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An Evaluation of the Canadian Shadow Banking System

Submitted by:

Zechen Wang

Approved by Supervisor:

Jean-Sébastien Rioux, Ph.D.

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Executive Summary

A particular focus on the “shadow banking” system has emerged since the 2008 global financial crisis as some scholars believed that the vulnerability of the system had largely worsened the crisis. As a new financial term, “shadow banking” can simply be understood as non-bank financial intermediaries that perform traditional banking functions. Nevertheless, the shadow banking system has not yet gained a globally recognized definition. The differences between the various definitions are mainly concerned with which components should be included in the system. For example, some believe that the shadow banking system should not include traditional banking entities which taking public deposits, while some believe it should. Exploring the definitions of the shadow banking system among existing scholars is the first step for understanding what the system really is.

Despite the Canadian financial system’s sound regulatory framework, the systemic risks exposed by the shadow banking system still need to be explored. There is currently a deficiency of studies in this particular field. For a detailed and continuous evaluation, it is necessary to know if there are any risks in the system so more effective regulating policies can be provided.

With that background, this Capstone project has three objectives: (1) to explore the definitions among existing studies, compare and contrast them, and summarize an appropriate definition for the Canadian context; (2) to measure the size of the Canadian shadow banking

system by using the most appropriate methodology; and (3) to identify the most significant risks that might warrant further policy development or regulations.

I developed the analysis utilized in this Capstone based on the Financial Stability Board's (FSB) definition and evaluating framework. The FSB is an international body that monitors and makes recommendations about the global financial system. The appropriateness of using the FSB's framework is mainly because of its accessibility, which means we are able to bridge the definition with current available data. There are many other definitions, which are also justifiable, but there are no direct existing data available while measuring the size of the system. The FSB's approach has been evaluated through two aspects: the broader side strictly follows the definition and measures the whole system, and the narrower measure targets financial entities that expose risks to the financial system.

As a result, this Capstone project defines the shadow banking system as "credit intermediation involving entities and activities outside the regular banking system."¹ Based on this definition, there are five major sub-sectors in the Canadian shadow banking system: Money Market Funds, Finance Companies, Structured Finance Vehicles, Securitization, and Trust and Mortgage Loan Companies. This Capstone measures the size of the system for the 10 year period from 2005 to 2014. In 2014, the size of the Canadian shadow banking system is estimated to be approximately \$1.11 trillion using a broad measurement, and was about \$669 million by using a

¹ Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: An Overview of Policy Recommendations," *Financial Stability Board Publication*, August 2013, accessed June 25, 2015, http://www.financialstabilityboard.org/2012/11/r_121118/.

narrow measurement. The system's scale (in narrow term) is about 29% of the chartered banks' assets at that year. In addition, the findings show that the risky part of the shadow banking system in Canada is in a decreasing trend. Additional monitoring from regulators is necessary in only two sub-sectors of the system: financial companies that provide non-depository credit intermediate functions, and the repo market.

1. Introduction

In its 2015-2016 *Report on Plans and Priorities*, the Office of the Superintendent of Financial Institutions (OSFI) positions “deepening OSFI’s understanding of risk factors arising from, and the oversight of, the parts of the financial system that are outside of OSFI’s direct responsibilities including shadow banking and securities financing”² as one of its organizational priorities. The OSFI is the regulating body for all Canadian banks and federally incorporated financial institutions. The OSFI proposes the need for regulating shadow banks and securities financial institutions (which are also being recognized as a part of the shadow banking system by many scholars) because of the potential risks to the financial and economic systems. The OSFI believes that shadow banks bring negative influences to the financial system and thus needs stricter supervision. So, what is “shadow banking” and what risks does it expose?

Economist Paul McCulley coined “shadow banking” as a new financial term in 2007. In general, shadow banking is defined as non-bank financial intermediaries that provide similar credit intermediate functions as traditional banks, but are regulated more loosely. Non-bank financial intermediaries usually do not meet the criteria for a licensed bank; therefore, they are not regulated as banks. They may provide borrowing and lending services similar to banks, but are restricted from taking general public deposits. Consequently, they seek substitute financing approaches such as issuing debt, providing credit or investment services. Examples of non-bank

² Office of the Superintendent of Financial Institutions, “2015-2016 Report on plans and Priorities,” accessed June 30, 2015, <http://www.osfi-bsif.gc.ca/>

financial intermediaries (shadow banks) are: money market mutual funds (investment services), structured finance vehicles (credit services, selling short-term bonds to purchase long-term bonds), securitization vehicles (credit services, the process of selling securities), and mortgage companies (loan services). More information about these financial entities will be provided in the Methodologies section of this Capstone. Within the definition of shadow banking, a wealth management product could be a part of shadow banking, and a hedge fund company could also be part of a shadow banking system.

The general risks associated with the shadow banking system can be summarized in two major sectors. First, shadow banks face higher liquidity risks. They usually provide higher rewards to investors (such as providing higher interest rates and dividends) and allow lending activities with lower credit borrowers. In the boom period of an economic cycle, these financial institutions expand dramatically because of their higher than normal rewards. They are able to absorb more investments and re-invest them, and gain through the difference. While in the period of a financial crisis, shadow banks' higher rewards become a heavy burden for financial institutions because they face liquidity problems. One of the liquidity difficulties derives from the lower credit borrowers as they are at higher risk of default. Another difficulty arises from the depreciation of the guarantees' value.

For instance, once the asset value of mortgage companies' guarantees depreciate, mortgage companies lose more money if borrowers do not have the ability to repay. The guarantees will be less than the money they have loaned out. The liquidity difficulty is exactly

one of the problems that Fannie Mae experienced in the late 2007 US mortgage crisis. Fannie Mae (the Federal National Mortgage Association), could be another example of a shadow bank because it sells asset-backed securities to obtain deposits -- which is considered to be a borrowing service -- and then provides loan services to the public.

Secondly, since shadow banks are interconnected with traditional banks, systematic risks are likely to spread to the traditional banking sectors and cause a chain effect. Imagine if a large number of giant companies, like Fannie Mae, experienced huge deficits, and if the US government did not take steps to save these companies, then hundreds of billions of dollars evaporate and company stocks become heavily depreciated. Investors lose their investments, and employees are laid off. In the end, the financial activities shrink and traditional banks have less deposits and borrowers.

Because of the risks to the financial system, shadow banks nowadays are attracting increased attention from financial regulators worldwide; however, there is still lacking a globally recognized definition for shadow banks. The debate among scholars is usually about what activities should be included and what entities should be considered as a part of the shadow banking system. Because of this, this Capstone aims to explore which definition would be most appropriate for the Canadian shadow banking system. At the same time, the definition would also provide a methodology for how to evaluate the scale of the shadow banking system.

1.1 The purpose of this Capstone

Most scholars and institutions have recognized the importance of the shadow banking industry due to the risks and scales involved. Many initiatives have been brought forward internationally for the purpose of facilitating macro-level regulations and enhancing financial stability.

In Canada, the OSFI's Report implied that the regulation of shadow banking is outside OSFI's direct responsibility. In fact, the regulating responsibility is actually divided between provincial and federal governments in Canada, which makes it more complex than some countries that have a single regulating authority. Moreover, the systematic study of shadow banking is lacking in Canada, especially detailed studies about how shadow banks are defined, as well as the measure of their size. The size of the shadow banking system may vary periodically according to the changes to the shadow banking's components. For purposes of providing accurate analysis, it is important to regularly know its trends and updated information for the shadow banking sector.

It is therefore necessary to understand the size of the shadow banking system. By knowing the size of the Canadian shadow banking system, answers can be found to such questions as: to what degree does the shadow banking sector influence an economic system? Does it really play a negative role in the financial system? If it does, what policies or regulations should be imposed on the shadow banks in order to have a more effective financial system? In

addition, we will be able to track the changes over time for the shadow banking sector and answer the question: do we need stronger regulations to deal with any market distortion problems?

Therefore, in addition to attempting to answer the aforementioned questions, this Capstone mainly focuses on providing a platform that measures the Canadian shadow banking sector by using the most recent data from the Bank of Canada statistics. The results will likely explain what the Canadian shadow banking system is about, how large the system is, and what areas will pose systematic risks to the financial system. Based on the findings, this Capstone will point out which sub-sectors of the Canadian shadow banking system will expose financial risks that need additional monitoring. The result will likely help the Canadian policy makers to promote the effectiveness of supervising the shadow banking system.

In the body of this Capstone, I will review recent publications about the definition and measurement of the shadow banking system and propose a model based on the Financial Stability Board's (FSB) model, plus some interpretations from a Canadian banking expert — David Longworth. The FSB, an international body that monitors and makes recommendations about the global financial system, has proposed a shadow banking measuring model; however, this model lacks detailed data that would be used for analysis for Canadian policy makers. David Longworth, the former deputy governor of the Bank of Canada, measured the Canadian shadow banking system with his own interpretation of the FSB's definition; however, his findings only compared the years 2007 and 2011. The lack of continuous data does not provide a trend that

shows whether the scale of shadow banking sector changes only in a particular year or changes continuously. Based on the incomplete information from the FSB and Longworth's publications, this Capstone aims to provide a more detailed and aggregated shadow banking measurement for the Canadian shadow banking system.

2. Literature Review

This section contains a summary of recent publications (especially post-2012) regarding definitions and measuring methodologies of the shadow banking system. In terms of the definitions, I have summarized four perspectives, which are from Canadian authors, US authors, the International monetary fund, and the Financial Stability Board. In terms of the methodologies, I have categorized the different definitions into three major approaches: the entity-based approach, the activity-based approach, and the mixed approach.

Before the discussion of the comparisons of the different perspectives, it is appropriate to review the debate on whether or not shadow banks play a negative role in a country's financial system. A review of existing studies for this question will provide some further information for understanding the shadow banking system.

