S. Federal Reserve Discount Window.

CMHC's Insured Mortgage Purchase Program (IMPP)

The second support for Canadian banks was from CMHC through the Insured Mortgage Purchase Program (IMPP). The structure of this program was different from the U.S. Federal Reserve and Bank of Canada programs in that loans were not being offered. Instead, CMHC was buying mortgages from the banks in the form of mortgage-backed securities.

A mortgage-backed security is created when an entity, like CMHC, bundles a set of mortgages together and sells them to an investor. When the various mortgage holders pay their mortgage payments, those payments go to the investor and not to whichever bank originated the mortgage in the first place. The reason for creating mortgage-backed securities from the bank's perspective is to free up capital at the bank so that it can be deployed for other purposes.

CMHC's Canada Mortgage Bonds (mortgage-backed securities) are fully insured by the federal government so even if mortgage payers fail to pay, the federal government will step in and maintain payments to the investor. Banks can go through a securitization process and sell their mortgages to investors, but they can also retain them on their own books all packaged and ready to sell at a future date.

In the case of the CMHC IMPP program, Canadian banks bought their own mortgage-backed securities and retained them. Once CMHC announced it was going to buy massive amounts of mortgages, the banks then sold their mortgage-backed securities to CMHC.

In that sense, the banks weren't required to repay the government for this cash infusion. Instead, the government would be paid back when the mortgages matured and Canadians needed to refinance their mortgages. CMHC estimates that most of the money injected in 2008–09 will be repaid between 2012 and 2014.⁴⁰

The stated reason for high levels of secrecy surrounding bank support in Canada and internationally was that if support levels were known, additional pressure would be put on weak banks (due to the reluctance by depositors and counter-parties to continue to do business with these banks). In Canada some aggregate information about the support programs is available. However, the most important details about which banks received how much money and when, have remained secret. The Bank of Canada and CMHC have received access to information requests in 2009 but have refused to divulge the details of their secret bank loans.⁴¹

CMHC has released the aggregate details of its mortgage purchase program.⁴² However, the details of which banks received how much support and when has remained secret, although CMHC is considering releasing this information at some point in the future.⁴³

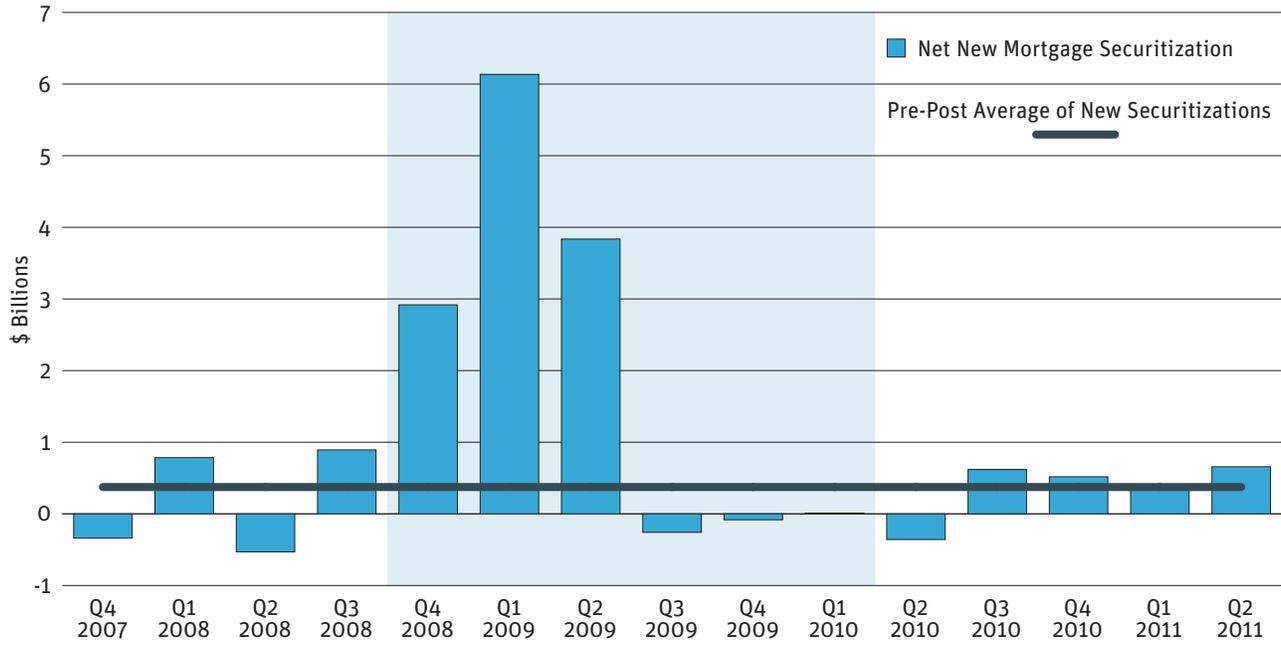
Despite these drawbacks, there is substantial information available from the banks themselves in their quarterly financial reports. Each quarter, the banks detail the value of securitized mortgages and whether they were retained or sold. The amount of mortgages securitized and sold to investors on a quarterly basis is fairly constant. As such, any large increase in the amount of securitized and sold mortgages above the baseline is likely the result of CMHC purchases of those mortgages.

