

Shadow Banking: Non-bank Credit Intermediation Heightens Risks for the Global Financial System

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OVERVIEW

Shadow banking generally refers to credit intermediation activities performed outside of the banking system.

On the plus side, shadow banks increase overall credit availability, providing more sources of liquidity, thereby supporting economic growth and diversifying risk across the financial system.

On the negative side, while shadow banks can take on similar risks to banks, they are not subject to the same risk controls required by bank regulators because they do not take in deposits; further, shadow banks do not have the benefit of government backstops that are intended to prevent runs and panics and ensure financial market stability.

As was demonstrated in the 2007-2009 global financial crisis, failures within the shadow banking sector can spread to the broader markets and cause significant disruption. Regulatory reforms have since been implemented to increase the resiliency of the financial system. The Basel Committee on Banking Supervision has introduced numerous new and/or enhanced standards governing banks, and banks are now subject to more stringent capital requirements, as well as new leverage and liquidity tests. Specific to shadow banking, the Financial Stability Board (FSB) has developed a framework to improve monitoring as well as regulatory coverage of the non-bank sector. Further, the riskiest shadow banking activities, including use of opaque off-balance sheet vehicles and reliance on volatile securities as collateral for financing, as well as concentration of counterparty risk for derivatives, have been addressed through specific rules.

However, regulation for shadow banks remains much less robust than it does for banks. In particular, the capital, leverage and liquidity reforms that have been implemented post the financial crisis apply only to banks, allowing shadow banks to take on higher levels of risk. Implementation of a consistent approach to assessing and mitigating shadow banking risks across the globe remains challenging because the activities within the sector are diverse and continue to evolve.

The global shadow banking sector is growing, fuelled by the increased regulation for banks, combined with an increase in the overall demand for credit, as well as appetite for innovative, technology-based products. Investors, both institutional and retail, searching for yield in the low interest rate environment have provided the necessary funding for the sector's expansion.

A growing and evolving sector, with similar risks but fewer formal risk controls, leads one to question whether the existing governance approach is sufficient. Our view is that more needs to be done to make the global financial system safer and to curtail regulatory arbitrage.

In particular, we recommend that national regulators introduce a minimum liquidity requirement for their systemically important non-bank entities as a starting point to reduce the risk of a shadow banking sector liquidity event creating a crisis for the broader financial markets.

We also recommend:

- Increasing the disclosure provided to consumers that borrow from non-bank entities. The products they offer can expose already vulnerable borrowers to significant leverage and the downside risks and impacts should be clearly understood; and
- Improving the disclosure for investors in the growing array of credit-related investment products so that the associated risks to capital, as well as the ability to redeem their investments, are made clear.

Introduction

Shadow banks are not licensed under banking legislation¹; they do not take in deposits therefore they are not subject to the banking regulations intended to protect depositors (who provide the funds that underpin the entities' operations) and taxpayers (who ultimately bear the cost of bailouts).

This creates an uneven playing field as entities not subject to banking regulation can operate more efficiently: they can be more innovative; they can implement change more expeditiously; and they do not bear the costs associated with regulatory compliance. Further, without the capital, leverage and liquidity controls that govern banks, they can take on more risk. While not all of the activities of shadow banks are inherently risky, the fact that there are fewer risk controls means there is the potential for unchecked growth in the higher risk areas.

Shadow banks involved in credit intermediation can operate like banks by borrowing, leveraging their balance sheets (in some cases²) and providing credit. They incur the same types of risks as banks, most notably credit risk, liquidity risk and maturity mismatch risk, but they generally do not have the benefit of a "safety net" in the form of government depositor insurance and back-up liquidity lines.

Because their activities are interrelated with those of banks, problems in the shadow banking sector can easily spread to the traditional banking system, as demonstrated during the 2007-2009 financial crisis³ and may not be solvable privately (i.e., without a government bailout), notwithstanding the lack of explicit government backstops for non-banks.

Increasing regulation for banks, combined with growing credit demand, has stimulated growth in the shadow banking sector, as activities move to the less restrictive, lower cost operating environment. A report by McKinsey [10] highlights the growing importance of non-bank credit providers and notes that since 2008, most new credit in advanced economies has come from non-bank sources.

Start-ups, with more efficient, technology-enabled lending platforms, often aimed at higher risk customers that are not targeted by banks, have also been increasing in number and growing in size. A quick internet search for on-line lenders reveals numerous pages of results. Two of the larger firms are Lending Club and Enova: Lending Club has funded over US\$24 billion in loans, and Enova, which focuses on non-prime loans, has originated over US\$19 billion in loans⁴. Their growth trajectories have been significant.

Growth and innovation in the sector, together with expanding risk appetite in certain areas, is heightening risks for the financial system. There are a few areas we think deserve particular attention: geographically, the US and China; sectorally, auto finance and consumer lending, primarily in the USA, Canada, UK and Australia.

The US shadow banking sector comprised 40% of overall shadow banking assets at the end of 2014 [6]. While size alone is not necessarily indicative of risk, the breadth of shadow banking activities, size of some firms and uncertainties around financial market regulation heighten the possibility that developing/increasing risks may not be identified or addressed. The 2008 failure of Lehman Brothers, and the failure of hedge fund Long Term Capital Management in 1998 demonstrate the systemic risks posed by the failure of large non-bank firms, including the impact on asset prices during "fire sales" and contagion to the broader financial system. As already noted, the regulatory reforms introduced post-crisis do not include capital, leverage or liquidity requirements that would mitigate the potential for large non-bank firm failures and the associated systemic impacts. It is also worth noting that as a result of financial reforms post the global financial crisis, the US central bank does not have the legal ability to be the lender of last resort for individual firms outside of the banking system. This limits the central bank's ability to step in during a crisis.

China is another area to watch. The country has experienced a very rapid expansion in debt, with debt to GDP climbing to 277% at the end of 2016 [14]. Much of the growth is associated with real estate and infrastructure spending. This demand for credit, together with the restrictions on the activities of China's banks, has fuelled the growth of the shadow banking sector. Investor demand for yield has facilitated funding through wealth management products where the underlying assets are loans. Much has been written about the possibility of a real estate market collapse and questions have been raised regarding the viability of some infrastructure projects, creating concerns about potential for loan losses. At an estimated 8% of GDP [6], China's shadow banking sector remains relatively small and therefore not currently a significant systemic risk, but risks to China's economy remain: a marked deceleration in economic growth, triggered by loan losses at both banks and non-banks, would have ripple effects globally.

Although of a much narrower scope, and therefore less likely to pose serious threat to overall financial stability, internet-based consumer lending platforms, designed to simplify borrowing and fill gaps in traditional lending, have been expanding around the globe, in both developed and emerging economies. There have been numerous start-ups in this increasingly competitive field, including many lenders specifically targeting higher risk (non-prime) borrowers.

