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Shadow Banking and Systemic Risk in Europe and China

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Shadow Banking and Systemic Risk in Europe and China[1]

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Abstract

We compare the European and Chinese shadow banking systems. While the European shadow banking system is better developed than the Chinese shadow banking system, herd behavior and other factors in European markets create systemic risk, which contributed in part to the financial crisis. Dispersion of risk across the "under-developed" shadow banking system in China has led to some cases of localized, concentrated risk, but not to systemic risk. We discuss proposed European shadow banking regulation and its implications for systemic risk, and discuss what lessons China might glean from such policies. We also discuss what lessons China's diverse and systemically uncoordinated shadow banking sector might provide for Europe.

Introduction

In this paper, we compare the potential for systemic risk in European and Chinese shadow banking systems. Systemic risk has been defined by a Group of Ten (2001) report as "the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainty about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects on the real economy." There are two types of systemic risk that can arise: liquidity risk, in which many institutions face difficulties in rolling over their short-term debt or in which institutions cannot trade assets at normal bid/ask spreads (Barnhill Jr. and Schumacher 2011); and solvency risk, in which institutions incur unexpected losses regardless of the source, type, or size of the losses. Systemic risk may arise due to the structure of bank balance sheets, the interconnectedness of financial institutions, and/or the intertemporal nature of financial contracts (de Bandt and Hartmann 2000). During the current crisis, Europe faced both liquidity and solvency risk and contagion due to all three reasons listed above: the nature of bank balance sheets, the interconnectedness of financial institutions, and maturity mismatches in financial contracts.

Hence we have seen that a systemic financial meltdown in Europe is a real threat, particularly since EU-wide expansion of European banks has been strongly encouraged. Herd behavior, coupled with intensive reliance on the banking sector (given their participation in shadow banking activity) and EU-wide dispersion of banking affiliates, presents a threat to financial

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stability. This in the presence of complex financial regulations within the EU makes combating the threat of systemic risk even more difficult.

China's financial system was less stressed during the current crisis than its real sector. Therefore it is not immediately obvious where the weaknesses within China's shadow banking sector may lie. However, because China's banking system has been slow to transition to a modern banking industry, other financial channels (most of which are considered to be part of the shadow banking sector) have existed for some time, while new ones have arisen as well. The largest part of the shadow banking sector in China, the informal financial sector, has existed for several decades (after reform began in 1979) and is comprised of individuals or small and medium enterprises as borrowers and individuals and small and medium enterprises as lenders. Risk is greatly dispersed within this system. The newer parts of China's shadow banking sector are somewhat more integrated with the rest of the financial sector, but their risk continues to be geographically dispersed, regulated, or segmented.

In the sections that follow, we first discuss systemic risk, then the European shadow banking sector, then the Chinese shadow banking sector. We examine and discuss these within a more technical framework, then make policy recommendations.

Systemic Risk

Systemic risk arises when many financial institutions fail due to a common shock. Many aspects of systemic risk have been explored in the literature. Applicable to our study is the finding that systemic risk has been shown to be higher in clustered asset structures, in which banks hold identical asset portfolios, rather than unclustered asset structures, in which banks swap projects with neighboring banks but do not hold identical portfolios (Allen, Babus and Carletti 2011). During the crisis, clustered asset structures led to an increase in systemic risk. This, in combination with other factors such as maturity mismatches in real estate finance, and underpricing of credit default swaps which limited short-selling of mortgage backed assets, created a shock to the financial system large enough to lead to a vast meltdown.

The literature on systemic risk has used a variety of measures to quantify this variable. A brief list of measures of systemic risk includes: examination of interlinkages of credit exposure (Allen and Gale 2000); the probability of default (Avesani, Pascual, and Li 2006); conditional value at risk (Adrian and Brunnermeier 2009); systemic expected shortfall (propensity to be undercapitalized) (Acharya, Pedersen, Philippon, and Richardson 2010); network-based systemic risk (Cont 2010); coupled stochastic processes (in the presence of a financial accelerator mechanism) (Battiston et al 2009); valuation of put options written on a portfolio of aggregate bank assets (Hovakimian, Kane and Laeven 2012); and insurance against systemic financial distress (Huang, Zhou and Zhu 2010).

In this paper, we first diagram the European and Chinese shadow banking systems, then perform a technical analysis based on the methodology given in Battiston et al (2009). Battiston et al is important because it assumes that systemic risk increases as the number of counterparties increases beyond a certain value and as agents are subject to a financial accelerator mechanism. In other words, there is a trade-off between decreasing individual risk and increasing systemic risk[5]. In order to implement the Battiston theory, we use a proxy for robustness (debt to equity ratio), bankruptcy indicator, and average number of balance sheet connections to other institutions.