CIBC's experience is used as an example in *Figure 19*. If we take the average of the 4 quarters before and 4 quarters after the CMHC IMPP program, CIBC was securitizing and selling on average \$375 million worth of new mortgages per quarter. However, once the IMPP program started in the fourth quarter of 2008, the amount of new mortgages securitized and sold skyrocketed up to almost \$3 billion and then to over \$6 billion in the first quarter of 2009. After those first three quarters of frenetic selling, net new securitizations fell below the pre-post average and so it is assumed that CIBC was not selling any of its mortgages to the IMPP program.

While it is possible that other investors were buying up massive amounts of mortgages from CIBC at the height of a financial crisis caused by American securitized mortgages, it is almost certain that this is the effect of the CMHC program being observed in CIBC's financial report.

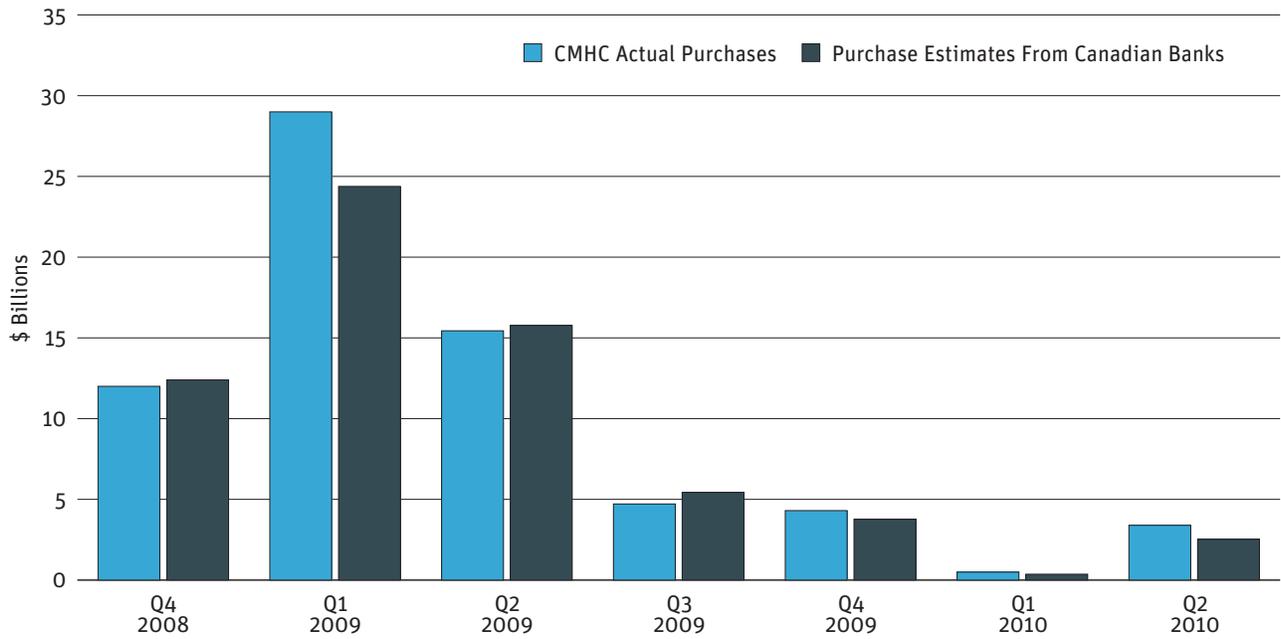
To verify how accurate the approach is, we can check the aggregated estimates for each bank against the amount that CMHC actually lent under the IMPP program. CMHC provides the aggregate value of mortgages purchased and the day they occurred. The banks report their securitizations quarterly. As such, *Figure 20* compares the figures on a quarterly basis.