Our view is that consumers of non-bank credit and the retail investor community that is providing some of the funding for these lenders are being exposed to higher risk levels without adequate understanding of the risks and downside possibilities.

Cracks will likely emerge in conjunction with rising interest rates, typically associated with a stronger economy, if income growth is not sufficient, or fast enough, to allow borrowers to continue to make their payments. Conversely, if there is an economic downturn, higher unemployment rates will mean some borrowers will no longer have the income to support their loans. Either outcome, i.e., economic improvement or deterioration, makes existing high debt levels unaffordable. Credit losses and/or a liquidity challenge in the non-bank sector will then expose the inherent risks.

In recognition of the overall growth in shadow banking and the associated systemic risks, in 2010 the Financial Stability Board (FSB) was tasked with strengthening regulation and oversight. In response, the FSB introduced a policy framework [5] comprising guiding principles for local regulators and a “toolkit” for implementation in 2013; however, implementation remains in early stages, attributed largely to the need to improve data collection and consistency in classification of shadow banking activities.

Regulators also face the challenge of balancing the right amount of regulation and oversight with the appropriate level of backstop protection.

Shadow Banking Defined

The term “shadow banking” was coined in 2007 by a senior executive at an asset management firm⁵ to describe the structures created by large Western banks before the financial crisis to keep securitized assets, often in the form of complex structures, off their balance sheets through the creation of special purpose vehicles.

The term is now commonly used more broadly, encompassing all credit intermediation activities performed by non-banks, and sometimes referring to any bank-like activity, incorporating both credit and non-credit activities such as asset management. There is, however, no universally accepted definition. Most academics and central bankers use the narrower definition focused on credit intermediation.

In its monitoring of shadow banking, the FSB narrows the scope of credit intermediation further, zeroing in on credit activities that can give rise to systemic risk, i.e., activities that involve maturity transformation, leverage, and/or imperfect risk transfer⁶.

Financial Stability Board Description of Shadow Banking [6]

“The shadow banking system can broadly be described as credit intermediation involving entities and activities outside of the regular banking system. Intermediating credit through non-bank channels can have important advantages and contributes to the financing of the real economy, but such channels can also become a source of systemic risk, especially when they are structured to perform bank-like functions (e.g. maturity and liquidity transformation, and leverage) and when their interconnectedness with the regular banking system is strong.”

Maturity/liquidity transformation, which is the use of short term liabilities to fund longer term assets, and use of leverage are common to both banks and non-banks. The key difference is that banks are subject to restrictions designed to control the associated risks whereas non-banks generally operate without such limitations.

The maturity mismatch created by using short term financing to fund longer term loans creates liquidity risk should the investors in the short term paper want their money back before the underlying assets (i.e., the loans) can be called or sold. A mass withdrawal of investor funds, typically following an event that triggers a real or perceived concern as to the safety of funds, is referred to as a “run” on the institution. There are several historical examples of bank runs from the 1930s depression as well as the more recent run on the British bank Northern Rock during the global financial crisis. The short-term obligations of shadow banks also proved susceptible to runs during the global financial crisis, as demonstrated by the collapse of Bear Sterns and Lehman Brothers. Because of the lack of “safety net” for non-banks, it would be fair to assume that panic and runs would be more likely to occur relative to traditional banks that have established backstop protections. Further, as a result of shadow banks being outside of the bank regulatory realm, the response to a system shock would likely be more ad hoc [3].

Use of leverage also creates risk: the more highly levered the entity, the smaller the capital buffer available to absorb credit losses.

Regulations for banks have become more stringent following the global financial crisis, with more capital required, new restrictions on leverage and new requirements for liquidity, along with more restrictions on the types of activities allowed. Non-banks do not face the same degree of regulation, creating an opportunity for regulatory arbitrage. According to the International Monetary Fund [9], the ongoing tightening of bank regulations may be encouraging a shift of traditional banking activities to non-bank firms.

A \$36 Trillion (and growing) Sector⁷

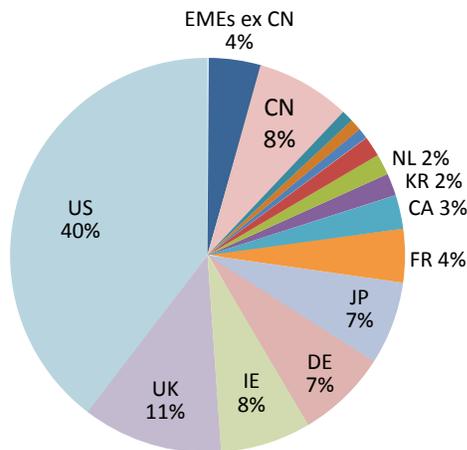
According to the FSB’s most recent global report on shadow banking [6] (and using its activities-based approach to define and measure the shadow banking sector – see Appendix 1 for more detail), shadow banking assets were \$36T globally at end of 2014, up 10.1% (\$1.1T) year-over-year, with average annual growth of 6.3% for 2011-2014. This compares with \$135T in bank assets at the end of 2014 which were up 6.4% year-over-year with average growth of 5.6% for 2011-2014.

Based on assets, shadow banking is about 27% of the size of the banking industry, but growing at a faster pace.

Notably, shadow banking assets are concentrated in the USA and Europe. The USA has the largest sector at \$14.2T, representing 40% of global shadow banking assets. The UK is second largest at \$4.1T or 11%, with a further 24% (\$8.7T) in other European countries.

China’s shadow banking assets have grown considerably, from 2% of the global total in 2010 to 7.7% in 2014, making it the country with the third largest shadow banking sector at the end of 2014.

SHARE OF SHADOW BANKING ASSETS, END OF 2014



CA = Canada;
 CN = China;
 DE = Germany;
 EMEs ex CN = Argentina, Brazil, Chile, India, Indonesia, Mexico, Russia, Turkey, Saudi Arabia, South Africa;
 FR = France;
 IE = Ireland;
 JP = Japan;
 KR = Korea;
 NL = Netherlands;
 UK = United Kingdom;
 US = United States

Source: FSB’s Global Shadow Banking Monitoring Report, November 2015

The overall ratio of shadow banking assets to GDP is also increasing, meaning the sector is becoming more significant, reaching 59% in 2014, up from 55% in 2012. The size of the shadow banking sector relative to GDP, by country, varies widely. Countries with relatively large shadow banking sectors include the UK at 147% of GDP, Switzerland at 90% and the USA at 82%. Ireland is highest, at 1,190%, although the majority of the assets and liabilities of these entities are located outside of Ireland [6].