Some researchers stand on a moderate side and believe that shadow banks should be considered as a normal part of the financial system. For example, the Financial Stability Board (FSB) concluded that shadow banking provides a valuable alternative as an intermediary for bank funding and provides credit support to real economic activities.³ In addition, in an International Monetary Fund (IMF) staff discussion, it notes that Claessens, Pozsar, Ratnovski, and Singh recognize that shadow banking serves a genuine economic function that responds to real

³Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: An Overview of Policy Recommendations," August 2013, accessed June 25, 2015, http://www.financialstabilityboard.org/2012/11/r_121118/

economic demand, although they did not provide in-depth research about this topic and suggested that further work should be done to evaluate the economic value of the shadow banking system.⁴ Anastasia Nesvetailova also believes that shadow banking's formation, on one side, is an institutionalized response to the financial industry as investors searching for investible profit, for example, through securitization (i.e. the process of issuing security).⁵ She believes that the securitization is considered as a part of the shadow banking system, which determined the nature of the 2007-09 financial crisis and will continue to play a significant role in financial capitalism in the future.⁶

Nevertheless, on the other side, due to the connection between the shadow banking sector and the traditional banking sector that causes a chain reaction, the vulnerability of shadow banking is likely to be passed on to the regular banking sector and thus cause an increase in the traditional banking's systemic risks. According to Nico Valckx et al.'s report for the IMF, this risk transmission occurs because shadow banks and traditional banks use interlinked and risk-adjusted balance sheets. The risks that subsequently spilled over onto traditional banks are largely due to their liquidity backstops and debt guarantees to the shadow bank entities.⁷ For example, the major US and European banks suffered a significant loss from August 2007 to March

⁴ Stijin Claessens et al., "Shadow Banking: Economics and Policy," *IMF Discussion Note*, December 2012, accessed May 25, 2015, <http://www.imf.org/external/pubs/ft/sdn/2012/sdn1212.pdf>.

⁵ Anastasia Nesvetailova, "A crisis of the Overcrowded Future: Shadow Banking and the Political Economy of Financial Innovation," *New Political Economy* (2015): 431, accessed May 27, 2015, doi:10.1080/13563467.2014.951428

⁶ Ibid.

⁷ Nico Valckx et al., "Shadow Banking around the Global: How Large, and How Risky?" *IMF Global Financial Stability Report*, October 2014, accessed August 19, 2015, <http://www.imf.org/external/pubs/ft/gfsr/2014/02/>, 70

2009, while bank liabilities rose by 32% and total market capitalization fell by 74%.⁸ This severe financial outcome was the result of traditional banks' guarantees to asset-backed commercial paper and securitization vehicle.⁹ In Florentina Paraschiv's and Minzi Qin's empirical model, their results indicate a strong interdependence between shadow banks and traditional banks. Once the degree of engagement of the shadow banks increases, the conditional systemic risks for the traditional banking sector increase simultaneously.¹⁰

The FSB points out that the major risks that currently exist in the shadow banking industry are because of its rapid expansion and the lack of transparency, as well as its heavy reliance on short-term wholesale funding that causes incentives to weaken lending standards.¹¹ High risks, which distinguish shadow banks from traditional banks, are derived from weak regulations currently imposed on shadow banks. According to Laura E. Kodres, shadow banks in the US are not subject to traditional banking regulations, and they cannot borrow in an emergency from the Federal Reserve and their funds are not covered by insurance.¹²

⁸ Here, the major banks include Citibank, JP Morgan Chase & Co., Bank of America, Deutsche Bank, Credit Suisse, UBS, Barclays, and Royal Bank of Scotland. Ibid, 71.

⁹ Ibid.

¹⁰ Florentina Paraschiv and Minzi Qin, "Extreme spillover between shadow banking and regular banking," *Institute of Operations Research and Computational Finance, University of St. Gallen* (2013): 24, accessed June 25, 2015, <http://www1.vwa.unisg.ch/RePEc/usg/sfwpfi/WPF-1312.pdf>

¹¹ Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: An Overview of Policy Recommendations," *Financial Stability Board Publication*, August 2013, accessed June 25, 2015, http://www.financialstabilityboard.org/2012/11/r_121118/.

¹² Laura E. Kodres, "What is Shadow Banking?" *Finance & Development* 50 (2013): 43, accessed May 28, 2015, <http://ezproxy.lib.ucalgary.ca/login?url=http://search.proquest.com/docview/1444018218?accountid=9838>.

At this point, the debate on whether the shadow banking sector plays a negative role remains unsolved; however, regardless of the role that shadow banks play, the risks associated with the expansion of shadow banks cannot be ignored. The shadow banking system has a more natural competitive edge than the traditional banking system: a higher rate of return to attract investors. This competitive edge allowed the shadow banking system to expand dramatically before the 2007-09 global financial crisis, and the system's expansion also produced higher risks. In other words, this system has a higher possibility of default and failure.

In addition, risks can be evaluated differently within the system due to different classification methods – that is, how is the shadow banking system defined and what components are put into the system. This could be one reason why some researchers evaluate risks in the system higher than others. The evaluating difference also illustrates the importance of the definition and the measurement given to the shadow banking system.

The following section will summarize existing scholars and institutions' definitions of the shadow banking system, and will illustrate from several different perspectives including countries and institutions such as Canada, US, IMF, and FSB.

2.1 Four perspectives

2.1-1 Canadian experts' perspective

From a Canadian perspective, David Longworth, argues that, when defining the shadow banking system, among current scholars there exist two types of theories. One is that some

authors narrowly focus only on the securitization process that involves purchasing and selling contractual debt between investors and entities. The other focuses on all financial institutions, markets, and processes that are not regulated as banks. The latter one is consistent with the FSB's definition and has gained a wider recognition among scholars.

Similar to the Financial Stability Board, Longworth classified five major parts of shadow banking in Canada:

1. Finance companies that fund long-term assets partly through the issuance of short-term assets such as financial commercial paper;
2. Commercial paper issuance, whether asset-backed or not;
3. Money market funds that hold financial and asset-backed commercial paper;
4. The creation and selling of asset-backed securities; and
5. Repo markets for fixed-income products such as bonds and treasury bills.¹³

Because Longworth's perspective is developed on the FSB's theory, this paper will adopt some of Longworth's interpretations to supplement the FSB's model.

2.1-2 US experts' perspective

In the report for the Federal Reserve Bank of New York, Zoltan Pozsar et al. argue different view and present a more specific definition of shadow banking. They allege that the shadow

¹³ David Longworth, "Combating the Dangers Lurking in the Shadows: The Macro-prudential Regulation of Shadow Banking," *C.D. HOWE Commentary No.361*, (09, 2012), 3-4, accessed Jun 5, 2015, http://www.cdhowe.org/pdf/Commentary_361.pdf

banking industry includes “all credit intermediation activities that are implicitly enhanced, indirectly enhanced, or unenhanced by official guarantees (public sector guarantees).” According to Pozsar et al., implicitly and indirectly enhanced activities refer to those asset management activities that include bank affiliated hedge funds, money market mutual funds, and securities lending activities of custodian banks.¹⁴ As parts of the shadow banks, these activities conduct “maturity, credit, and liquidity transformation without explicit access to central bank liquidity or public sector credit guarantees.”¹⁵

Pozsar et al. emphasize the role of public sector guarantees, and this definition is applicable. However, realistically in Canada, data under this definition is difficult to access.

2.1-3 The International Monetary Fund’s perspective

Harutyunyan et al.’s recent published working paper for the IMF propose a definition for shadow banking that is different from other definitions. They categorized a financial system with two sectors: “core” funding sector and “non-core” funding sector. A core funding sector is about traditional banks using deposits from households and non-financial corporations to finance their lending activities. Due to rapid economic growth, core funding was no longer sufficient as a funding source. At that point, non-core funding emerged. They define core liability as “bank

¹⁴ Zoltan Pozsar et al., “Shadow Banking,” *FRBNY Economic Policy Review*, December 2013, accessed June 5, 2015, referred from Academic OneFile database.

¹⁵ Ibid.

deposits mainly from nonfinancial corporations and households”, while noncore liabilities are about “all the remaining funding sources, particularly market funding.”¹⁶

In contrast to other definitions, Artak Harutyunyan et al. believe that the shadow banking system should also include non-traditional banking activities carried out by the traditional banks. In addition, in another IMF working paper, Stijn Claessens and Lev Ratnovski describe shadow banking as “all financial activities, except traditional banking, which require a private or public backstop to operate.”¹⁷

Obviously there is a recognition of difference between the authors from IMF and Pozsar et al. The former authors believe that financial activities with a public backstop can be considered as part of the shadow banking system, while the latter believe not. In this Capstone, I take the center position and argue that financial entities with a public backstop could be considered as a part of the shadow banking system, such as the example of Fannie Mae mentioned earlier. However, financial activities and entities within traditional banks should not be considered as part of the shadow banking system. The reason is that two important attributes of the shadow banking system are its higher risks and weaker regulation. In the traditional Canadian banking sector, risks are monitored under a sound regulatory framework and thus should not be considered as a part of the shadow banking system.

¹⁶ Harutyunyan et al., “Shedding Light on Shadow Banking,” *IMF Working Paper*, January 2015, accessed June 10, 2015, <http://www.imf.org/external/pubs/ft/wp/2015/wp1501.pdf>, 4

¹⁷ Stijn Claessens and Lev Ratnovski, “What is shadow banking?” *IMF Working Paper* 14/25, (2014): 4, accessed June 2, 2015, <http://www.imf.org/external/pubs/ft/wp/2014/wp1425.pdf>

2.1-4 The Financial Stability Board's perspective

Despite the fact that the definition for shadow banking varies among different scholars and institutions, since 2012, a most common referenced definition among scholars is defined by the FSB as “credit intermediation involving entities and activities (fully or partially) outside the regular banking system.”¹⁸

According to this definition, the FSB study summarized four types of credit intermediation:

1. Maturity transformation: obtains short-term funds to invest in longer-term assets;
2. Liquidity transformation: uses cash-like liabilities to buy harder-to-sell assets such as loans;
3. Leverage: employs techniques such as borrowing money to buy fixed assets to magnify the potential gains (or losses) on an investment;
4. Credit risk transfer: takes the risk of a borrower's default and transfers it from the originator of the loan to another party.¹⁹

In addition to those mentioned above, Laura Kodres added two extra types of credit intermediation: (1) financial entities that fund their assets using repurchase agreements and (2) activities such as money market funds that use investors' funds to purchase commercial paper or

¹⁸ Financial Stability Board, “Strengthening Oversight and Regulation of Shadow Banking: An Overview of Policy Recommendations,” *Financial Stability Board Publication*, August 2013, accessed June 25, 2015, http://www.financialstabilityboard.org/2012/11/r_121118/.