FIGURE 19 CIBC's Securitization History



Source CIBC Quarterly Supplementary Financial Information and author's calculations

FIGURE 20 Comparison of CMHC and Bank Securitizations



Source CMHC, Quarterly Supplementary Financial Information and author's calculations

There is a striking correlation between the simple estimating approach in *Figure 19* and what CMHC says it actually purchased in mortgage-backed securities. There are some discrepancies, as one would expect, particularly in the first quarter of 2009 where the methodology underestimates the number of mortgages actually purchased by \$5 billion. However, on the whole the methodology as outlined in *Figure 19* across all six banks appears to be almost completely capturing the CMHC purchases.

In total CMHC reports that it purchased \$69 billion in mortgages and the methodology above summed across Canadian banks adds up to \$64 billion.

Bank of Canada Programs

The Bank of Canada programs were essentially identical in design to the U.S. Federal Reserve programs. The Bank of Canada created two programs for the big banks. The most heavily used was the Term Purchase and Resale Agreements program (Term PRA), which loaned cash to the big banks for periods ranging up to one year.⁴⁴ The other program allowed the big banks to receive loans using non-mortgage loans such as car loans as collateral although only after a 40% haircut (Term Loan Facility).⁴⁵

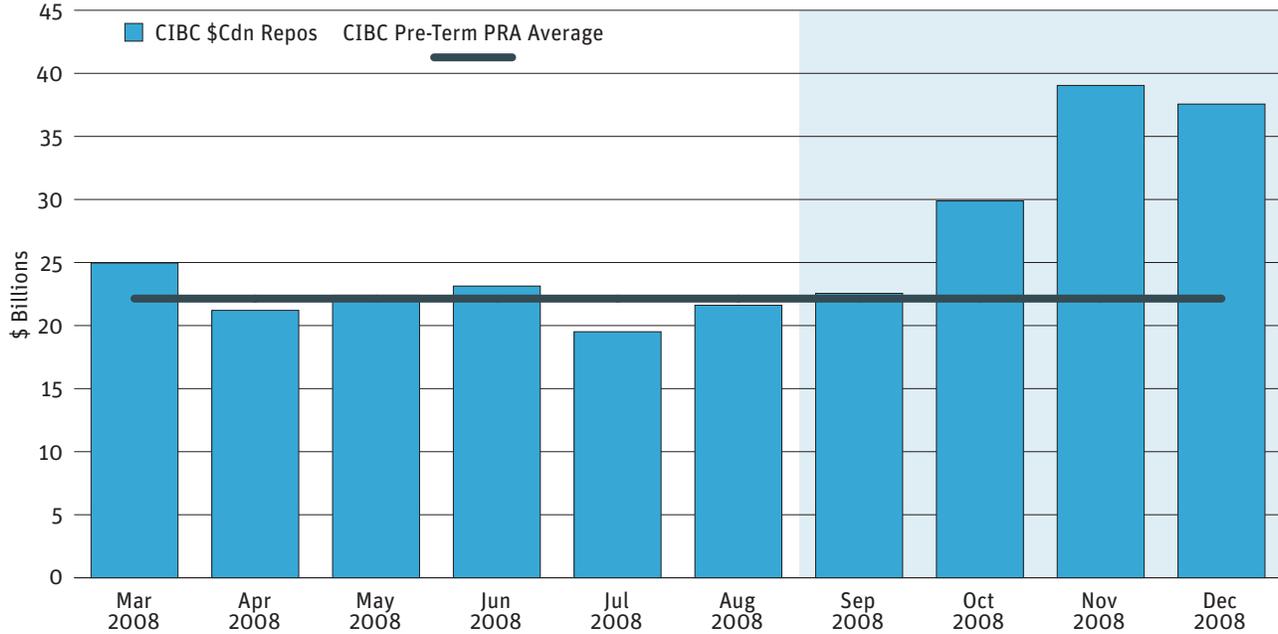
The details of the Bank of Canada programs are also secret. As with the CMHC program, the Bank of Canada has published the aggregate value of support via monthly Supplementary Information for Balance Sheet Loans and Receivables.⁴⁶ Within those reports, the aggregate level of collateral for the repos is also published. The Bank of Canada has separately provided weekly totals of total support.⁴⁷