SHADOW BANKING PERCENTAGE OF GDP, TOP 10, END 2014

	% of GDP
Ireland	1,190
United Kingdom	147
Switzerland	90
United States	82
Netherlands	74
Germany	73
France	71
Japan	60
Canada	58
Korea	48

Source: FSB’s Global Shadow Banking Monitoring Report, November 2015, Supplemental Data File

In our assessment, countries with the largest share of global shadow banking assets that also have large shadow banking sectors relative to their economy pose more risk to the financial system; countries experiencing significant growth in shadow banking are also areas to watch for heightened risk. Using this criteria, we highlight the USA, the UK, China and Ireland.

The USA’s shadow banking sector is the largest in terms of its contribution to the global sector; in terms of size relative to GDP it is fourth. Sheer size makes this an area to watch as a potential risk to global financial market stability.

The UK has the second largest shadow banking sector as measured against GDP. This is in part reflective of the international nature of financing in Europe, with London as the financial centre. We note the UK also has a large banking sector as a percentage of GDP (ranks third at 601%, following Hong Kong at 817% and Singapore at 607%). Again, sheer size poses a risk to global financial market stability.

China’s shadow banking sector has grown significantly, but remains relatively small in relation to GDP, at 26% [6]. Many observers have identified China as an area to watch though due to growth as well as challenges with respect to credit quality.

Ireland has the fourth largest contribution to global shadow banking assets, and it has by far the largest shadow banking sector relative to GDP: it is the one jurisdiction where the shadow banking sector is larger than the banking sector. However, a significant portion of the assets (and liabilities) of the entities are not domiciled in Ireland (many are investment funds with Ireland as the registered home office), making it difficult to assess the risk at the country level. As a result this too is an area to watch.

LARGEST CONTRIBUTORS TO SYSTEMIC RISK

Country	Share of Global Shadow Banking Assets			Relative Size of Shadow Banking Sector to GDP	
	2014	Rank	Change from 2010	SB Assets as % of GDP	Rank ¹
USA	40%	1	Down 2%	82	4
UK	11%	2	Down 23%	147	2
China	8%	3	Up 400%	26	13
Ireland	8%	4	Up 14%	1,190	1

Sector Composition

Alternative lenders such as mortgage companies, auto lenders, leasing companies, and other non-bank credit providers⁸ are likely what most people think of when defining non-bank credit intermediation, but the sector is much broader. Other entities and activities that involve maturity/liquidity transformation include⁹:

1. Credit based investment funds, such as money market funds, mutual funds, exchange-traded funds and hedge funds;
2. Securities financing (repurchase agreements and securities lending) and other broker-dealer intermediation activities that are not consolidated into an entity subject to regulation; and
3. Securitization vehicles.

Lending by non-bank entities comprised 8% of shadow banking assets at the end of 2014, based on FSB information¹⁰. Credit based investment funds¹¹ and securities financing each represented more of the overall shadow banking sector assets. This shadow banking sub-sector is by far the largest, at 60% of all shadow banking assets at the end of 2014. Intermediation of market activities where there is reliance on short term funding or on secured funding, such as securities financing

transactions, involves rollover risk (i.e., funding liquidity risk), particularly when investing borrowed cash involves a maturity mismatch. This is the second largest shadow banking category at 11%. Securitization of longer term assets, which accounted for 7% of shadow banking activities, involves maturity transformation, and also involves reliance on market liquidity; it can also involve leverage. That said, since the financial crisis, securitization activities have reverted to the less complex structures, reducing the associated risk.

We also note that assets alone are not necessarily the best indicator of risk concentration because some of the activities / entities are governed by other bodies, such as securities regulators, which can reduce systemic vulnerabilities.

As previously noted, we think credit based investment funds and non-bank lending activities are the areas warranting more attention due to lower transparency of risks.

Factors Contributing to the Rise of Shadow Banking

The factors underpinning the evolution of shadow banking include increasing bank regulation, low interest rates and technological innovation. We comment on these three drivers below.

Regulation:

Banks are heavily regulated in order to protect depositors and taxpayers, and over the past decade we have seen a tightening of the rules in order to reduce the risk in the financial system. Banks must hold more capital and they are now subject to liquidity and leverage restrictions. Regulation also constrains what activities banks can engage in, and the cost of regulatory compliance is significant. Post the financial crisis, the financial sector has deleveraged, with lower lending activity creating an opportunity for non-bank lenders. Shadow banks are freer to take on higher levels of credit risk, leverage and liquidity risk and do not bear the same costs associated with regulatory compliance¹². They can offer more to borrowers than banks can, including loans where the risk levels are deemed too high for traditional banks, and they generally have lower operating costs plus nimbler platforms for improved service efficiency.

Low Interest Rates and Ample Liquidity:

Low interest rates have been motivating both retail and institutional investors to look for ways to get a better yield on their money, providing access to funding for non-bank lenders.

Alternative investment funds such as hedge funds and other private investment funds as well as sovereign wealth funds have branched out into direct lending activities outside of the traditional banking system and associated regulation as well to take advantage of opportunities where banks have pulled back.

1. The third largest in terms of SB assets to GDP is Switzerland, at 90%;Switzerland's SB assets are 1.6% of the global total.

Mutual fund companies offer a growing array of credit funds for retail investors.

Insurance companies and pension funds have increased the scope of their lending activities in order to find ways to invest their surplus funds.

The appetite for credit has been increasing as well: governments, corporations and households are all borrowing more, stimulated in part by low interest rates which make borrowing cheap.

Technology:

Technology, and consumer appetite for technology-based solutions, is also a factor in the evolution of shadow banking, particularly for household loans. New entrants are not burdened by legacy systems and can develop nimbler platforms that make the decision process faster and simpler. Technology is also making it easier to bring together borrowers and investors through peer-to-peer applications¹³.

As long as these advantages continue to exist, we expect shadow banking will continue to grow.

We see a material rise in interest rates, or an economic downturn with higher unemployment, as potential catalysts for problems within the sector.

Areas of Risk

Shadow banking activities, and in particular complex securitizations where increasingly risky loans and other obligations were packaged (and repackaged) into securities with multiple layers that compounded leverage and obscured risk, were a root cause of the global financial crisis. When some funds began losing money on their riskier holdings, investors panicked and withdrew from money markets. This in turn caused liquidity for these funds, which relied on short term funding for their longer term assets, to dry up.

Post the financial crisis, there has been a retreat from the riskiest shadow banking activities such as complex securitizations¹⁴, and regulatory reforms have been introduced targeting specific activities to mitigate associated risks. That said, certain areas continue to grow and pose potential risks to the broader financial system. Further, innovation is almost always a potential risk as products and activities are transformed in an effort to create new or expanded opportunities (as was seen in the evolution of the securitization market leading up to the financial crisis).