¹⁹ Laura E. Kodres, “What is Shadow Banking?” *Finance & Development*, 50 (2013): 43, accessed May 28, 2015, <http://ezproxy.lib.ucalgary.ca/login?url=http://search.proquest.com/docview/1444018218?accountid=9838>.

mortgage-backed securities.²⁰ With Kodres' addition, these financial entities and activities basically cover most components of shadow banks and explain the behaviors of shadow banking.

So far, this section has examined four perspectives for the definition of the shadow banking system. Based on some understanding about the subject, the following section will mainly illustrate and contrast some measurement methods existing shadow banking.

2.2 Measuring the shadow banking system

2.2-1 The Financial Stability Board's "entity-based" approach

In terms of measuring the size of the shadow banking system, the FSB's inaugural 2011 report to the G20 group of countries proposed a two-step approach: firstly, a broader view that takes account of all non-bank credit intermediations; and secondly, a narrower view that focuses down to a few subsets of non-banking credit intermediations including developments that increase system risks and regulatory arbitrage.²¹ However, in the FSB's 2014 Report, it further narrows the focus at the second step to those financial intermediations that pose the systemic risk to the financial system.²² That is, this measurement narrows its focus onto non-bank credit intermediations that mainly pose immediate systemic risks to the financial system.²³ Under this measurement, the scale of global shadow banking is about \$34.9 trillion in 2013, while Canada's

²⁰ Ibid.

²¹ "Global Shadow Banking Monitoring Report 2014," *Financial Stability Board*, October 2014, accessed June 5, 2015, <http://www.financialstabilityboard.org/2014/11/global-shadow-banking-monitoring-report-2014/>, 5.

²² Ibid.

²³ Ibid. 8.

is about \$1 trillion, ranking as the 9th largest among 23 jurisdictions that exercise about 80% of the global GDP and 90% of global financial assets.²⁴

The broader measurement proposed by the FSB is labeled an “entity-based approach” by Toni Gravelle, Timothy Grieder and Stéphane Lavoie in the Bank of Canada’s *Financial System Review (2013)*. They argue that an entity-based approach is an important measurement but certainly has some problems in measuring shadow banking. According to Gravelle et al., this approach may omit shadow banking activities undertaken by banks due to its exclusive accounting of traditional banking entities that may contribute to systemic risks.²⁵

Nevertheless, this is more related to an argument regarding the definition, not a measuring problem. Many definitions provided by other scholars also face a similar problem about whether they accurately set the boundaries of the shadow banking system. Furthermore, the FSB’s narrow measuring method pays particular attention to the systematic risks. I would categorize the FSB’s narrow measure to a half activity/half entity-based approach.

2.2-2 Gravelle et al.’s “activity-based” approach

In order to take systemic risks exposed from the traditional sector into account, Gravelle et al. propose another approach for measuring the systemic risk — an “activity-based” approach to evaluate Canadian shadow banks. This approach considers systemic risks both in the non-

²⁴ In US dollars, Ibid. 24.

²⁵ Toni Gravelle, Timothy Grieder and Stéphane Lavoie, “Monitoring and Assessing Risks in Canada’s Shadow Banking Sector,” *Bank of Canada Financial System Review*, (06,2013): 56, accessed June 5, 2015 <http://www.bankofcanada.ca/wp-content/uploads/2013/06/fsr-0613-gravelle.pdf>

banking sector and the traditional banking sector. Some of these traditional banking entities also include an explicit government guarantee.²⁶ Here, Gravelle et al.'s approach values systemic risks as a dominant component of shadow banking in both non-banking sectors and banking sectors.

In their report, they summarized the Canadian shadow banking system as the following sub-sectors:

1. Government insured mortgage securitization including the National Housing Act Mortgage-backed securities and Canadian Mortgage Bonds,
2. Private-label securitization, including asset-backed commercial paper and term asset-backed securities,
3. Repurchase agreement,
4. Money market funds, and
5. Bankers' acceptances and commercial paper²⁷

Through the use of Gravelle's approach, it can be noted that the size of the shadow banking sector in Canada had shrunk from about 50% of the traditional banking sector in 2008 to about 40% in the 4th quarter of 2012. The value is about CAD \$650 billion in total.²⁸ Comparing this with the FSB's measure, the activity-based approach reduced the scale of the shadow banking system by one-half.

²⁶ Ibid.

²⁷ Ibid. 57.

²⁸ Ibid.

2.2-3 A combination of both entity- and activity- based approaches

Besides the two methods of measuring the scope of the shadow banking sector by the FSB and by Gravelle et al., Artak Harutyunyan et al. summarized about 20 existing shadow banking measurement methodologies, including researches conducted by the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), the European Central Bank (ECB), the Financial Stability Board (FSB), the US Financial Crisis Inquiry Commission, and some other individual scholars who are presented in Appendix 1. In order to be consistent with the concepts mentioned regarding the measurement approaches, the institutional coverage in appendix 1 can be understood as an “entity-based approach”, while the instrument coverage can be interpreted as an “activity-based approach.”

Instead of using a single approach to measure the size of shadow banking, some scholars choose to use both approaches. In a staff report from the US Financial Crisis Inquiry Commission, the authors evaluated shadow banking through activities including unsecured commercial paper and asset-backed commercial paper, repos, securities lending, and auction rate securities. The authors also evaluated from the perspectives of entities including investment banks and finance companies, etc.²⁹ A major drawback of using that method in this Capstone is the overlapping of calculations while trying to obtain an aggregate shadow banking size. In order to avoid double counting, the report only produces sub-sector shadow banking without an overall evaluation.

²⁹ Financial Crisis Inquiry Commission, “Shadow banking and financial crisis,” May 2010, accessed June 10, 2015 http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0505-Shadow-Banking.pdf

Harutyunyan et al. used both approaches to estimate shadow banking through the perspectives of both activities and entities; however, their mixed methodology is different from others. They created a framework that subdivided non-equity funding of financial intermediation into core and non-core liabilities. As mentioned earlier, core liabilities include bank deposits mainly from nonfinancial corporations and households while non-core liabilities include all the remaining funding sources.³⁰ The funding sources of non-core liabilities are the components of shadow banking. According to their illustration, non-core liabilities are raised by issuing debt securities, loans, money market fund shares, and accepting certain types of deposits.³¹ They further state that non-core liabilities are issued by banks, MMFs, and OFIs.

In addition to estimating non-core liabilities funding through banks, MMFs, and OFI as a broad term, Harutyunyan et al. further narrowed the financial entities, that their sources of funding for financial intermediate lie outside core liability. By his definition, a narrowed non-core liability includes financial activities among households, nonfinancial corporations, state and local government, non-residents, insurance corporations, pension funds, and non-MMF investment funds as the counterpart of the narrow measure of the shadow banking system. This argument is in opposition to the FSB's position as Harutyunyan et al. believe that public financial institutions, such as insurance corporation and pension funds, belong to the part of the narrow measure of

³⁰ Artak Harutyunyan et al., "Shedding Light on Shadow Banking," *IMF Working Paper*, January 2015, accessed June 10, 2015, <http://www.imf.org/external/pubs/ft/wp/2015/wp1501.pdf>, 4

³¹ Ibid. 10.

the shadow banking system. In the FSB's report, these institutions are not considered as a part of the shadow banking system.

In the end, their measurement yields a significantly different result for each jurisdiction. For example, the FSB's estimation for the US's shadow banking system is about \$24 trillion in 2013, while using Harutyunyan et al.'s broad measurement, it is about \$18 trillion and their narrow measurement is about \$12 trillion. The FSB's measurement of shadow banking for Japan is about \$3.5 trillion. In contrast, Harutyunyan et al.'s measurement estimates about \$5.8 trillion in broad terms and \$1.9 trillion in narrow terms.³² Unfortunately, there is no Canadian evaluation from this report, which also does not specify the use of the FSB's broad measure or narrow measure.

Due to the difference currently existing among the definitions and measures of shadow banking system, it is necessary for scholars to have more time to unify their thoughts and develop a well-recognized definition that can be accepted globally. In general, from a broader view, we can evaluate the shadow banking system through the activity- based approach, the entity- based approach, or the mixed approach. The activity approach estimates risky behaviour in the financial market regardless of whether in or not in traditional banks. In contrast, the entity- based approach draws a boundary that shadow banks are financial institutions that are distinct from

³² Ibid. 12.

traditional banks. A mixed approach varies according to different definitions; an example could be targeting specific risky behaviors only in the non-banking sector.

While discussing the subsectors among the three types of approaches, the FSB uses an approach that only includes Other Financial Intermediaries (OFIs). On the other hand, several research institutions and scholars, such as IMF, believe that some institutions such as banks, MMFs, and OFIs should also be considered within the shadow banking system.

In this Capstone, the evaluating measurement is based on the FSB's model. It is an entity-based approach for the broad measure, and a mixed methodology for the narrow measure of the shadow banking sector in Canada. The broad measure will include all financial intermediations outside traditional banks, while the narrow measure will count for all the risky activities within the broad measure. The reason for choosing the FSB's model will be illustrated in the following section.

3. Methodology

This section illustrates the data source and the evaluation objectives which adopted in this Capstone. Before the illustration, I will start with a brief discussion for its advantage.

3.1 The advantages of the FSB's approach

The Financial Stability Board's approach has significant advantages for measuring the size of the shadow banking system. Firstly, the FSB is a well-recognized international body in the financial system. The FSB's analysis and recommendations are widely adopted by many countries including Canada.

Secondly, because its definition sets a clear boundary that shadow banks exist only within Other Financial Intermediaries (OFI). According to the FSB, OFIs "include all non-bank financial intermediaries with the exception of insurance companies, pension funds and public financial institutions."³³ The structure of the shadow banks is clear cut that no additional works are needed in order to evaluate other financial entities.

Moreover, the FSB has proposed a completed model that matches current Canadian data. While many other definitions and measuring methodologies may be appropriate as well, there are data difficulties.

³³ Financial Stability Board, "Global Shadow Banking Monitoring Report 2014," accessed June 5, 2015, <http://www.financialstabilityboard.org/2014/11/global-shadow-banking-monitoring-report-2014/>, 5.