However, a breakdown of which banks received how much and when, in addition to what each bank used as collateral, remains secret. This secrecy endures despite Access to Information Requests specifically asking for this data. It is similar requests in the United States that led to the release of the U.S. Federal Reserve data.

The Office of the Superintendent of Financial Institutions (OSFI) was particularly helpful in unravelling where the Bank of Canada support went.⁴⁸ The OSFI reports monthly totals of both foreign currency and Canadian dollar values of “Obligations related to assets sold under repurchase agreements.”

When a bank enters into a repurchase agreement or “repo” the balance sheet retains the pledged asset of, for example, a mortgage-backed security. The balance sheet gains in a new cash asset for the value of the repo and a new liability under the “Obligations related to assets sold under re-

FIGURE 21 CIBC \$Cdn Repos



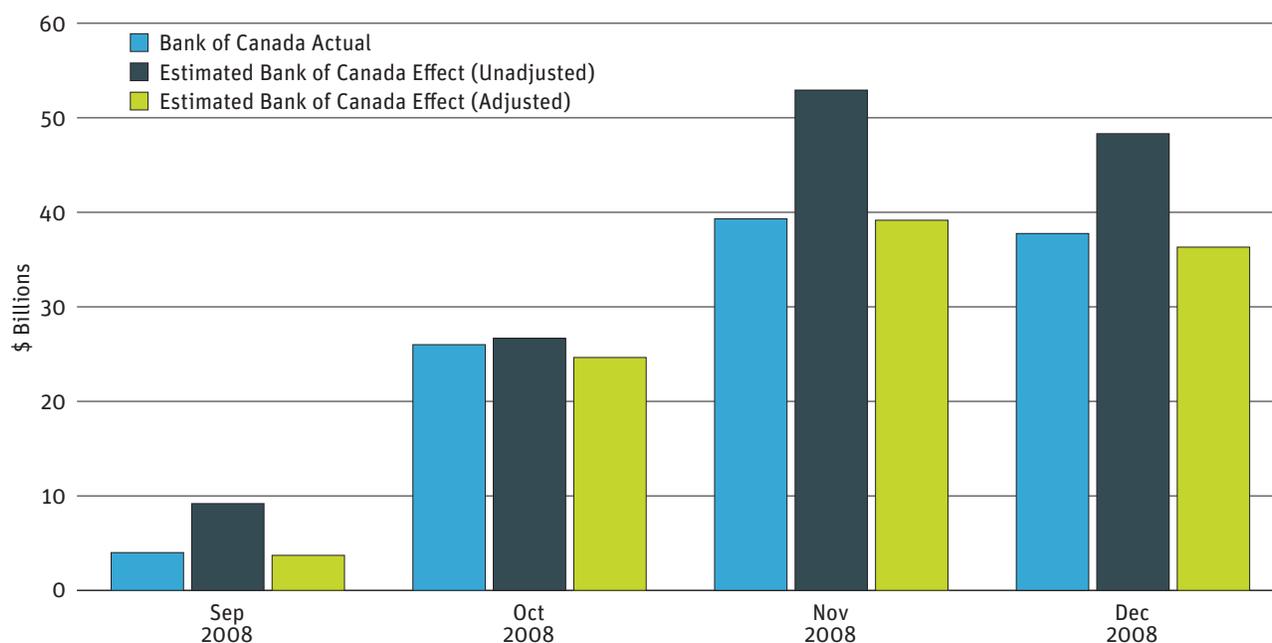
Source OSFI and author's calculations

purchase agreements” line. The asset side is difficult to track as the initial cash almost always immediately buys one or several other assets. However, the “Obligations related to assets sold under repurchase agreements” line does not suffer the same fate. It is here that the impact of the Bank of Canada loans can be tracked.