Below we highlight the evolving activities of non-bank mortgage lenders and auto finance companies, as well as China, as areas of potential concern. The US is also an area to

watch, as noted previously, due to the size of the non-bank sector, large firm concentrations and the (potentially) changing regulatory environment.

Non-bank mortgages:

As noted earlier, there has been significant growth in both the number and size of consumer lending companies, including non-bank mortgage providers. This business is well established in the US; it has been growing in importance in Canada over the past decade. Many are internet-based firms that can operate with lower costs and therefore offer very competitive, and highly transparent, rates.

While some borrowers may be drawn to the appeal of their internet-based, simpler application processes, and the ability to easily shop for and compare interest rates, others may be seeking more relaxed credit terms if they are not able to qualify for more traditional bank financing.

These lenders can offer mortgages that are outside of the criteria set by banks to meet regulatory standards¹⁵. For example, they can offer higher loan-to-value ratios and higher loan-to-income ratios (where debt servicing costs take up a larger portion of income), and/or longer amortizations. Generally, more of their borrowers tend to be financially stretched [2]. These firms also operate outside of the capital and liquidity requirements set for banks. Further, they are monoline businesses without diversification of operations. As a result, these entities are more vulnerable to downside economic risks.

If a large non-bank lender were to fail, the investors would bear the risk of loss. However, the loss event would likely have a contagion effect across other non-bank lenders, triggering withdrawals of funding and equity redemptions (where permissible). In addition to investor withdrawals from shadow banks, investors could also withdraw from other investments related to mortgages more broadly out of fears of a collapse in the real estate market, exacerbating the situation.

The mortgagees could also be affected by the failure of their lenders, encountering challenges in refinancing. They could be exposed to higher interest rates, or even required to sell their homes.

We question whether the more vulnerable mortgagees have adequately considered the downside risks regarding their level of leverage. Further, investors that fund the higher risk activities may not be fully aware of the level of credit risk taken on, or the leverage and liquidity risks associated with the non-bank entities' operations.

For peer-to-peer lenders, risk to the overall financial system is considered to be relatively low at present based on market size and future outlook: some of these lenders are likely to

be absorbed by banks; those that reach the “critical mass” necessary to go public will face increased operational costs to meet disclosure requirements, reducing their competitive advantage; others that finance the “unbankable” segment may

fail due to credit losses or lack of funding as these entities will become less attractive to investors when interest rates rise and investors can earn acceptable yields from more conventional investments. Nonetheless this is an area to watch.

Canada’s Mortgage Finance Market [2]

Canada’s mortgage market has been dominated by its banks, although non-bank lenders, specifically mortgage finance companies, mortgage investment corporations and private lenders, have been increasing their activities over the past decade.

Canada’s non-bank mortgage market is dominated by four mortgage finance companies. Their share in Canada’s C\$1.6 trillion mortgage market rose to 12.5% in 2015, compared with 6.6% in 2007. Mortgage finance companies are financial institutions that underwrite and administer mortgages that are sourced through brokers. The vast majority of their mortgages are underwritten to the same standards as banks because these firms either sell their mortgages to banks, or fund them through public securitizations¹⁶ and as a result they must comply with the regulatory rules for banks’ mortgage activities. That said, generally these lenders have a larger share of mortgages with higher loan-to-income and debt-service ratios.

Mortgage investment corporations and private lenders represent a much smaller segment of the market. Mortgage investment corporations and other private lenders offer non-traditional mortgage products (i.e., mortgages not typically available through banks), such as non-prime mortgages, second mortgages and very short-term mortgages. These lenders can adopt their own credit standards, offering financing to those that would not qualify under bank rules (at higher rates), because they do not sell their mortgages to banks or rely on the public securitization market.

These non-bank lenders do not have to meet the regulatory criteria for capital, leverage and liquidity because they are not deposit taking institutions. As a result, they are more vulnerable to deterioration in the real estate market as well as higher interest rates and/or unemployment rates.

In addition, some lenders are skirting the rules that apply to mortgages funded via securitization: some mortgage investment companies are providing second loans to facilitate the down payments, resulting in higher loan-to-value ratios [13]. This puts the borrowers at increased risk of taking on too much debt, making them more vulnerable to interest rate increases, house value declines and/or loss of employment.

Taking into consideration the tightening of banking regulations for mortgages introduced over the past several years, we would expect that the Canadian bank regulator, the Office of the Superintendent of Financial Institutions, will continue to act to address this and other risks as they evolve.

Auto finance:

The auto finance sector has also been growing, particularly in the US, UK, Canada and Australia. As an example, according to a March 2016 report by the Financial Consumer Agency of Canada (FCAC) [4], the Canadian auto finance market nearly doubled in size in eight years, outpacing all other forms of household credit growth, including mortgages.

Prior to the financial crisis, the financing arms of the auto manufacturers dominated the auto finance market in the USA and Canada, but strong auto sales combined with low interest rates have fuelled growth in the auto finance sector and an expansion into the market by both bank and non-bank lenders, including prime and non-prime lenders¹⁷. Increased competition has resulted in looser financing practices, with more extended term loans/leases, known as “ETLs”, that go

well beyond the once traditional term of five years, with terms of up to eight years now available. According to Experian¹⁸, the average term in the USA is 68 months versus 62 months in 2009. The longer terms are allowing borrowers to afford more expensive cars for the same payment they would have made for a less expensive car based on the traditional five year term. But most consumers continue to opt to trade in their vehicles and break their loans/leases at the four year mark [4], when the value of their vehicle is still less than the amount outstanding on the loan¹⁹. As a result, they have to carry forward their outstanding obligation, rolling it into their new financing. They are also paying a lot more in interest charges as a result of the longer term financing, noting as well that the interest rates charged by non-prime lenders can be exceptionally steep.

The FCAC raises a concern that consumers are not likely getting the information they need to evaluate the costs and risks

associated with longer term financing: they are focused on the affordability of the monthly payments.

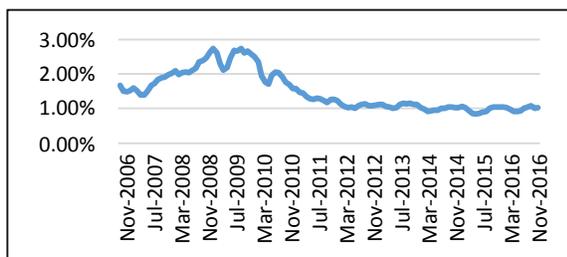
FCAC notes that when consumers are carrying more debt, they are more vulnerable to changing circumstances such as job loss. Further, having negative equity in their auto financing puts them on a “financing treadmill” where their obligations snowball and make future refinancings more difficult, and raising the probability and size of potential default/loss. It could also put in jeopardy their ability to meet other debt obligations.