European Shadow Banking

Europe has already been systemically affected, so we can analyze how the current crisis impacted this region. The current crisis entered Europe's financial system first through the banks. Banks are closely connected to Europe's industrial sector and impacts on the real economy were immediately threatened. Aggressive expansion of banks into the subprime mortgage area, as well as into foreign markets, increased banks' exposure to risky loans. Securitization of these risky loans worsened matters and transmitted the crisis to the European shadow banking system.

The European shadow banking system is smaller than that in the United States, measuring at about half the size of total banking assets, as opposed to equal to the size of total banking assets in the US. European countries with relatively larger shares in the global shadow banking system include 13% for UK intermediaries, 8% for Netherland intermediaries, 6% for French intermediaries, and 5% for Danish intermediaries (European Commission 2012).

The financial system itself can be divided into monetary (money-issuing) (MFI) and nonmonetary financial institutions (non-MFIs). MFIs consist of credit institutions, money market funds, and other MFIs. Non-MFIs include investment funds, financial vehicle corporations, insurance and pension funds, public financial corporations, hedge funds, and other non-MFIs, including financial leasing companies, securities lending corporations, and financial auxiliaries.

Credit institutions comprise the largest portion of the financial sector, and include banks and other types of credit-issuing institutions. Banks are not part of the shadow banking system per se, but held a large number of assets that indeed were part of the shadow banking sector and created uncertainty during the credit crisis. Over the crisis period, banks lost confidence in their cross-border counterparts. Between year-end 2008 and year-end 2011, international interbank lending dropped (BIS 2012). This was caused by a variety of factors, but the shadow banking sector played a key role. The European Commission Green Paper (2012) finds that "under distress or severe uncertainty conditions, risks taken by shadow banks can easily be transmitted to the banking sector through several channels: (a) direct borrowing from the banking system and banking contingent liabilities (credit enhancements and liquidity lines); and, (b) massive sales of assets with repercussions on prices of financial and real assets." Both of these factors transmitted contagion to the banking sector as the crisis unfolded.

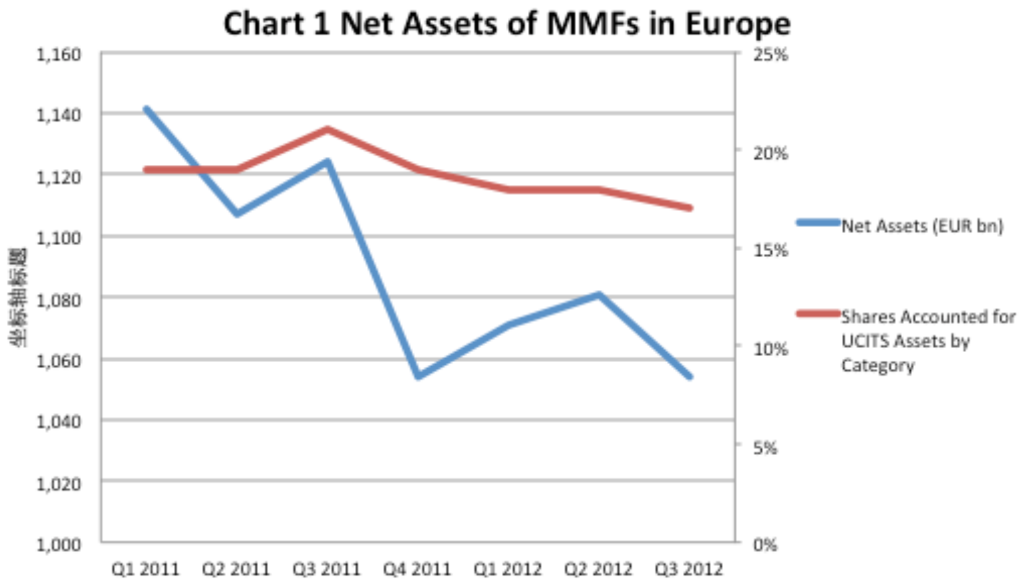
Enhanced money market funds assets peaked at €137 billion in 2007. However, as contagion from the US spread, revealing shortfalls in US money market funds, money market funds in Europe encountered problems, including asset price drops and large investor redemptions (Bengtsson 2013). Regulatory differences in money market funds prevail across Europe, creating differences in types of investments contained in the funds, variations in types of net

[5] This is an assumption that diverges from the influential paper by Allen and Gale (2000), which assumes that systemic risk is monotonically decreasing.

asset value used, and differences in the extent of safeguards imposed on fund values, but this panoply of funds suffered as uncertainty shrouded financial markets.