For all of 2008, OSFI breaks out the foreign currency repos, making it even easier to pinpoint the Bank of Canada impact as its transactions are in Canadian dollars. Unfortunately, in 2009 OSFI changed its reporting requirements and foreign currency repos were no longer broken out.

The basic methodology for the Bank of Canada repos is similar to that of the CMHC purchase methodology, at least for 2008 when foreign currency repo data is available. A six-month average of the Canadian dollar repos is taken for each of the banks. *Figure 21* details CIBC again as an example. In the six months leading up the start of the Bank of Canada repos in September 2008, CIBC had on average \$22 billion worth of Canadian dollar repo contracts. However, once the Bank of Canada program started in 2008, the amount of Canadian dollar repos spiked to almost \$40 billion in November 2008. The difference between the \$22 billion baseline and the new highs is assumed to be the impact from the Bank of Canada programs.

FIGURE 22 Comparison of Bank of Canada Estimates Vs Actuals



Source OSFI, Bank of Canada and author's calculations

Like the CMHC methodology, it is possible to verify how close our methodology is by aggregating its estimates across all banks and comparing it to what the Bank of Canada said it lent.

Figure 22 shows the sum of our methodology compared to the actual dollars dispensed by CMHC. It is important to note that the Term Loan Facility (the smaller of the two Bank of Canada facilities) has a collateral value of only 60% meaning banks take a 40% haircut to access these funds. The “Bank of Canada Actual” bars in Figure 22 adjust the Term Loan Facility portion up 40% so that it is directly comparable to the banks’ balance sheets.

On the first go around of the unadjusted estimated Bank of Canada effect, in every month an over-estimation occurs. That is to say that the methodology aggregated across all banks estimates that more money was lent compared to what the Bank of Canada itself says it lent.

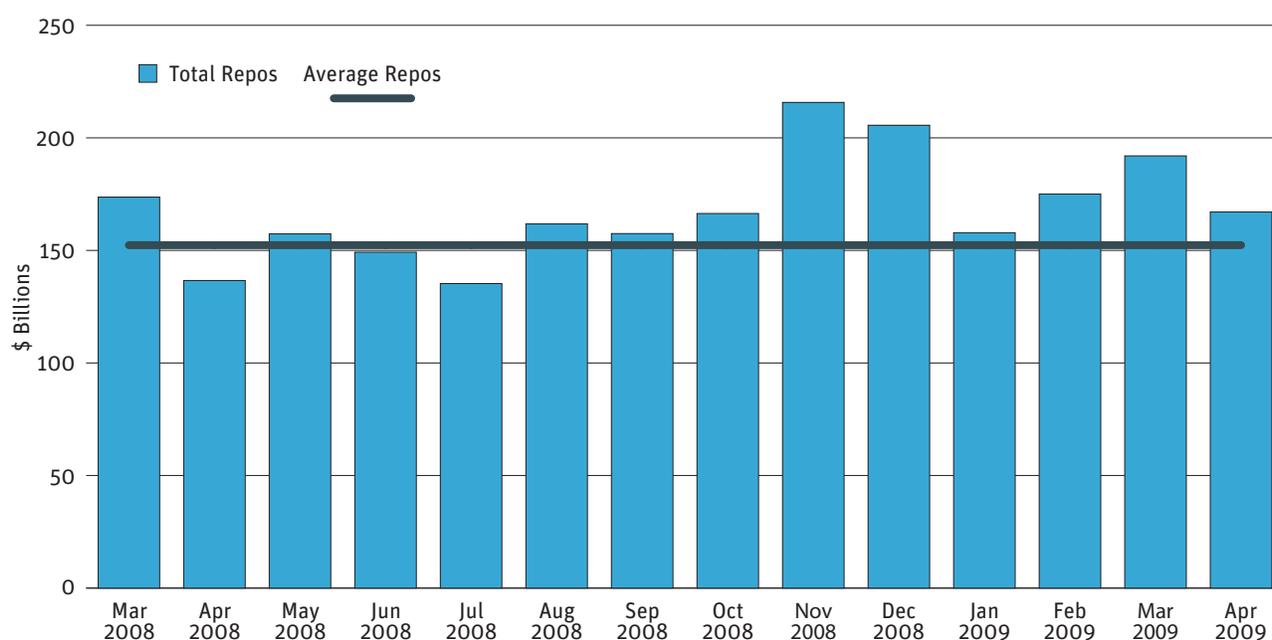
However, several conditions were placed on the Bank of Canada supports, first that no single bank could obtain more than 25% of the total support and second that in any given auction, no single bank could obtain more than 25% of the auction value.⁴⁹ Individual auction details have been kept