With the overall trend to higher loan-to-value, the investors financing the loans/leases are also facing increasing risks both as a result of higher potential default rates as a result of unsustainable debt levels, but also because the used car market could crash when a high volume of vehicles relating to recent record sales are returned to the dealer.

At present the risk level seems low: according to the S&P/Experian Auto Default Index²⁰, default rates on US auto loans remain relatively low (December 2016: 1.03% vs 10 year peak of 2.75% in February 2009), reflecting the overall strength of the economy.

We believe that the increasing prevalence of ETLs and the unsustainability of rolling over negative equity will result in increasing default rates and reduced investor appetite, which will pose challenges for an industry reliant on leverage and maturity transformation.

AUTO LOAN DEFAULT RATES (USA)



Source: S&P Dow Jones Indices

If a shock to investor confidence occurs, perhaps as the result of a rise on default rates or the failure of an auto finance company, we speculate that money market funds may not be able to maintain demand for finance-company commercial paper, creating a sector specific liquidity crisis that could extend to the broader asset backed commercial paper markets.

China:

China has experienced a rapid expansion in credit since the end of the financial crisis, adding \$20T of new debt between 2007 and mid-2014, which is more than one-third of global debt growth over this period [10]. Debt to GDP reached 277% at the end of 2016 [14].

China’s explosive debt expansion has been driven largely by its real estate boom and infrastructure spending. Traditional banks have been unable to meet the growing demands for credit to support real estate investments due to increasingly strict regulatory limitations, designed to cool the market. China’s shadow banking sector has grown in response, up from 2% of global shadow banking assets in 2010 to 7.7% in 2014, making it the third largest, and notably the jurisdiction with the most significant growth. That said, China’s shadow banking sector remains small relative to its banking sector: shadow banking was 26% of GDP at end-2014 whereas banking was 271% of GDP [6].

Most of China’s shadow banking activities relate to loans (other areas of shadow banking are much less developed in China) with trusts (often linked to banks) being the dominant provider. Associated funding comes from wealth management products offered by shadow banks to a growing market of household and business investors that have been seeking yields higher than what banks pay. These products provide a return based on performance of underlying assets, typically a pool of loans, but in some cases one large loan.

The main risk relates to the quality of the underlying loans: if the real estate market crashes, and/or if loans for real estate and/or infrastructure projects cannot be repaid, sizable loan losses could result, causing both bank and non-bank lenders to incur losses, and potentially fail. Investors in wealth management products would also lose out. Further, China’s economy could suffer.

Liquidity could also become an issue: a study by the China Academy of Financial Research warned that a redemption shock for investment products could occur as promised returns in the 10 to 15 percent range are likely not achievable²³.

Potential problems could also result from the government’s attempts to regulate shadow banking activities. For example, the government’s new Macro Prudential Assessment framework includes measures, including higher capital requirements, targeting use of off-balance sheet structures (such as trusts) to avoid lending quotas. Implementation could result in lenders’ liquidating assets, in turn negatively affecting valuations²².

Given the relatively smaller size of China’s shadow banking sector and its limited reliance on wholesale funding, combined with the fact that trusts do not provide liquidity to the broader financial system, we think that the risk to the financial system posed by shadow banks is currently low. If the shadow banking sector is larger than estimated, or loan quality is worse than anticipated, or growth proceeds unchecked from a risk perspective, the risk to the financial system could be greater than currently estimated.

While the consensus seems to be that China has the resources to support its lenders, if a crisis did occur and the government does not provide the anticipated support, there would likely be a spillover effect across the financial markets as questions are raised about other activities where government support was assumed.

Regulation

Post the 2007-2009 financial crisis, specific reforms have been introduced to address the riskiest shadow banking activities. For example:

- Use of off-balance sheet special purpose and structured investment vehicles has been curtailed to address risk opacity;
- Central clearing of certain derivatives has been introduced to reduce counterparty credit risk, and
- Certain money market funds can only invest in government assets to improve the stability of funding sources.

More broadly, in 2010, the FSB was tasked by the G20 to devise ways to improve the oversight of the shadow banking system as part of the overall regulatory agenda post the financial crisis. In response, the FSB introduced a Policy Framework in August 2013 that sets out general principles to guide local regulators²³. The FSB also continues to monitor the global shadow banking industry and is working to improve data availability and consistency.

The International Monetary Fund (IMF) advocates for integration of shadow banking into the regulatory framework in order to mitigate systemic risk, noting that a crisis in the shadow banking sector may spill over into the broader financial system. Further, the IMF supports a risk based approach: “Overall, the degree to which shadow banking requires regulation and oversight depends largely on the degree to which it contributes to systemic risk.”²⁴ The IMF also advocates for improved transparency of information for investors to facilitate risk assessment, and for policy cooperation across jurisdictions to prevent cross-border regulatory arbitrage and to enhance global financial stability [9].

Notwithstanding the recommendations of these global oversight bodies, the shadow banking system, and in particular the bank-like credit intermediation activities, remains largely under-regulated. The FSB’s May 2016 report on implementation indicates that implementation of the framework remains in early stages and that jurisdictional efforts so far appear to have focused on data gathering to facilitate risk assessment [7].

Bank of Canada Approach

The Bank of Canada introduced a framework to assess risks and identify areas for monitoring in 2013 [8]. In line with the FSB Policy Framework, the Bank of Canada’s framework focuses on risks associated with maturity transformation, liquidity transformation, leverage and imperfect credit-risk transfer. The report concludes that the composition of the shadow banking sector in Canada is relatively conservative, with a large portion of activities (in particular securitization of government insured residential mortgages) conducted by or involving regulated entities and backed by an explicit government guarantee.

In its most recent report on shadow banking in Canada [15], the Bank of Canada concludes as follows: “Based on currently available information, we judge that the shadow banking sector does not pose large vulnerabilities for the Canadian financial system because of the low degree of liquidity and maturity mismatch and the low leverage in most parts of the sector.” Further: “While stresses in shadow banking markets and entities could lead to losses for some investors, the potential for a system-wide impact is judged to be small at this time.” It appears that future efforts will continue to focus on addressing data gaps, as well as on monitoring activities.

Is a more robust effort required?

As noted earlier, we think that (i) as long as the regulatory advantage continues to exist for shadow banks, and interest rates remain low, we expect the sector will continue to grow; and (ii) potential for problems within the sector will increase if there is a material rise in interest rates or an economic downturn. A growing sector, facilitated by regulatory arbitrage, with limited “checks and balances” to control how the sector evolves, and potential for problems in both a good and bad economic scenario begs the question of whether the “wait and see” approach focused on monitoring is enough.