Money market funds were first affected as issues with Luxembourg-Based AXA Investment Management were revealed (Bengtsson 2013). After experiencing large losses, the fund implemented a policy of purchasing all shares from investors redeeming at the current NAV. French company ODDO also experienced a decline in valuation and was forced to suspend activity on the fund, then later to dissolve and liquidate the fund. Additional issues with money market funds surfaced. Asset managers affected included German financial company Union Investment, HSBC Investments Deutschland, French company BNP Paribas, and German asset managers Sal Oppenheim and Frankfurter Trust.

After Lehman Brothers failed, money market funds faced massive withdrawals; in the third quarter of 2008, 45 billion Euros were redeemed from European money market funds. Authorities in Germany and Luxembourg were forced to intervene to guarantee money market funds, and the European Central Bank stepped in to ease liquidity pressures through other channels. Even so, both the net assets of MMFs and its shares of UCITS (Undertakings for Collective Investment in Transferable Securities Directives) witnessed a decline during the recent two years (see Chart 1).



Source: European Fund and Asset Management Association, EFAMA

The €6.2 trillion repo market[6], which provides a large amount of financing for both the banking and shadow banking sectors, was also severely affected in Europe, as it was in the United

[6] When maturity mismatch is one of the important features of shadow banking sector, maturity transformation can be realized by holding leveraged loans financed via repo (Bouveret 2011). Additionally, other current market characteristics like the increasing institutional demand for money-like assets (by banks, broker-dealers and other intermediaries seeking 'collateralized' short-term liabilities)

States. It became clear during the crisis that margin requirements and haircuts in repo markets are damningly procyclical (Constâncio 2012).

Financial vehicle corporations, with close connections to European banks, were also adversely impacted. Financial vehicle corporations are a type of security generator that is found throughout Europe, particularly in Spain, Ireland, the Netherlands, and Italy, but lack coordinated oversight. Common shadow banking assets of European financial vehicle corporations include asset backed commercial paper and asset backed securities, which themselves were used before the Great Recession to comprise collateralized debt obligations[7]. As markets for securities experienced large losses, financial vehicle corporations in turn suffered.

Hedge funds, too, were affected. Although they play a much smaller role in the shadow banking sector in Europe, hedge funds, considered part of the asset management sector, contribute to credit transformation by selling CDS or betting with ABS CDOs (Pozsar et al, 2010). The two main channels through which hedge funds can and have impacted financial stability are through market and credit channels. When market dislocations disrupt liquidity and pricing via market channels, credit channels experience losses by counterparties, such as banks and brokers of failed hedge funds[8].

While investment funds, insurance and pension funds, and public financial corporations are not a part of the shadow banking sector per se, there are myriad interconnections between these institutions and the shadow banking sector, with assets of these institutions being held by the shadow banking sector and vice versa. This is because the European shadow banking system is closely integrated into the financial system, with potential contagion effects through financial transmission methods such as interest rates and through interlinkages to other aspects of the sector itself (Bakk-Simon et al 2012). As noted by the Vice-President of the European Central Bank, Vítor Constâncio, there are strong ties between the shadow banking sectors and regulated banking sectors across European nations (Ibid 2012). The shadow banking sector transmits financial stress both to and from the regulated banking sector. Credit institutions such as banks do a great deal of business with financial vehicle corporations and other counterparties.

What is more, systemic risk is created through long, complex, opaque chains of intermediation within and between the shadow banking and banking system. Using collateral swaps to lend

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and the financing needs of leveraged intermediaries are key drivers of repo markets as well. The 2012 ICMA survey has estimated this sector to amount to 6.2 trillion Euros. Two-thirds of EU repos are currently secured by government bonds, and about a third of EU repos are cleared through central counterparty clearing houses.

[7] Asset backed securities are comprised mainly of loans (65%), followed by deposits (16%), and non-share securities (11%) (Bakk-Simon et al 2012).

[8] According to the latest report on hedge funds by the FSA, the total assets of surveyed hedge funds under management (AUM) were approximately $380bn as at March 30, 2012. Predominantly due to positive returns and positive net subscriptions, this number increased in the survey period. Taking credit intermediation into account, the value of gross exposures (the total value of long and short positions held) of surveyed hedge funds for structured/securitized products and CDS were around US$130 and USD $400 billion respectively.

high-quality securities against the collateral of lower quality securities, say, lending government bonds against ABSs, is an example. Using the borrowed securities, banks are able to obtain repo financing, which can either be held to meet liquidity requirements enforced by a regulator, or used again in additional transactions, lengthening transaction chains. The source of hedge fund borrowings can be taken as another example. According to the FSA, most cash, or on-balance sheet, leverage comes from repo borrowing, which, even though the sector saw a decline in the aggregate in the latest survey, is continually rolled over[9].