FIGURE 23 Estimated Bank of Canada Effect (\$ Billions)

	Sept 2008	Oct 2008	Nov 2008	Dec 2008
CIBC	\$0.4	\$5.9	\$7.6	\$8.9
BMO	\$1.0	\$6.4	\$7.9	\$9.2
RBC	\$1.0	\$2.8	\$4.8	\$1.8
Scotia	\$0.1	\$5.6	\$7.3	\$8.6
TD	\$-	\$3.6	\$5.5	\$4.1
National Bank, HSBC, ING	\$1.2	\$0.3	\$2.6	\$3.7

Source OSFI and author's calculations

FIGURE 24 Total Repos for Canadian Banks



Source OSFI and author's calculations

secret by the Bank of Canada so a proxy for the second rule is adopted: that no single bank can gain more than 25% of the increase from month to month.

When both of the 25% rules are applied, we get the “Estimated Bank of Canada effect (Adjusted)” bars in *Figure 22*. In all four months the “Estimated Bank of Canada effect (Adjusted)” has an uncanny match up to the actual value lent by the Bank of Canada.

FIGURE 25 Utilization Assumed for Bank of Canada Supports for 2009–10

	Utilization by Bank (Including TD)	Utilization by Bank (Excluding TD)
CIBC	23%	25%
BMO	24%	25%
RBC	10%	14%
Scotia	22%	25%
TD	13%	0%

Source Author's calculations

Figure 23 breaks apart the “Estimated Bank of Canada effect (Adjusted)” by individual bank. It should be noted that two international banks, HSBC and ING, and National Bank (Canada’s sixth largest bank) likely drew from the Bank of Canada windows although in amounts too small to state definitively.

Using the banks’ balance sheets to estimate how much cash they received from the Bank of Canada could result in an over-estimate due to the 60% collateralization of the Term Loan Facility. The only month where this may be the case is November 2008. As such, *Figure 23* adjusts the November 2008 amounts down proportionally to match the Bank of Canada cash paid instead of the value of over-collateralized assets offered.

The December 2008 Bank of Canada peak of \$41 billion occurred mid-month and even with over-collateralization, the banks end of month total is \$36 billion below the mid-month peak. While this approach assumes that overcollateralization is evenly distributed, which it may not be, insufficient detail exists to distinguish between the Term Loan facility and the Term PRA facility.

Unfortunately, this approximation technique despite its verisimilitude is unavailable beyond 2008. First of all, OSFI, in 2009, ceased to publish foreign currency repos making it impossible to disaggregate Canadian dollar repos where the Bank of Canada programs have their effect. Second, and more importantly, aggregate repos of all currencies drop dramatically in January 2009 despite the fact that aggregate Bank of Canada support continues at almost \$37 billion as shown in *Figure 24*. For the final four months of 2008, the banks were increasing their aggregate repo value by putting Bank of Canada repos on top of their pre-existing private ones. However, with the sudden drop in January 2009, the Canadian banks were replacing their private sector repos with ones from the Bank of Canada and the U.S. Fed. In fact by the end of January 2009, the U.S. Federal Reserve and the

Bank of Canada had effectively become 54% of the Canadian banks' repo market (38% Bank of Canada, 16% U.S. Fed). As such, the baseline average decreased in an unpredictable way.