Some advocates for regulation seek to apply banking-like regulation to shadow banking, without extending the benefits that banks receive in the form of liquidity backstops in order to address systemic risk. Simply applying minimum liquidity requirements (to mitigate against the risk of runs triggered by maturity transformation risk and market liquidity / funding risk) and minimum capital requirements together with maximum leverage requirements (to ensure a buffer for losses) similar to requirements for banks seems appealing from a risk mitigation standpoint, but it would be costly for both the non-bank entities and for governments. It would also be one sided, unless governments were also prepared to extend the liquidity backstops that exist for banks to non-banks.

Shadow Banking Regulation, Federal Reserve Bank of New York, Staff Report No. 559, Tobias Adrian and Adam B. Ashcroft, April 2012 [1]

This paper notes that it is the maturity transformation that renders financial intermediaries intrinsically vulnerable since by definition an entity engaging in maturity transformation can at no time honour a sudden request for full withdrawals. The authors conclude that in order to reduce the risks associated with maturity transformation, the non-bank credit intermediation system needs less leverage, asset risk and maturity transformation to survive periods of extreme stress.

Shadow Banking and Financial Regulation, Harvard Law School Forum on Corporate Governance and Financial Regulation, September 18, 2010 [11]

This paper asks the question “If the safety net is conducive to stability, why not extend it to shadow banks?” The authors look at the arguments for, which typically involve imposing regulations, but without the privileges of the social contract (i.e., depositor insurance and liquidity backstop, provided to banks in exchange for regulatory restrictions), and against (would vastly expand the government’s explicit commitments to the financial system and put more of a burden on taxpayers); could encourage risky behaviour (“moral hazard”); regulations are costly and reduce credit formation and commercial activity). The authors put forth a proposal that we might disallow financial firms outside of the “social contract” from engaging in maturity transformation, i.e., require that they do not raise funds via money markets but rather use term funding, but noting that many of the firms would not be viable on a term funded basis.

A one-size-fits all approach to both banks and non-banks would put an end to the shadow banking sector. In our view, this should not be the goal recognizing their contribution to credit liquidity and diversification of risk.

That said, the shadow banking sector should not be allowed to continue unchecked even if authorities currently view systemic risk as low. Additional risk controls are needed, particularly in regards to maturity transformation and liquidity risks, and for preventing undue concentrations, to mitigate the risks that shadow banks pose to the stability of the overall financial system as they grow and evolve.

Further, non-bank lenders should not be able to over-lever their customers: at a minimum, increased transparency of the risks facing borrowers is needed (including the risk of their loans being called) so that borrowers can make informed choices. Similarly, full disclosure of risks, in understandable terms, is necessary for those investing in credit-related investment products.

As per the IMF’s 2014 Report [9], “Overall, the continued expansion of finance outside the regulatory perimeter calls for a more encompassing approach to regulation and supervision that combines a focus on both activities and entities and places greater emphasis on systemic risk and improved transparency.”

Summary and Recommendations

Shadow banking activities are evolving and risk appetite is expanding in some areas. The sector overall is growing in size, and so are individual shadow banks. Risks for consumers, investors and the financial system more broadly, are increasing.

Non-bank lenders are facilitating ever higher consumer debt

levels, heightening risks for these consumers (which include more vulnerable borrowers that do not qualify for bank loans). The lenders themselves may have significant leverage, and rising default rates could cause entities to fail, resulting in losses for investors in this sector, with potential contagion to the broader financial markets.

Credit-based investment products have been rising in prevalence as a result of growing demand for yield by both household and institutional investors, and the product offerings continue to evolve. The risks associated with these products may not be fully disclosed or understood, particularly in regards to less sophisticated investors. In addition to exposing investors to risk levels that may exceed their risk tolerance and/or capacity, a negative event within the shadow banking industry could trigger a mass withdrawal of funds. This in turn could create a liquidity crisis with potential for contagion to the broader financial sector.

Reporting on the size and activities within the shadow banking sector continues to improve, although data gaps and inconsistencies still exist [6].

Because the sector is growing and evolving, and reporting is sub-optimal, it is challenging to accurately assess the level of risk and to identify appropriate policies and regulations to control systemic risk.

The IMF [9] highlights that the future risk levels will be influenced by, among other things, the degree to which liquidity mismatches deepen thereby increasing run risks, the extent to which entities use leverage, the extent to which concentrations increase, and whether the level of transparency of risk improves allowing for investors to assess risks properly. We also think that risk transparency is an issue for the more vulnerable, higher leveraged borrowers.

The FSB [7] and the IMF [9] advocate for regulators to take a risk-based approach, with an encompassing view of the broader financial system, and international coordination so that risks do

not migrate across countries. They also recommend continuing to close data gaps to improve accuracy of information and risk identification.

FSB Policy Framework – Overarching Principles, Implementation Challenges and Recommendations

The May 2016 FSB Thematic Peer Review [7] identifies the following challenges to implementation of the FSB’s four overarching principles:

Principle 1: Definition and update of the regulatory perimeter

Finding: Only a few FSB jurisdictions currently have a systematic process involving all relevant domestic authorities to review the regulatory perimeter in order to ensure that it encompasses all of the financial entities and activities that could pose financial stability risks.

Principle 2: Collection of information needed to assess shadow banking risks

Finding: Gaps in data availability and granularity were identified, noting data collection powers often do not extend to nonregulated entities. Further, institutional constraints were identified in the sharing of information within and across borders in several jurisdictions. The difficulty in assessing the risks of interconnected with the broader financial system was also highlighted.

Principle 3: Public disclosure of information about risks posed by shadow banking entities

Finding: Disclosure requirements for non-bank financial entities may not be sufficient to enable market participants to assess shadow banking risks.

Principle 4: Assessment of shadow banking risks and adoption of policy tools

Finding: There are some differences in approach and inconsistencies in how shadow banking activities are defined and classified and different interpretations and judgments by jurisdictions on the risks associated with these entities.

The FSB recommends that jurisdictions fully implement the FSB Framework by taking the following actions:

- Establish a systematic process involving all relevant domestic authorities to assess the shadow banking risks posed by non-bank financial entities or activities.
- Ensure that any entities or activities that could pose material risks to financial stability are brought within the regulatory perimeter in a timely manner.
- Ensure sufficient information-collection powers and address gaps in the availability of data.
- Remove impediments to cooperation and information-sharing between authorities.
- Review the adequacy of existing public disclosures and address identified material gaps

Regulators are likely reluctant to impose regulations that make shadow banking unviable because they contribute to credit creation and risk diversification.

We think that national regulators should introduce some basic requirements now, rather than taking a “wait and see” approach, in order to prevent the sector from growing unchecked, and to better protect borrowers and investors.