The drawback of this approach is arguable because this approach does not count risky behaviors within the traditional banking sector; however, the argument is not about a methodological issue, but whether several financial activities should be considered as shadow banking activities.

In the FSB's 2014 report, they use a two-step conceptual framework that, as a first step, collects data for all the non-banking financial intermediations, then narrows down the focus on those intermediations with potential systemic risks to the whole financial system. According to the report, the first step aims at ensuring that the data collection covers all the financial intermediations that lay outside the traditional banks, while the second approach targets more specific areas that pose potential systemic risks and would be used for policy analysis purposes.³⁴

The FSB measures the broad scale of non-bank financial intermediations by using the total financial assets held by Other Financial Intermediaries (OFIs) except for insurance companies, pension funds, and public financial institutions.³⁵ In contrast, they measure non-bank credit intermediations with bank-like systemic risks (the narrow measure) by using the broad measurement mentioned above minus "(1) financial assets of non-bank financial entities not involved in bank-like credit intermediations, (2) financial assets of non-bank financial entities that

³⁴ Ibid.

³⁵ Ibid, P.6

are prudentially consolidated into a banking group and (3) financial entities that do not exhibit risks associated with shadow banking (such as maturity and liquidity transformation).”³⁶

3.2 Data aggregation

The primary data source used in this Capstone project is the *Banking and Financial Statistics* from the Bank of Canada publications. In the latest report published in May 2015, it covers all the statistical data that relates to the Canadian central bank, chartered banks, other financial institutions, financial aggregates, and financial markets, etc. Because the 2015 Report is not completed, some data are referenced from previous years’ reports.

Table D of the Bank of Canada’s statistics provides financial statistics for OFIs including Trust and mortgage loan companies, local credit unions and caisses populaires, non-depository credit intermediations, life insurers, segregated funds, and investment funds. However, this measure for other financial institutions is different from the FSB’s definition of OFIs. This Capstone will use the OFI’s approach with the author’s own calculation.

The FSB proposes a template that it uses for collecting relevant data (see Appendix 2). This Capstone relies on this template and will use the most relevant data to update the FSB and Longworth’s findings, for the purpose of analyzing the scale of the Canadian shadow banking system and determining if it has had significant growth in the past few years.

³⁶ Ibid.

The difficulty of using this template is some data from the Bank of Canada do not correspond with the FSB's category. For example, if the FSB's definition is followed, there are no exact numbers that can be found in the Bank of Canada's statistics. At this time, the number used in this Capstone is based on the author's own interpretation, according to the FSB's definition with relevant numbers from the Bank of Canada's publication. Nevertheless, because of the lack of correspondence, some data cannot be perfectly transferred from the Bank of Canada Publication to the FSB's model. This means that there are double calculations in some areas; however, these double calculations can be eliminated with a further specific dataset of the Canadian financial statistics.

Together with the reorganization of the FSB's template, the five sub-sectors that broadly measure the Canadian shadow banking system are as follows:

1. MMF: money market funds; according to David Longworth, money market funds are mutual funds that include treasure bills, commercial paper, and certificates of deposits. These funds are invested in short-term assets.³⁷ Data for the Money Market Mutual Fund in Table E1 of the *Bank of Canada Banking and Financial Statistics* will be used in this paper.
2. Finance Companies: include all credit intermediate activities as they do not take deposits and are not regulated as banks.³⁸ This Capstone uses the data of the total assets of *Non-*

³⁷ David Longworth. "Combatting the Dangers Lurking in the Shadows: The Macro-prudential Regulation of Shadow Banking" *C.D. HOWE Commentary* No.361 (2012): 5.

³⁸ Ibid.

depository Credit Intermediation in Table D3 as the sector of Finance companies. Here, total assets of non-depository credit intermediation include portfolio investments, mortgages and non-mortgage loans, etc. In order to avoid double calculation for mortgage loans with sector 5, the total assets have been adjusted with and deducted from mortgage loans.

3. Structured Finance Vehicles: to clarify, structured investment vehicles (SIV), use short-term borrowings, such as asset-backed commercial paper, to buy long-term financial assets.³⁹ SIVs play a similar function as banks that borrow short-term deposits cheaply and invest on medium/long-term assets at a higher yield.⁴⁰ In this sub-sector, two types of financial instruments will be included, which are short-term commercial paper and repurchase agreement (repo). A repo refers to financial companies that issue an agreement to sell securities and promise to back the securities at a higher price later. It is also a short-term borrowing approach to obtain capital. In BoC's Statistics Table F2, asset-backed commercial paper is included in the commercial paper issued by financial corporations, and data for repo is available in Table F14.
4. Broker-dealer: there is no relevant data in the Bank of Canada's statistics for the "Broker-dealer" category in FSB's template. Broker-dealer is about the process of trading

³⁹ Simon Simpson and Wiley Finance, *Financial Markets, Banking, and Monetary Policy*. (New York: Wiley, 2014):256, ProQuest ebrary. Web. 14 June 2015.

⁴⁰ Fuller, Geoff and Elizabeth Collett. "Structured Investment Vehicles - the Dullest Business on the Planet?" *Capital Markets Law Journal* 3 (2008): 377, doi: <http://dx.doi.org/10.1093/cmlj/kmn024>.
<http://ezproxy.lib.ucalgary.ca/login?url=http://search.proquest.com/docview/1620214224?accountid=9838>.

securities by a broker or a dealer. Data in Table E2 shows the loans and business transactions that have been securitized in four sections. They are credit card loans, auto loans, and other personal loans in the Household section. Both the National Housing Act (NHA) and non-NHA insured mortgages in the Residential section. Corporate loans and trade receivables in the Business credit section. And leasing receivables and non-residential mortgages in the other business credit section.

5. Trust and Mortgage loan companies: Bank of Canada's Statistics Table D1 has included the total assets of the trust and mortgage loan companies (however exclude bank trust and mortgage subsidiaries). Data in this table can be used directly. This sector is corresponding to two sub-sectors (Real Estate Investment Funds, and Trust Companies) in the FSB's template.

According to the FSB's method, the broad measurement is simple and straight: while the narrow approach has to filter out several financial assets:

1. Securities are issued by the Structured Finance Vehicle, and they are owned by the originating bank and remain on its balance sheet.
2. Non-bank financial entities not involved in credit intermediation, such as equity investment fund.
3. Non-bank financial activities that are prudentially consolidated into a banking.⁴¹

⁴¹ Financial Stability Board, "Global Shadow Banking Monitoring Report 2014," accessed June 5, 2015, 7

In the Canadian case particularly, these financial assets that are part of repos that remain in the chartered banks' balance sheets, and the investment funds under the Finance Companies' section should be excluded from the narrow measurement.

4. Findings

This section first evaluates the Canadian shadow banking system through both broad and narrow aspects. Then, it looks into each sub-sector and provides an analysis for each. In the end, it locates the risky sub-sectors exposed in the shadow banking system.

4.1 The scale of the system

As defined earlier, the broad measure approach defines all the credit intermediation outside traditional banking sector and is categorized under Other Financial Intermediaries. This approach defines the scope of the shadow banking system. Based on it, the narrow measure approach evaluates entities and activities of shadow banking that impose potential risks to the financial system. Both evaluations are based on these financial entities' total assets.

Table 1: Broad Measure of Shadow Banking System (In millions of Canadian \$)						
Sum of Column 1-5		Col 1	Col 2	Col 3	Col 4	Col 5
Year	OFIs (Shadow Banking System)	MMFs	Finance Companies	Structured Finance Vehicles	Broker- dealers (securitization)	Trust and Mortgage loan companies
2005	889,199	47,616	149,625	564,568	109,924	17,466
2006	1,096,425	47,742	161,088	734,256	133,020	20,319
2007	1,127,517	56,513	180,268	730,303	136,450	23,983
2008	1,098,683	73,481	204,983	681,655	112,073	26,491
2009	952,919	57,953	191,006	590,023	84,888	29,049
2010	1,005,998	40,850	195,360	663,697	74,042	32,049
2011	996,749	35,263	203,371	661,599	37,740	58,776
2012	1,079,794	29,143	227,975	732,001	37,294	53,381
2013	1,118,457	26,014	221,698	797,089	35,539	38,117
2014	1,115,651	22,768	226,151	795,587	33,385	37,760
Source: Bank of Canada, <i>Banking and Financial Statistics</i>						

According to the data from the Bank of Canada, shown in Table 1, which is the broad measure over the past ten years, there were no significant changes in the Canadian shadow banking system. In 2005, Canada's shadow banking industry started at its lowest point of \$889 billion and experienced a boom and bust cycle that reached its peak at about \$1.1 trillion in 2007. After 2008, in the post global economic crisis period, the scale of the shadow banking system in Canada had dropped to about \$953 billion. And this could be interpreted as a slow period for the whole financial system. By experiencing a moderate increase and fall in 2010 and 2011, in the past three years since 2012, the shadow banking's size in Canada has rebounded and even exceeded its peak high, which reached \$1.1 trillion in 2013. If we only compare the year 2005 with 2014, the size of shadow banking increased by 25.47% in ten years.