As such from January 2009 and onwards, the average utilization of each bank is merely the average utilization for the four months of 2008 carried forward. However, if the U.S. Federal Reserve utilization was at or near the total repos for a given bank, as was only the case with TD Bank for most of 2009, it is assumed that that bank was not drawing from the Bank of Canada program as it couldn't and still have the repo figures be correct. In that case, the other averages increase proportionally to allocate what TD's utilization would have been. Both sets of averages are outlined in *Figure 25*.

The methodology to estimate the Bank of Canada supports by bank for 2009–10 is inferior to that used in 2008 and will almost certainly deviate, potentially significantly, from the actual values. In addition, there is no way to verify that it is operating correctly in contrast to both the CMHC approach and the Bank of Canada approach in 2008 which can be compared to actuals. As such, it should be considered a very approximate value until such time as the actual values are released from the Bank of Canada.

Notes

1 <http://www.theglobeandmail.com/news/video/video-canada-has-most-sound-banking-system-in-the-world-flaherty-says/article2250694/>.

2 CIBC in this paper is meant to refer to the Canadian Imperial Bank of Commerce and its subsidiaries including: Canadian Imperial Bank of Commerce/New York NY.

3 BMO in this paper is meant to refer to the Bank of Montreal and its subsidiaries: Bank of Montreal/Chicago IL.

4 Scotiabank in this paper is meant to refer to the Bank of Nova Scotia and its subsidiaries: Bank of Nova Scotia/Houston, Bank of Nova Scotia/New York and Scotiabank de Puerto Rico.

5 TD Bank or TD is meant to refer to the Toronto-Dominion Bank and its subsidiaries: Toronto-Dominion Bank/NY and Carolina First Bank.

6 Royal Bank and RBC in this paper are meant to refer to the Royal Bank of Canada and its subsidiaries: Royal Bank of Canada/New York NY and RBC Bank USA.

7 All figures in this report are reported in Canadian dollars. American dollar figures are converted to Canadian dollar figures using end of day rates available at <http://www.bankofcanada.ca/rates/exchange/10-year-lookup/>

8 Finance Minister Jim Flaherty's Speech At Canada-U.K. Chamber Of Commerce.

9 <http://www.ft.com/intl/cms/s/0/78f66854-bf08-11dd-ae63-0000779fd18c.html#axzz1pflgxhtX>.

10 CNBC, Interview on the Kudlow Report, February 23rd, 2009. <http://video.cnbc.com/gallery/?video=1043703424>.

11 <http://www.therecord.com/news/business/article/699593--mark-carney-fires-back-at-bankers>.

12 All dollar values in this report are in Canadian dollars. American dollar values are converted to Canadian dollars using end of day values available from the Bank of Canada at <http://www.bankofcanada.ca/rates/exchange/10-year-lookup/>