To stem future crises, Constâncio (2012) recommends consistency of policies across countries. To that end, the European Commission is in the process of making recommendations for European shadow banking monitoring, regulation, and enforcement, with coordination among regional authorities, including the European Central Bank (ECB), the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), the European Insurance and Occupational Pension Authority (EIOPA) and the European Systemic Risk Board (ESRB).

Chinese Shadow Banking

By contrast, China's shadow financial system is far smaller and less developed than that in Europe. Despite variations in shadow banking definitions, we include the informal financial sector, which does not consist of money market funding of capital market lending, per Mehrling et al (2012). But it does consist of non-bank financing that has extensive ties to sectors that fund capital markets through money markets.

To that end, we describe China's shadow financial system as being comprised of three levels (Li, Hsu and Tian 2012). The first part contains commercial banking and investment banking, including bank-trust cooperation in financial products, investment banks, financing leasing companies, and insurance brokerage firms and their products. The second part includes quasi financial institutions such as micro loan companies, financing guarantee companies, and pawn shops. The third part consists of informal financial institutions.

According to PBOC data for 2011, the system wide financial aggregate is RMB ¥12.83 trillion (about €1.43 trillion Euros); banking loans comprise 58.3%, which means that general shadow financial activity comprises 41.7% of all financial activity. Shadow banking and banking activity have some interactions, although these are not as extensive as in Europe. For example, commercial banks in China may cooperate with trust and investment companies, or may themselves take part in shadow financial activities such as transferring deposits into financial management products and lending the funds to investors for short-term projects. However, outside of the commercial banking system, the shadow banking system encompasses property securitization, money market funds, and undiscounted instruments, for which the bank acts only as intermediaries, not as institutions that back up these funds with reserves. There is thus a firewall around commercial banks' lending activity. What is more, the third level, consisting of

[9] As to hedge fund markets, what also demands our attention is the concentration of credit counterpart exposures. As pointed out by the Hedge Fund Survey, there are only five banks accounting for approximately 65% of aggregate hedge funds' net credit counterparty exposures (FSA 2012).

informal finance, carries out performance of financial functions and risk management outside the banking system.

Commercial banks act, in various, limited capacities, in the shadow banking sector by offering several products, including trust products[10] (including real estate investment trusts), negotiable securities, credit default swaps, and wealth management products. Outside the commercial banking system are trusts, broker-dealer pension and insurance companies, micro-loan companies, guarantee companies, pawnshops, investment or financing companies, entrepreneurs unions, private money houses and money brokers, and internet borrower-lender platforms. The ratio of commercial banking shadow activity compared to aggregate non-commercial banking shadow activity was about 18.5% at the end of Q3 2012 (Financial News 2013).

Further, commercial banks themselves, for the most part, are implicitly backed by the government. Ownership is held by the government in the form of shares. Looking at the structures of main shareholders of China's five commercial banks, we can better understand the relationship between banks and the government. For example, the Ministry of Finance and Central Huijin Investment Ltd play significant roles in the shareholder structures of all top five banks. While the Ministry of Finance, as well as the National Council of Social Security Funds, are obviously governmental shareholders, Central Huijin Investment Ltd, authorized by the State Council, is the main sponsor of many predominant financial institutions. Other major shareholders like China Life Insurance Company, Pingan Life Insurance Company of China and Baosteel Group Corporation are featured as large state-owned businesses. Therefore state control of banks continues to be implied.

Credit default swaps issued by banks and bond insurance companies, known as credit risk mitigation products, are far less risky than those involved in the US crisis. These are also tightly regulated-- only large, approved financial institutions are allowed to conduct trades and only when they own the underlying bonds or loans (Anderlini 2010). Ownership of these instruments is therefore quite limited.