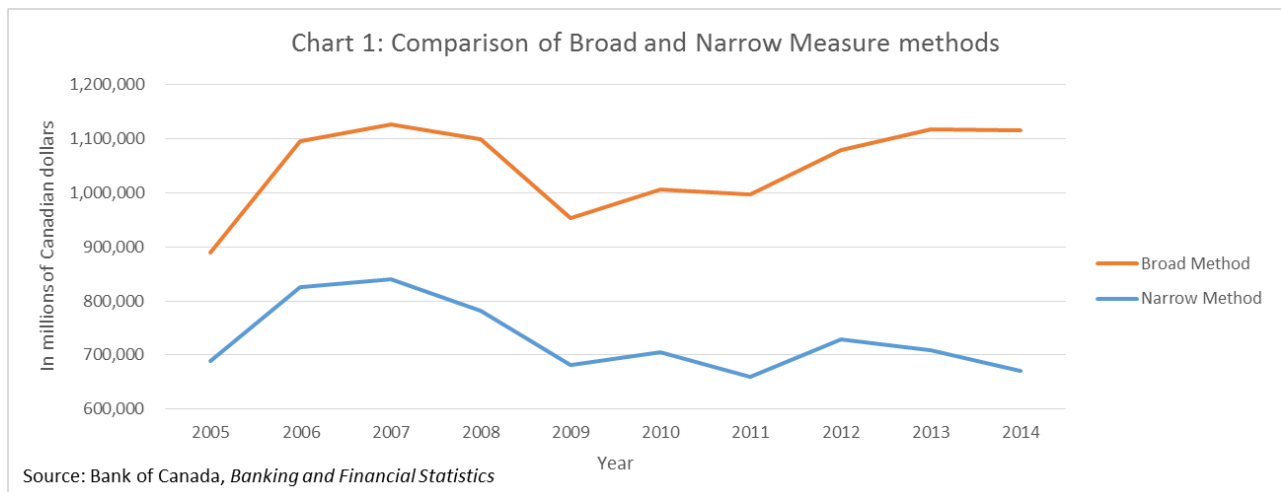
Table 2: Narrow Measure of Shadow Banking System (In millions of Canadian \$)

	Sum of Column 1-5	Col 1	Col 2	Col 3	Col 4	Col 5
Year	Narrow OFIs	MMFs	Finance Companies	SFV	Broker Dealer	Trust & Mortgage
2005	688,218	47,616	109,023	404,189	109,924	17,466
2006	826,216	47,742	120,060	505,075	133,020	20,319
2007	840,484	56,513	131,473	492,065	136,450	23,983
2008	782,381	73,481	139,417	430,919	112,073	26,491
2009	682,237	57,953	125,318	385,029	84,888	29,049
2010	704,180	40,850	117,439	439,800	74,042	32,049
2011	659,633	35,263	113,436	414,418	37,740	58,776
2012	727,896	29,143	116,280	491,798	37,294	53,381
2013	708,461	26,014	112,373	496,418	35,539	38,117
2014	669,754	22,768	120,826	455,015	33,385	37,760

Source: Bank of Canada, *Banking and Financial Statistics*

The narrow measure approach shows a similar tendency before 2012. The scale of the shadow banking system experienced a cycle before 2009 and met its bottom low of \$ 660 billion at year 2011 (for detailed numbers see table 2). However, different from the broad measurement, in 2013 and 2014, the volume kept shrinking and moved back to about \$ 670 billion by the end of 2014. So far, according to the data, we may conclude that, despite the fact that the shadow banking size has increased moderately in the past three years, in general, activities and entities that consist of risky behaviors to the financial system were, in fact, reduced. Compared with 2005, the narrow measure of the shadow banking scale has actually been reduced by 2.68%.

The following chart (Chart 1) gives a compendious way of understanding and comparing these two evaluating methods for the trends of the shadow banking system's scale in Canada.



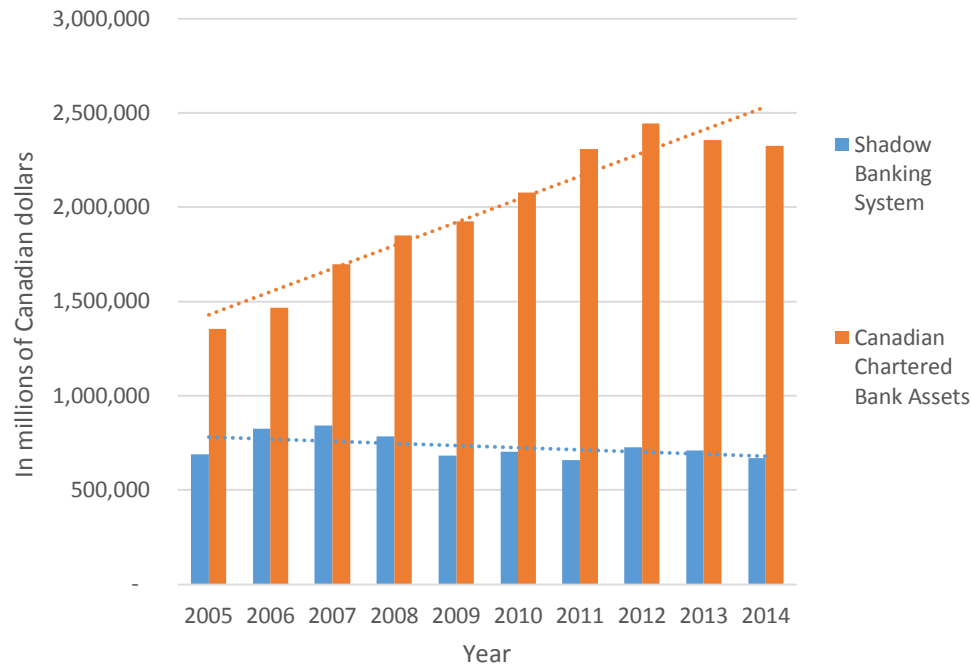
Because of the importance and the fact that the shadow banking industry imposes a systemic risk to the whole financial system, this Capstone will now focus on the sector of the narrow measure approach for analysis.

In comparison with the total banking assets in Canada, the findings further prove that the shadow banking assets were decreasing in terms of their percentage rate of Canadian chartered bank assets. Table 3 shows the percentage of shadow banks versus chartered bank assets.

Table 3: Percentage of Chartered Banks Assets (In millions of Canadian dollars)			
Year	Shadow Banks (In narrow term)	Chartered Banks	SBS/Chartered Banks
2005	688,218	1,353,126	50.86%
2006	826,216	1,466,515	56.34%
2007	840,484	1,697,210	49.52%
2008	782,381	1,850,764	42.27%
2009	682,237	1,925,537	35.43%
2010	704,180	2,075,643	33.93%
2011	659,633	2,309,344	28.56%
2012	727,896	2,443,668	29.79%
2013	708,461	2,353,638	30.10%
2014	669,754	2,326,264	28.79%
Source: Bank of Canada, <i>Banking and Financial Statistics</i>			

As we can see, the proportion of shadow banks to chartered banks was at about 50% in 2005. Despite the slight rise in some years, in the end of 2014, the proportion has a significant reduction that dropped to less than 30%.

Chart 2: Comparison of Shadow Bank assets with Chartered Banks assets



Source: Bank of Canada, *Banking and Financial Statistics*

Canadian Chartered banks experienced strong growth and the trend line was in a positive upward trend (see Chart 2). On the other hand, the shadow banking system was in a slightly negative downward trend. The gap between the differences of the two banking sectors kept enlarging in the past one decade. The result indicates that the Canadian shadow banks fell slightly, while the traditional banking assets grew rapidly. One of the possible hypotheses here in this particular case is: the Canadian chartered banks were buying assets and acquiring businesses from the shadow banking sector.

This hypothesis is supported by several examples from the Bank of Canada *Banking and Financial Statistics* notes in the Trust and Loan companies sector. In 2006, Bank of Nova Scotia purchased Maple Trust Companies, which led an asset transfer of \$1.1 billion from the Trust and Loan companies to the chartered banks. In 2012, B2B Bank, a wholly owned subsidiary of Laurentian Bank, purchased AGF Trust for \$2.8 billion. In 2013, Royal Bank of Canada purchased Ally Financial Inc. and Equitable Trust became Equitable Banks, which transferred a total of \$9.5 billion assets to the chartered banking sector.⁴²

From my perspective, the asset transfer from the shadow banking system to the chartered banking system is a double-edged sword. On one side, this transfer reduces the financial risks due to a stronger regulation and promotes financial systematic stability. On the other side, it discourages the growth of small and medium financial intermediaries. The larger scale of chartered banks will increase the barrier of entries for smaller financial companies thus creating an oligopoly in the financial system. In addition, the larger the market power the biggest chartered banks hold, the smaller power the consumers own.

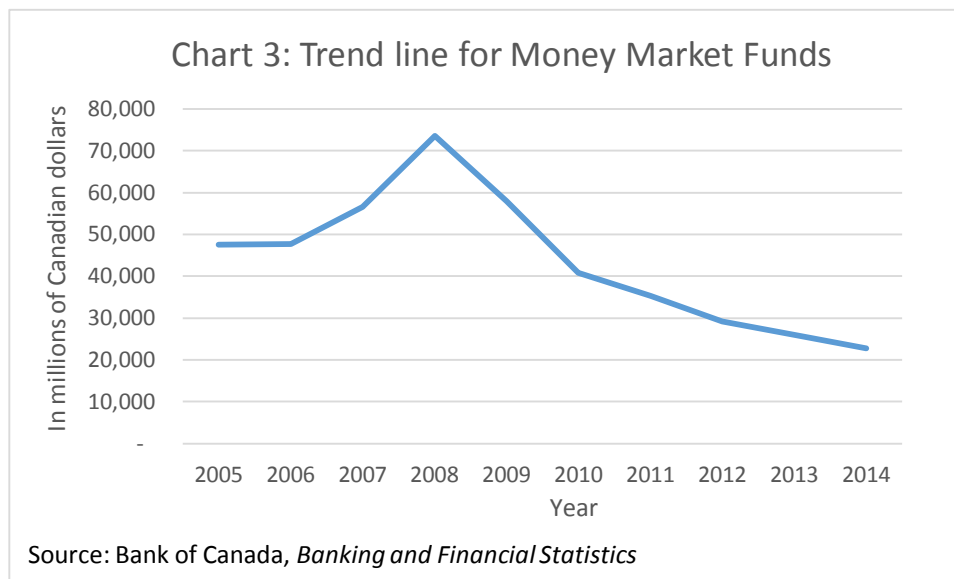
To fix this particular issue, I believe that we should adopt an outcome-oriented approach. That is, if we want to both avoid the shadow banking's systematic risks and the market oligopoly, we need to (1) heighten the regulating standard for the shadow banks; and (2) develop policy to encourage the growth of small and medium financial intermediaries.