13 All lending, including to Canadian banks is available at <http://bit.ly/Bloomberg-Fed-Data>.

- 14** For the Primary Dealers list see <http://www.bankofcanada.ca/primary-dealers/>. For the list of LVTS participants see <http://www.bankofcanada.ca/financial-system/payments/canadas-major-payments-systems/>.
- 15** For more information on the various US Fed programs see Federal Reserve Bank of New York, “Forms of Federal Reserve Lending”, July 2009 (http://www.newyorkfed.org/markets/Forms_of_Fed_Lending.pdf).
- 16** See the State Street Corp. description from Bloomberg found at http://www.bloomberg.com/data-visualization/federal-reserve-emergency-lending/#/State_Street_Corp/?total=true&mcp=true&mc=true&taf=false&cpff=false&pdcf=false&tslf=false&stomo=false&amlf=false&dw=false/.
- 17** Zorn & Wilkins, “Bank of Canada Liquidity Actions in Response to the Financial Market Turmoil”, Bank of Canada, Autumn 2009, pg 8 and Eneajor, Sebastian & Witmer, “An Assessment of the Bank of Canada’s Term PRA Facility”, Bank of Canada, Working Paper 2010–20, pg 9.
- 18** See Appendix 1 for calculation details.
- 19** Bank of Canada, “Terms and Conditions of the Term Purchase and Resale Agreement (PRA) Facility,” January 2010, <http://www.bankofcanada.ca/wp-content/uploads/2010/03/terms190110.pdf>.
- 20** <http://www.cmhc-schl.gc.ca/en/hoficlincl/mobase/auop/>.
- 21** www.globeinvestor.com.
- 22** Hugh Mackenzie, “A SOFT LANDING: Recession and Canada’s 100 Highest Paid CEOs”, Canadian Centre for Policy Alternatives, January 2010.
- 23** Hugh Mackenzie, “RECESSION-PROOF: Canada’s 100 best paid CEOs”, Canadian Centre for Policy Alternatives, January 2011.
- 24** www.globeinvestor.com.
- 25** Hugh Mackenzie, “A SOFT LANDING: Recession and Canada’s 100 Highest Paid CEOs”, Canadian Centre for Policy Alternatives, January 2010.
- 26** Hugh Mackenzie, “RECESSION-PROOF: Canada’s 100 best paid CEOs”, Canadian Centre for Policy Alternatives, January 2011.
- 27** www.globeinvestor.com.
- 28** Hugh Mackenzie, “A SOFT LANDING: Recession and Canada’s 100 Highest Paid CEOs”, Canadian Centre for Policy Alternatives, January 2010.
- 29** Hugh Mackenzie, “RECESSION-PROOF: Canada’s 100 best paid CEOs”, Canadian Centre for Policy Alternatives, January 2011.
- 30** www.globeinvestor.com.
- 31** Hugh Mackenzie, “A SOFT LANDING: Recession and Canada’s 100 Highest Paid CEOs”, Canadian Centre for Policy Alternatives, January 2010.
- 32** Hugh Mackenzie, “RECESSION-PROOF: Canada’s 100 best paid CEOs”, Canadian Centre for Policy Alternatives, January 2011.
- 33** www.globeinvestor.com.
- 34** Hugh Mackenzie, “A SOFT LANDING: Recession and Canada’s 100 Highest Paid CEOs”, Canadian Centre for Policy Alternatives, January 2010.
- 35** Hugh Mackenzie, “RECESSION-PROOF: Canada’s 100 best paid CEOs”, Canadian Centre for Policy Alternatives, January 2011.

36 <http://www.winnipegfreepress.com/business/carney-fires-back-at-bankers-says-ottawa-didnt-pause-when-they-needed-rescue-146165375.html>.

37 Toronto-Dominion Chief ‘Wrong’ on Aid, Official Says (Update1) By *Theophilos Argitis and Sean Pasternak* - January 22, 2009 <http://www.bloomberg.com/apps/news?pid=conewsstory&refer=conews&tkr=BNS:US&sid=acNbWVxi5rmk>.

38 <http://bit.ly/Bloomberg-Fed-Data>.

39 For further information on how Canadian banks used these facilities see <http://www.bloomberg.com/data-visualization/federal-reserve-emergency-lending/>.

40 That is to say that over 90% of IMPP NHA MBS will mature in 1 to 3 years from 2011: CMHC, “Quarterly Financial Report,” June 30, 2011, pg 70.

41 Private communication with the author.

42 <http://www.cmhc-schl.gc.ca/en/hoficlincl/mobase/auop/>.

43 Private communication with the author.

44 Zorn & Wilkins, “Bank of Canada Liquidity Actions in Response to the Financial Market Turmoil”, Bank of Canada, Autumn 2009, pg 6.

45 Technically, the Term Loan facility temporarily allowed Large Value Transfer System (LVTS) participants to use non-mortgage loans as LVTS collateral. While these are loans and not repurchase agreements, they are essentially identical in terms of their balance sheet treatment. See www.bankofcanada.ca/publications-research/market-notice/bank-canada-initiative-allow-substitution-canadian-dollar/.

46 Available at <http://www.bankofcanada.ca/about/corporate-governance/bank-of-canada-statement-financial-position/>.

47 This was provided personally to the author but is derived from Zorn & Wilkins, “Bank of Canada Liquidity Actions in Response to the Financial Market Turmoil”, Bank of Canada, Autumn 2009, pg 8.

48 See http://www.osfi-bsif.gc.ca/osfi/index_e.aspx?ArticleID=554.

49 Bank of Canada, Terms and Conditions of the Term Purchase and Resale Agreement (PRA) Facility, January 2010, <http://www.bankofcanada.ca/wp-content/uploads/2010/03/terms190110.pdf>.



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