In particular, we suggest that national regulators work towards introducing a basic liquidity requirement that would apply to shadow banking entities over a designated size threshold (determined by each jurisdiction) to help mitigate against the liquidity/run risks associated with maturity transformation activities. This is not meant to be a full solution, merely a starting point (and we recognize the complexity in such a proposal). A more comprehensive framework would ultimately

need to consider leverage, as well as a potential backstop mechanism for systemically important non-bank entities, and protection for consumers to ensure risks are understood.

We also recommend:

- Increasing the disclosure provided to consumers that borrow from non-bank entities. The products they offer can expose already vulnerable borrowers to significant leverage and the downside risks and impacts should be clearly understood; and

- Improving the disclosure for investors in the growing array of credit-related investment products so that the associated risks to capital, as well as the ability to redeem their investments, are made clear.

Quoting Mark Carney, Governor of the Bank of England, “Now is the time to take shadow banking out of the shadows and to create sustainable market-based finance”,²⁶

Spotlight on Canada

The Canadian financial industry is generally seen as fairly conservative and non-bank activities are not likely to pose broad systemic threats:

- Canada’s largest investment firms, where liquidity gaps and run risks can threaten financial stability as seen in the 2007-2009 financial crisis, are bank owned and therefore subject to banking regulation, so they pose less of a threat to financial system stability;
- Canadian hedge funds are not currently large enough to pose systemic risk; and
- For the most part, mortgage lending by non-bank firms conforms to the standards imposed by banking regulations as this is required for securitization of mortgages, which is the primary funding source.

Certain non-bank activities in Canada (as well as other developed markets), are, however, posing increasingly significant risks for consumers and investors, if not to systemic stability. As previously noted, some firms are providing access to aggressive amounts of leverage (examples: longer term auto loans and leases that result in negative equity; secondary “loans” paired with first mortgages that skirt loan-to-value rules), and the associated risks may not be fully transparent to or understood by the consumer.

Clear explanations of the risks, in simple terms, are required so that consumers understand the downside impacts (for example: how they would be affected by rising interest rates or income loss; when and why their loan could be called; refinancing risks; the potential for a forced asset sale and implications of negative equity).

Similarly, credit related investment products are more and more prevalent, and they continue to morph to increase the breadth of products offered. Less sophisticated investors searching for yield, and the dealer representatives selling these products, may not fully grasp the downside risks.

We therefore recommend focusing on reforms to improve the transparency of information for consumers and investors. They need clear information on the risks they are taking, in plain, understandable language.

The Bank of Canada and the Office of the Superintendent of Financial Institutions must also continue keep a close eye on “product creep” and activities that push the envelope of acceptability.

Of note, there are other large non-bank lenders, such as insurance and pension companies, which have been expanding their credit and investment activities. They too are susceptible to credit and market value risks, and failure of a large insurer could cause concerns for other firms. However, insurance and pension fund companies are not considered to be shadow banks by the FSB as they do not incur the maturity mismatch/funding risks: while these entities may use short term funding for their lending activities, policy holders do not have the same ability to demand their funds back as bank depositors do, therefore there is no potential for a run.

Appendix I: The FSB Definition of Shadow Banking [6]

The FSB considers shadow banking activities based on five economic functions that can give rise to systemic risk, specifically maturity/liquidity transformation, leverage and/or imperfect credit risk transfer, as shown in the chart below.

CLASSIFICATION BY ECONOMIC FUNCTIONS

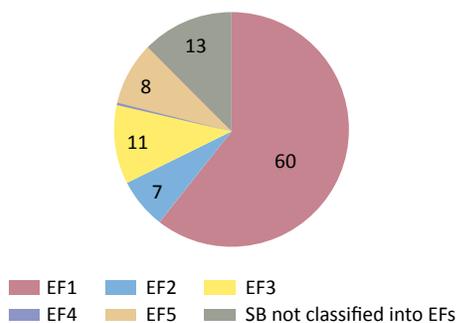
Economic Function	Definition	Typical entity types
EF1	Management of collective investment vehicles with features that make them susceptible to runs	Fixed income funds, mixed funds, credit hedge funds, real estate funds
EF2	Loan provision that is dependent on short term funding	Finance companies, leasing companies, factoring companies, consumer credit companies
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets	Broker-dealers
EF4	Facilitation of credit creation	Credit insurance companies, financial guarantors, monolines
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles

Notably, the FSB definition excludes entities that do not involve any of the five economic functions. Therefore, equity funds, closed end funds and REITs without leverage are excluded. Pensions and insurance assets are also excluded because they do not involve a maturity transformation/liquidity risk: while these entities may use short term funding for their lending activities, policy holders do not have the same ability to demand their funds back as bank depositors do, therefore there is no potential for a run. Insurance company activities relative to EF4, i.e., providing guarantees, continue to be included. Entities consolidated into banks are also excluded.

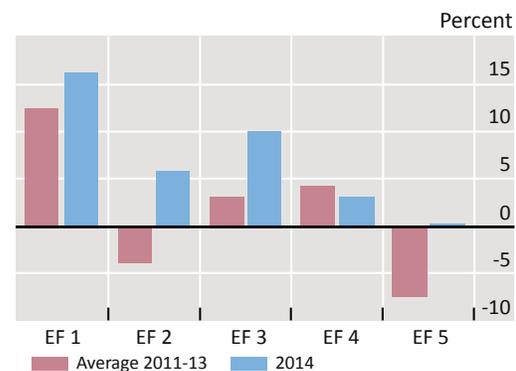
The relative size and growth of these shadow banking categories is shown in the figure below, also from the FSB's 2015 Report.

RELATIVE SIZE OF ECONOMIC FUNCTIONS

At end-2014



ANNUAL GROWTH OF ECONOMIC FUNCTIONS FROM 2011 TO 2013¹ AND 2014



Note: EF1 = Economic Function 1 EF2 = Economic Function 2 EF3 = Economic Function 3 EF4 = Economic Function 4 EF5 = Economic Function 5 SB not classified into EFs = Residual OFI with some shadow banking risks but not classified into any of the five economic functions.

1. Controlling for exchange rate effects. Average annual growth rates not shown for 'not classified' category.

Sources: National financial accounts data; other national sources; FSB calculations.