⁴² Bank of Canada, "Banking and Financial Statistics," accessed August 27, 2015, <http://www.bankofcanada.ca/publications/bfs/>

4.2 Sub-sectorial analysis

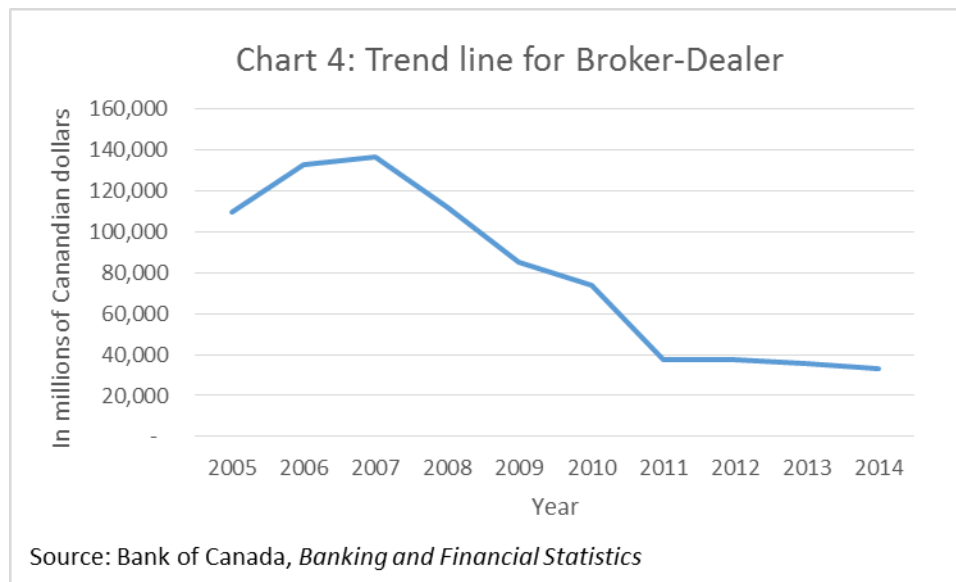
Once each sub-sector of the shadow banking system is examined, it becomes evident that each sub-sector performed in several different ways in terms of their changes in size. Charts 3-7 show historical trends for each sub-sector. Most of these subsectors, especially by using the narrow measure, experienced downward trends from 2011 to 2014.

Money Market Funds (Chart 3) had reached their peaks in 2008, and then fell sharply. MMF's sizes had reduced more than half from 2008 to 2014. According to Dr. Jack Mintz, the decline of the money market funds is because of its sensitivity to the market.⁴³ The condition of the market worsened the expansion of the MMFs.



⁴³ From Dr. Jack Mintz's comments to this Capstone

Similar to MMFs, Broker-Dealer (Chart 4) reached its highest point at 2007, and fell to its lowest point at 2014. In terms of the broker-dealer's slump, Investment Industry Association of Canada (IIAC) argues that high compliance costs, which reflected on the requirement to comply with local rules, are hurting smaller dealers.⁴⁴

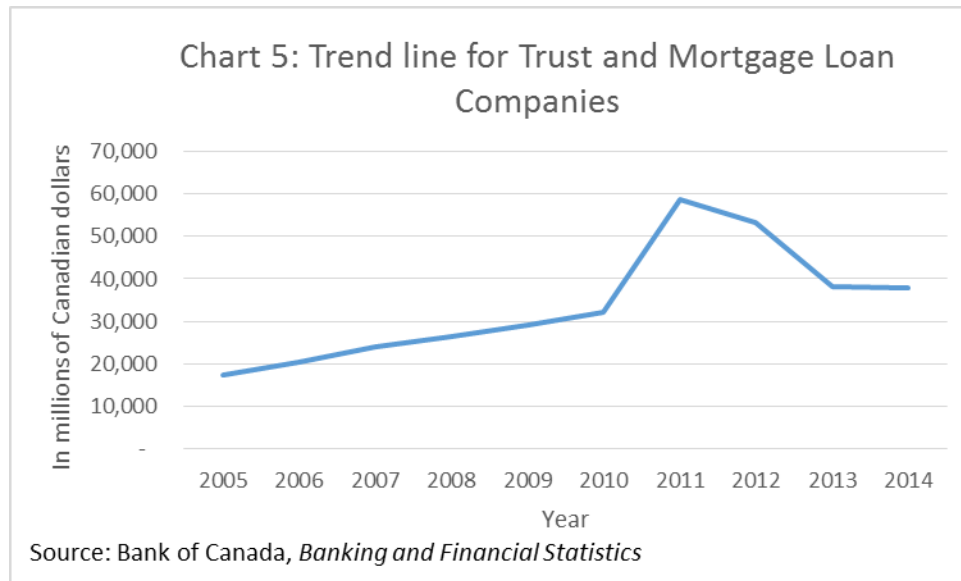


The Trust and Loan Companies' scale (Chart 5) had risen dramatically and tripled their size from 2005 to 2011. Especially notable, they had doubled their size within one year, from year 2010 to 2011. The reason here is because of the Canadian Accounting Standards Board adopted International Financial Reporting Standards beginning January 2011. The change of evaluation method contributes a significant difference for the data between 2010 and 2011.⁴⁵ Therefore,

⁴⁴ Ibid.

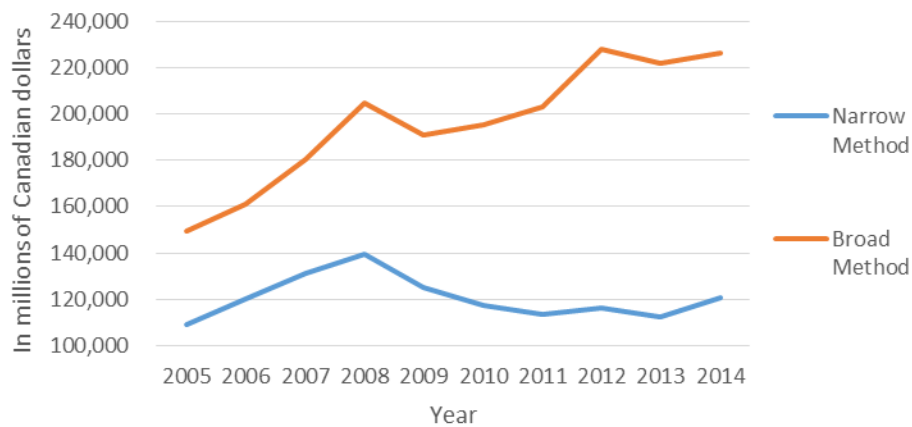
⁴⁵ Bank of Canada, "Banking and Financial Statistics," accessed August 27, 2015, <http://www.bankofcanada.ca/publications/bfs/>

we should perceive the data separately before and after 2010. The scale change of Trust and Mortgage Loan companies can be interpreted as the adjustment of the market.



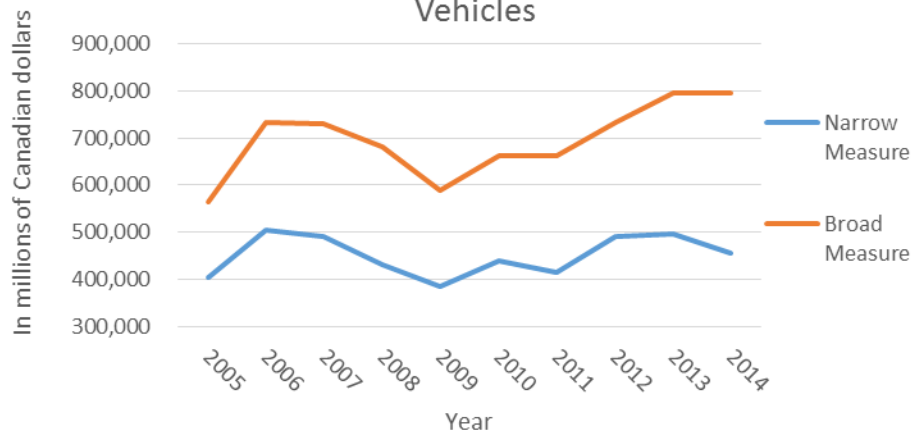
The major difference between broad measure and narrow measure in this Capstone is reflected in the Finance companies (Chart 6) and Structured finance Vehicles (Chart 7). By using a broad measure, both of these two sub-sectors experienced a significant increase after 2011. In contrast, while using the narrow measure approach, the scale of Finance Companies remained steady during 2010 to 2014; while the Structured Financed Vehicles grew slightly.

Chart 6: Trend line for Finance Companies



Source: Bank of Canada, *Banking and Financial Statistics*

Chart 7: Trend line for Structured Finance Vehicles



Source: Bank of Canada, *Banking and Financial Statistics*

Here we may conclude that the major contributing factor for the increase of the shadow banking system is because of the rise of the three sub-sectors: the trust and mortgage loan companies, the finance companies, and the structured finance vehicles. Finance companies and

structured finance vehicles are the areas that still remain at a relatively high scale. In other words, they are not in a decreasing trend. These sectors are the fields that should be paid closer attention to regulation purposes.

The next three sectors will explore the likelihood and risks of them causing potential harm to the financial system.

4.3 Three risky sub-sectors

4.3-1 Trust and Mortgage Loan companies

Risk: Low

Trust and mortgage loan companies are not in such a dangerous situation that they should be given special attention. Firstly, in terms of their scale, trust and mortgage loan companies take only a small portion (6% in 2014) of the total shadow banking system. Secondly, the significant expansion of this sector in 2011 was large because of a new evaluating method. After 2010, the trend is decreasing. Furthermore, in the history of the past 20 years, many assets from the trust and mortgage loan companies have been bought by big banks and became assets of the chartered banks.

Trust and mortgage loan companies are currently regulated at both federal and provincial levels. The federal government regulates trust and loan companies that are created federally. The *Trust and Loan Companies Act* Part XII has indicated that the federal regulating body for the companies is the Superintendent of Financial Institutions (OSFI). Trust and loan companies are

required to provide relevant information each year for the OSFI's auditing.⁴⁶ At the provincial level, for example in Alberta, the Alberta Treasury Board and Finance is the regulating body for the trust and loan companies, which are regulated under the Alberta *Loan & Trust Corporations Act*.

The only problem for the trust and mortgage companies is the separation of regulating bodies, or in other words, the regulatory competition. Because companies are regulated under different regulating bodies with different regulations in each province, a potential risk is that companies may choose to do business in a jurisdiction in which it benefits them more. Similar to a tax competition, such separations of power may also lead to market distortions in which each province competes to lower its regulation standards in order to attract more business.

4.3-2 Finance companies

Risk: medium high

As defined in the methodology section of this Capstone, finance companies are those non-depository credit intermediations. Finance companies do not take deposits; they borrow money from other financial intermediaries and obtain profits from credit market borrowing. For example,

⁴⁶ Government of Canada, "Trust and Loan Companies Act," *Justice Laws Website*, last modified June 9, 2015, accessed July 6, 2015, <http://laws-lois.justice.gc.ca/eng/acts/T-19.8/page-163.html#h-92>

they issue credit card services or they engage in sales financing. Sales financing lends money to consumers and businesses by using contractual sales agreements.⁴⁷

Some companies are easy to identify as finance companies. Locally in Alberta, GE Capital is an example of the finance company. It does not take public deposits, and it provides private label credit card and MasterCard programs and a variety of financing services. Nevertheless, some financial institutions are not considered as finance companies, like Alberta Treasury Branch (ATB) and Credit Unions. Although these institutions are not chartered banks and being categorized into other financial institutions, they take public deposits. Therefore, they should not be included in the Finance Companies sector. In addition, these companies are being supervised with a stricter regulation. For instance, ATB is regulated under the *Alberta Treasury Branches Act* and Credit Unions are regulated under the *Alberta Credit Union Act*.

Business in finance companies faces higher risks as they do not have actual business support such as production or manufacturing. They usually face problems such as liquidity, default risks, chain reactions, and ambiguous regulations.

Finance companies do not have reserve funds and need to use their lending profits to maintain their future borrowing. In an economic downturn, once a larger number of finance company borrowers' default, these companies likely will face liquidity problems, as they do not

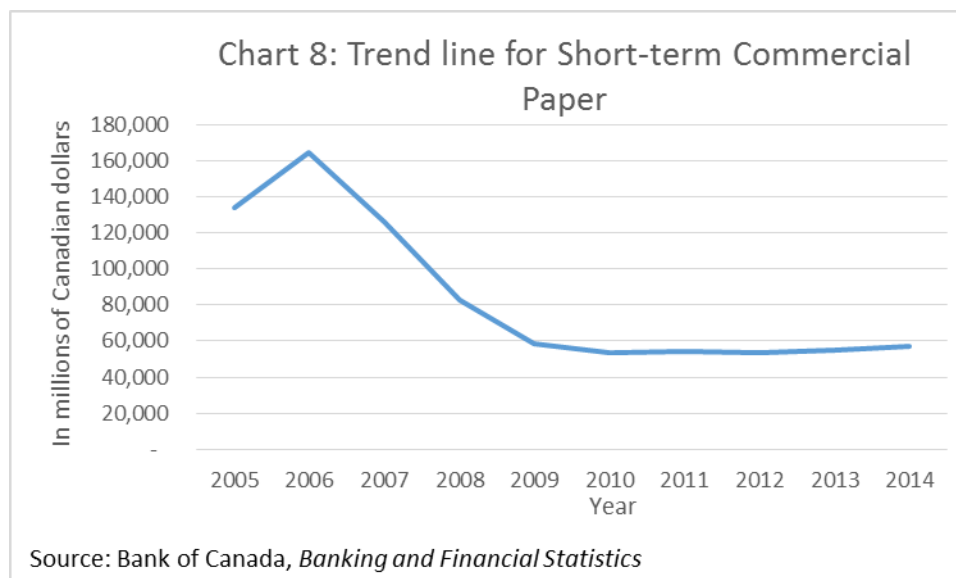
⁴⁷ Statistics Canada, "North American Industry Classification System (NAICS) Canada 2012 - Definition of classes," accessed July 6, 2015, <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=118464&CVD=118467&CPV=5222&CST=01012012&CLV=3&MLV=5&D=1>

have sufficient income to support their payback and further borrowing. Finance companies will likely cause a chain reaction with commercial banks, because some money they borrowed are originated from traditional banks. The default risks will then move to the traditional banking sector.

Similar to trust and loan companies, finance companies in Canada are also regulated at both the provincial and federal levels. They do share the same problems with the trust and loan companies; that is, the separation of the regulating responsibilities. One of the major issues is that the province has its own regulatory power (British North America Act section 92 power over contracts) with the federal government controlling banking; so each province makes its own regulations with the aim of furthering their own interests.

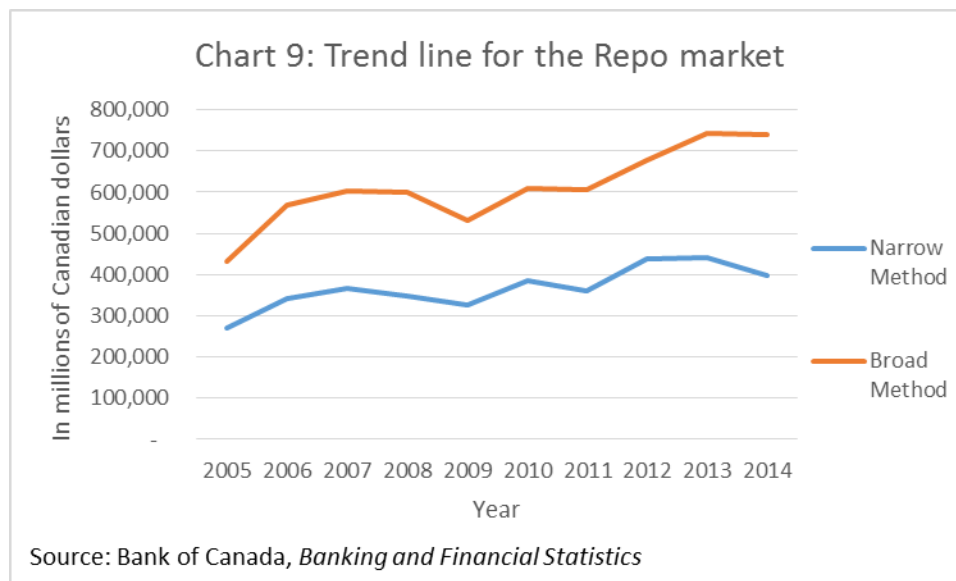
4.3-3 Structured Finance Vehicles

Risks: High



Structured Finance Vehicles (SFV) contain the largest portion of the shadow banking system. SFV have two components, the short-term commercial paper and the repo. If the sector of short-term commercial paper is solely examined, then it becomes obvious that it actually is in a decreasing trend (see chart 8)

Therefore, the major contribution to the growth of SFV is the repo market. In 2014, Repos represented over half of the total shadow banking system in narrow term. Repos present a significant risk to the financial system. In a recent released report, Fitch Rating states that “more than 70 percent of corporate bond repo transactions had a maturity of five days or less, illustrating how funding remains short-term in nature and thus vulnerable to any market shock that spurs investors to stop lending cash.”⁴⁸



⁴⁸ Joe Rennison, “Fitch warns on repo threat to bank funding,” *Financial Times*, June 17, 2015, assessed July 6, 2015, <http://www.ft.com/cms/s/0/26e01216-1435-11e5-9bc5-00144feabdc0.html#axzz3f9nCN4Cd>

Further, David Longworth argues that there is a pro-cyclicality for the price of collateral securities in a repo transaction. In a boom period, the price of collateral securities is low while in a burst period the price is high. This pro-cyclicality causes volatility in asset prices.⁴⁹ It further discourages market activities while the collateral price is high in a burst economic cycle.

This section, through broad and narrow measurements evaluates the size of the shadow banking system in Canada. The narrow measurement indicates the areas that impose potential financial risks to the financial system. Within the narrow measured shadow banking system, two sub-sectors have to be paid particular attention; that is, the finance companies and the repo markets that urge medium high and high risks, respectively.

⁴⁹ David Longworth. "Combatting the Dangers Lurking in the Shadows: The Macro-prudential Regulation of Shadow Banking" *C.D. HOWE Commentary* No.361 (2012): 18

5. Policy Implications

This Capstone project reveals three major policy implications: firstly, it defines the shadow banking system by adopting an international framework into the Canadian context. Defining the shadow banking system is the cornerstone of evaluating and analyzing this system. Moreover, employing an international framework enables the comparison between Canada and other countries. By realising the exact components of the shadow banking system, policy makers will have a clear understanding about which financial sectors they are regulating.

Secondly, it evaluates the Canadian shadow banking system. With limited funding and resources, it is difficult for policy makers to closely supervise all sub-sections of the shadow banking system. The major contribution of this Capstone project lies in the evaluation of the system that provides a scope for policy makers to narrow their focus and specially regulate those riskiest financial sectors.

Thirdly, it provides a 10-year historical trend for the Canadian shadow banking system, which means there now exists continuous data that can horizontally review the trends from years past. Policy makers will then be able to track the shadow banking system's status annually and document any a significant differences within historical data.

5.1 Narrowing existing definitions

In the literature review section of this project, I examined four different perspectives regarding the definition of the shadow banking system: David Longworth's perspective (Canada), defines it as the transaction of contractual debt in narrow terms and all financial institutions outside regulated banks in broad terms. (David sides with the FSB's view in broad terms.) Zoltan Pozsar et al.'s perspective (US), believes that all credit intermediate activities that have no government guarantee consist of the shadow banking system. IMF argues that shadow banking is about the financial activities that do not take public deposits like traditional banks. The FSB's perspective sets simple and clear boundaries and alleges that the shadow banks are credit intermediations outside the regular banking system.

By using the above definitions, the scale of the shadow banking system is evaluated differently. The differences between the evaluation methods can be summarized as using either an entity-based approach or an activity-based approach. The former one emphasizes the institutional structure; while the latter one focuses on the risky behaviors.

This Capstone has adopted the ideas from these four perspectives, specifically from the FSB, which argues that shadow banking should be defined and measured in two ways: the broader way that provides the systematic scale strictly according to the definition; the narrower way that looks particularly at these activities that would expose financial risks. Therefore, the evaluating method used in this Capstone would internationally fit most definitions.

5.2 Evaluation of the system

In addition to giving a definition to the shadow banking system, this project provides an evaluation of the current Canadian shadow banking scale, and conclusions about two major areas that still expose risks to the Canadian financial system: the finance companies that do not take deposits from the public, and the structured finance vehicles (SFV), especially repo market within SFV. Their potential risks are shown as their large scales in relation to the whole financial system, as well as their division of regulating responsibilities between the federal and provincial governments.