Endnotes

1. Some shadow banking activities are subject to other forms of regulation, for example securities regulation; however, the requirements are generally less rigorous than banking regulations and generally do not address credit, capital or liquidity risks.
2. Use of leverage will depend on the goals and risk tolerances of the individual firms.
3. The Lehman bankruptcy during the global financial crisis is a prime example.
4. Both Lending Club and Enova are publicly traded; loan information is from Enova's March 2017 investor presentation.
5. Paul McCulley at PIMCO, a global investment management firm.
6. Risk transfer refers to the facilitation of credit creation through insurance and/or financial guarantees.
7. The FSB's Global Shadow Banking Monitoring Report 2015 was used as the reference for all data references relative to the sector's size. All figures are in USD unless otherwise noted. The FSB figures are based on reporting from 26 jurisdictions which together account for about 80% of global GDP and 90% of global financial system assets. The 26 jurisdictions are as follows: Argentina, Australia, Brazil, Canada, Chile, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Turkey, United States, and United Kingdom.
8. Pension funds and insurance companies also provide loans, but without the same maturity or liquidity transformation: they use their collected premiums and contributions to fund their activities and their pension / policy holders do not have the same ability to demand their funds back.
9. Our categorization is a hybrid of the approaches used by the Bank of Canada and by the FSB. The Bank of Canada definition separates securities financing from other broker-dealer credit intermediation such as prime brokerage services to hedge funds and securities brokering services; the FSB also includes a category for facilitation of credit creation, largely comprising credit guarantees / insurance.
10. The FSB's Global Shadow Banking Monitoring Report 2015, reference 6, was used for all references to sub-sector asset sizes.
11. In the context of shadow banking, credit based investment funds are limited to those that hold longer term assets but offer on-demand redemptions for investors, creating the potential for runs. Closed-end funds where investors have limited redemption rights are excluded.
12. Some non-bank activities are indeed subject to other forms of regulation; here, we refer to the costs associated with the rules and regulations applicable to banks.
13. Peer-to-peer lending firms offer on-line services that "match" those seeking financing, typically individuals or small businesses, directly with investors that are looking to lend out their money as an alternate way to earn higher yields. This business has seen rapid growth and is evolving, with interest from institutional money and other social lending platforms such as crowdfunding.
14. Simple forms of securitization continue to exist, providing a valuable source of cost-efficient funding for mortgage lenders.
15. In Canada, non-bank lenders that sell their loans to banks, or rely on securitization for funding, must ultimately comply with the same underwriting criteria that apply to banks (and this may be the case in other countries as well). Non-bank lenders that raise financing through investors and retain the mortgages rather than sell them are free to establish their own risk appetite and underwriting standards.
16. Non-bank lenders that raise funds to finance their activities privately are free to set their own risk appetite and associated credit standards.
17. Non-prime typically denotes credit scores of 670 or lower; deep sub-prime typically means a credit score of 550 or lower.
18. Experian is a global leader in credit reporting.
19. Vehicles depreciate most rapidly in the first two years, while at the same time this is the period when the bulk of the payments made go to interest, resulting in "negative equity". See [4].
20. <http://us.spindices.com/indices/specialty/sp-experian-auto-default-index>
21. Evans-Pritchard, Ambrose, "Bank of England's Mark Carney sees shadow banking in emerging markets as biggest global risk", The Telegraph, 13 December 2013.
22. Wildau, Gabriel, "Shadow bank crackdown prompts China cash crunch", The Financial Times, 24 March 2017.

23. Per the FSB Policy Framework, regulatory measures should be:
- Focused, targeting the externalities and risks that shadow banking creates;
 - Proportionate to the risks to the financial system;
 - Forward looking and adaptable to emerging risks and innovations;
 - Designed and implemented in an effective manner, balancing the need for international consistency against the need to take account of jurisdictional differences; and
 - Regularly assessed and reviewed following implementation and improved as necessary.
24. The IMF also highlights that in addition to continued growth, the level of systemic risk will be influenced by the degree to which liquidity mismatches deepen and the extent to which concentration within the system increases.

References

1. Adrian, T. and A.B. Ashcroft, *Shadow Banking Regulation*, Federal Reserve Bank of New York, Staff Report No. 559, April 2012
https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr559.pdf
2. Coletti, D., M-A Gosselin and C. MacDonald, *The Rise of Mortgage Finance Companies in Canada: Benefits and Vulnerabilities*, Bank of Canada, Financial System Review, December 2016
<http://www.bankofcanada.ca/wp-content/uploads/2016/12/fsr-december2016.pdf>
3. Elliott, Douglas, Arthur Kroeber and Yu Qiao, *Shadow banking in China: A primer*, The Brookings Institution, March 2015
https://www.brookings.edu/wp-content/uploads/2016/06/shadow_banking_china_elliott_kroeber_yu.pdf
4. Financial Consumer Agency of Canada, *Auto Finance: Market Trends*, March 2016
<http://www.fcac-acfc.gc.ca/Eng/resources/researchSurveys/Documents/auto-finance-market-trends.pdf>
5. Financial Stability Board, *An Overview of Policy Recommendations for Shadow Banking*, 29 August 2013
<http://www.fsb.org/2013/08/an-overview-of-policy-recommendations-for-shadow-banking/>
6. Financial Stability Board, *Global Shadow Banking Monitoring Report 2015*, 12 November 2015
<http://www.fsb.org/wp-content/uploads/global-shadow-banking-monitoring-report-2015.pdf>
7. Financial Stability Board, *Thematic Review on the Implementation of the FSB Policy Framework for Shadow Banking Entities*, May 2016
<http://www.fsb.org/2016/05/thematic-review-on-the-implementation-of-the-fsb-policy-framework-for-shadow-banking-entities/>
8. Gravelle, T., T. Grieder and S. Lavoie, *Monitoring and Assessing Risks in Canada's Shadow Banking Sector*, Bank of Canada Financial System Review June 2013
<http://www.bankofcanada.ca/wp-content/uploads/2013/06/fsr-0613-gravelle.pdf>
9. International Monetary Fund, "Shadow Banking Around the Globe: How Big and How Risky?", *Global Financial Stability Report*, October 2014
<http://www.imf.org/external/pubs/ft/gfsr/2014/02/pdf/text.pdf>
10. McKinsey Global Institute, *Debt and (Not Much) Deleveraging*, February 2015
<http://www.mckinsey.com/global-themes/employment-and-growth/debt-and-not-much-deleveraging>
11. Plantin, G., *Shadow Banking and Bank Capital Regulation*, Toulouse School of Economics, Harvard, 27 October 2014
<http://www.gplantin.net/ShadowBankingAndBankCapital.pdf>
12. Ricks, M., *Shadow Banking and Financial Regulation*, Harvard Law School Forum on Corporate Governance and Financial Regulation, 18 September 2010
<https://corpgov.law.harvard.edu/2010/09/18/shadow-banking-and-financial-regulation/>
13. Scuffham, M. and A. Martell, *How lenders skirt Canada's mortgage rules*, Globe and Mail, 12 January 2017
14. Yao, K. and E. Glen, *China's GDP beats expectations but debt risks loom*, Globe and Mail, 20 January 2017
15. Yong Chang, B., M. Januska, G. Kumar and A. Usche, *Monitoring Shadow Banking in Canada: A Hybrid Approach*, Bank of Canada, Financial System Review, December 2016
<http://www.bankofcanada.ca/wp-content/uploads/2016/12/fsr-december-2016-chang.pdf>