Nevertheless, in general, the size of the Canadian shadow banking system is decreasing over the years, and the risks are evaluated to be under supervision and manageable.

5.3 Providing detailed data

I demonstrate in this Capstone that there are few studies that provided detailed measures for the Canadian shadow banking system. Without any exact numbers, the FSB's report only provides a chart that shows the 2013 scale for the Canadian shadow banking system. On the other hand, David Longworth's paper compares the 2007 and the 2011 data, but lacks continuous data. Based on the definition proposed earlier, this project summarizes the data for each component of the Canadian shadow banking system for the past 10 years.

The findings in this project provide policy makers with a direct sense of the component scale of each sector. The continuous data also provides policy makers with a reference in order

to vertically compare the past 10 years' trends. Due to the data constraint, data before 2004 are not available from the Bank of Canada Publication. If more data are accessible, it would be simple to use this framework and create a more detailed shadow banking scale for the past decades. Moreover, the adoption of an international framework in this project would also allow policy makers to horizontally compare the Canadian shadow banking scale with other economies.

6. Conclusion

A major purpose of this Capstone is to explain what financial entities and activities comprise the Canadian shadow banking system. In the literature review part, I summarized different perspectives from worldwide scholars and institutions. I also compared different methodologies from existing studies for purposes of measuring the size of the shadow banking system. Consequently, I decided to adopt the FSB's model in this project.

By defining the components of the system and by using the available data from the Bank of Canada Publication, this Capstone also estimates the scale and provides an evaluation of the system. As a result, in general, the Canadian shadow banking system is healthy and under effective monitoring and supervision.

However, among the sub-sectors in the system, two sectors require special attention: the finance companies and the repo market. In addition, further work is suggested for an evaluation to determine whether a macro-regulation for the shadow banking system is appropriate, especially for the finance companies and the repo market which may expose systemic risks to the financial system.

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8. Appendices

Appendix 1. Shadow Banking System Measurement Methodologies⁵⁰

The following chart is from Artak Harutyunyan, Alexander Massara, Giovanni Ugazio, Goran Amidzic, and Richard Walton's IMF report - *Shedding Light on Shadow Banking*. They have concluded with different definitions for the shadow banking system from international scholars and institutions. As seen, definitions and measurements given by different institutions vary significantly.

⁵⁰ Artak Harutyunyan et al., "Shedding Light on Shadow Banking," *IMF Working Paper*, January 2015, accessed June 10, 2015, <http://www.imf.org/external/pubs/ft/wp/2015/wp1501.pdf>, 4

Source	Institutional Coverage	Instrument Coverage
IMF:		
1) Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System (Pozsar, 2008)	Broker-dealers, government sponsored vehicles, investment conduits and limited purpose finance companies, SIVs	N/A
2) Exploring the Dynamics of Global Liquidity (Chen et al., 2012)	Banks, MMFs, OFCs	Nonresident deposits in commercial banks (hence cross-border deposits would be considered noncore) and other deposit corporations as well as loans and securities (other than shares) of commercial banks, nonbanks and other financial intermediaries
3) Shadow Banking: Economics and Policy (Claessens et. al, 2012)	Banks, dealer banks, and SPVs	Repos, securities, derivatives
4) Global Financial Stability Report, Chapter 2 – Flow of Funds approach (October 2014)	MMFs, financial leasing companies, broker/dealers, securitization vehicles, financial holding corporations, venture capital corporations, development capital companies and other entities.	N/A
IMF (STA):		
1) Mapping the Shadow Banking System Through a Global Flow of Funds Analysis (Errico et al., 2014)	Banks, OFIs	Deposits (including foreign currency deposits) at ODCs excluded from broad money; debt securities issued by ODCs, MMFs, and OFCs; loans received by ODCs and OFCs; and nonresidents' deposits with ODCs and OFCs.
2) Shedding Light on Shadow Banking (Harutyunyan et al., 2014)	Banks, MMFs, OFIs	Restricted deposits, MMF shares, debt securities, loans
3) Global Financial Stability Report, Chapter 2 – Noncore Liability measure (October 2014)	Banks, MMFs, OFIs	Restricted Deposits, MMF shares, debt securities, loans
OECD:		
Financial Statistics for Measuring the Structure and Size of the Shadow Banking System (Sartoru and Cavieres, 2012)	OFIs (including SPEs and financial vehicle corporation)	Currency, deposits, loans (by ODCs), securities other than shares (bonds, negotiable certificates of deposit, commercial paper, debentures, asset backed securities, and similar instruments normally traded in the financial markets) except financial derivatives or shares and other equities (for insurance corporations)

Source	Institutional Coverage	Instrument Coverage
ECB:		
Shadow Banking in the Euro Area - An Overview (Bakk-Simon et al., 2012)	All OFIs (financial institutions other than those included in the sectors monetary financial institutions and the insurance corporations and pension funds) ,	N/A
FSB:		
Global Shadow Banking Monitoring Report 2013 (FSB, 2013)	OFIs (all financial institutions that are not classified as banks, insurance companies, pension funds, public financial institutions, central banks or financial auxiliaries)	N/A
US:		
1) Shadow Banking and the Financial Crisis (FCIC, 2010)	MMMFs, hedge funds, investment banks, finance companies, asset-backed commercial paper conduits, government-sponsored enterprises, other financial guarantors	Unsecured commercial paper and asset-backed commercial paper, repos, securities lending, auction rate securities, derivatives
2) The Deloitte Shadow Banking Index (Deloitte Center for Financial Services, 2012)	MMFs, government-sponsored entities, SPVs	ABCP conduits, ABS, non-agency MBS, CDOs, repos, securities lending, and agency mortgage backed securities
3) FRBNY: Shadow Banking (Pozsar, Adrian, Ashcraft and Boesky, 2010)	finance companies, limited-purpose Finance companies, structured investment vehicles, credit hedge funds, money market mutual funds, securities lenders, and government-sponsored enterprises	Asset-backed commercial paper (ABCP) conduits, asset-backed securities, collateralized debt obligations, and repo
4) Financial Stability Monitoring (Adrian, Covitz and Liang, 2013)	Securities broker-dealers, hedge funds, private equity and other funds, asset management firms, insurance companies and pension funds, MMFs, other cash management funds	Tri-party repos, ABCP, financial commercial paper, uninsured certificates of deposits, variable rate demand obligations, tender option bonds
Other:		
1) Noncore Bank Liabilities and Financial Vulnerability (Hahn, Shin and Shin, 2011)	Banks	Time, savings and foreign currency deposits, restricted deposits; institutional money market mutual funds, repurchase agreements
2) Regulating Shadow Banking (Schwarcz, 2012)	SPEs (ABCP conduits, limited-purpose finance companies and SIVs), finance companies, hedge funds, mutual funds, government sponsored entities and investment banks	N/A
3) Regulating the Shadow Banking System (Gorton & Metrick, 2012)	MMFs, SPEs	Demand deposits, repos, securitized bonds and related assets, including many classes of asset-backed securities (ABS) and CDOs

Source	Institutional Coverage	Instrument Coverage
4) Shadowy Banking: Theft by Safety Net (Kane, 2014)	An institution or bank-sponsored SPV. It covers any financial organization, product, or transaction strategy that can opaquely extract subsidies guarantees from national and cross-country safety nets by means of 'regulation-induced innovation'	Swaps, repurchase agreements, futures contracts and AAA securitizations that may trade for substantial periods of time as if they carried zero performance risk
5) Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance (Mehrling et al., 2013)	Money market funding of capital market lending on the balance sheets of banks and OFIs	Residential mortgage backed securities (RMBS), credit default swaps, interest rate swaps, foreign exchange swaps
6) Money and (Shadow) Banking: A thought experiment (Ricks, 2012)	Maturity transformation outside banking social contract	N/A

Appendix 2. FSB's Template

The following template is created by the Financial Stability Board in its report *Global Shadow Banking Monitoring Report 2014* for collecting data about the Other Financial Intermediaries (shadow banks). Details regarding this template can be found in page 28 of the report.

[Click here for the Link to the report.](#)

	STOCK of financial assets as of end-year	2002....2013	Source (Description, confidentiality, URL)	Note (Detailed definition etc.
Col 19	Other Financial Intermediaries (OFIs) =sum of col 20 to col 34			
Col 20	MMFs - of which constant NAV or equivalent (Note 5 ⁱ)			
Col 21	Other MMFs (Note 5)			
Col 22	Finance Companies			
Col 23	Structured Finance Vehicles			
Col 24	Hedge Funds (Note 6 ⁱⁱ ,8 ⁱⁱⁱ)			
Col 25	Other Investment Funds - equity funds (Note 7 ^{iv} ,8)			
Col 26	Other Investment Funds - fixed income funds (Note 7,8)			
Col 27	Other Investment Funds - other funds (Note 7,8)			
Col 28	Broker-dealers			
Col 29	Real Estate Investment Funds and Trusts			
Col 30	Trust Companies			
Col 31	XX (Note 1)			
Col 32	XX (Note 1)			
Col 33	XX (Note 1)			
Col 34	Others			
Col 35	Financial Auxiliaries (Note 9 ^v)			
Col 36	Exchange rate at end of the period (Note 10 ^{vi})			

ⁱ Note 5: If data for MMFs cannot be separated between CNAV and Others, please fill the aggregated number in the Other MMFs cells and explain that in the Note cell.

ⁱⁱ Note 6: If data for hedge funds cannot be separated from Other Investment Funds, please fill the aggregated number in the Other Investment Funds cells and explain that in the Note cell.

ⁱⁱⁱ Note 8: Please provide data for funds that are domiciled in your jurisdiction. For jurisdictions that are host to fund managers managing funds domiciled offshore, please provide financial assets under management by fund managers registered/licenced in your jurisdiction but domiciled offshore at the end of 2013 in the Note cell. If possible, please also provide the name of the jurisdiction in which funds these funds are domiciled.

^{iv} Note 7: If data for Other Investment Funds cannot be separated between Equity Funds, Fixed Income Funds and Other Funds, please fill in the aggregate number in the Other Funds' cells and explain that in the Note cell.

^v Note 9: If your Flow of Funds / sectoral accounts distinguish financial auxiliaries, please describe what they are and provide examples

^{vi} Note 10: USD per local currency unit.