Negotiable securities companies, which are either part of commercial bank groups or owned by independent securities traders, sell shares in funds based on pools of stocks and bonds, which are defined as collective wealth management products. These companies are supervised by the China Securities Regulatory Commission (CSRC) and their wealth management products

[10] For trusts, serving as a channel of issuance and distribution, banks play a third party role only as required and limited by the Law of Commercial Banks. The Rules on Trust Schemes of Collective Funds by Trust Companies states in Article 16, "When recommending a trust scheme, a trust company can sign a collection and payment agreement on entrusted funds with commercial banks, according to which a client may purchase trust units in cash through commercial banks. Where the trust company entrusts a commercial bank to deal with collection and payment business for trust schemes, it shall clearly define relevant rights and obligations for both sides, especially for commercial banks who (sic) only assume the responsibility of funds collection and payment, rather than bear investment risks in trust schemes." Any trust activity that banks themselves engage in is listed on the balance sheet, per the Notice on Further Standardizing of Bank-Trust Cooperation, which states that "By the end of 2011, all the bank-trust cooperate (sic) services should be transferred from off-balance sheet into balance sheet by commercial banks."

are inevitably considerably influenced by CSRC. After restrictions on their issuance were loosened, wealth management products designed by negotiable securities companies saw a rapid development. Up to November 12, 2012, the number of the existing collective wealth management products is was 322 (Sina Finance 2012).

In these kinds of transactions, negotiable securities companies take the roles of initiators and custodians simultaneously, and trade with trustees, a role usually played by qualified institutions like large commercial banks. Wealth management products issued by banks also carry implicit government backing. However, there is a lack of implicit government backing for smaller banks, which increasingly issue wealth management products (Cushnie 2012). From Q1 to Q3 of 2012, commercial banks issued over ¥20 trillion RMB of wealth management products. The stock of wealth management products was ¥6.73 trillion RMB (US $1.07 trillion). Wealth management products comprise only 11.5% of total deposits, or ¥10.4 trillion RMB (US $156.8 billion at the end of Q2 2012). Although potentially risky, these products do not currently pose systemic risk as their total size is so small.

Credit guarantee companies are likely the most interlinked shadow banking institutions, often guaranteeing the credit of many non-bank companies in one area. They are not part of the commercial banking sector but are linked to the banking sector through third-party guarantees that state borrowers will not default on their loans.

There have been cases[11] in which the failure of one guarantee company has brought down a multitude of non-bank companies. Still, credit guarantee companies are not linked to other areas of the shadow banking sector, and their threat of systemic risk is low. In fact, most credit guarantee companies lend money directly to SMEs, and issue wealth management products informally.

Most of the non-bank related shadow banking is further segmented by geographical region, fund sources, and even between institutions or individuals. Although financial segmentation is a mark of financial underdevelopment, in this case, the coexistence with low-level forms of shadow banking along with high-level forms of shadow banking has served to protect the real economy from financial contagion.

Within the realm of informal or folk finance, we find that informal lenders such as money lenders, private equity funds, pawn shops, and rotating credit associations are based to a large extent on personal relationships and engage almost solely in lending and borrowing to/from small and medium enterprises and individuals, rather than in riskier or more highly leveraged forms of financial activity. Lenders know their borrowers, and borrowers are obligated by social relations to repay the loans. Money lenders and money houses rely on personal connections to obtain loan repayment. This financial activity is not normally linked to other types of financial

[11] In early 2012, Zhongdan Investment Credit Guarantee Company's financial strain and inability to compensate guaranteed companies' overdue loans came about. After that, the controller and some of the senior management left the company with a financial hole involving 294 companies with an amount of 13 billion RMB unfilled.

activity in other firms or regions, except in the case of the rare Ponzi scheme[12]. Hence contagion from one financial institution to another is rare.

Micro loan companies, one type of informal financial institution, do not absorb public deposits and are set up as limited liability companies. In order to direct informal funds to the countryside and to promote rural economic development, in May 2005, the Central Bank set up 7 experimental micro loan companies. After that, starting in 2007, the People's Bank of China and the Banking Regulatory Commission allowed additional micro loan companies to be set up in various provinces, touching off rapid growth of such companies. At the Q3 2012, the stock of micro loan companies measured in at ¥533 billion RMB, amounting to only 0.9% of the stock of bank loans. Their main source of funding comes from selling stock shares, endowments, and raising capital from less than two financial institutions. Risks posed by micro loan companies are low due to their small volume and high levels of repayment.

Pawnshops are one of the oldest types of informal finance and are locally based, using local physical goods as collateral rather than sophisticated financial instruments. Hence they are not connected to the rest of the financial system. The pawn shop is also not associated with usury, deferring to the legal interest rate and accepting supervision from the government as well as the public. A pawn shop must obtain an operation or closure permit from the government, and is supervised at both a macro and micro level. By the end of June 2011, China had 5,238 pawn shops, three times the number existing in 2005. Registered capital increased by over 20% in the past few years. The small volume and lack of financial interconnectedness of these institutions result in low levels of systemic risk.

Entrepreneur's clubs, also informal financial institutions, help member enterprises obtain loans due to their close relationships to government officials or experts. Most of the non-government financing transacted by entrepreneurs clubs is used for enterprise management. These clubs currently account for a small share of non-government finance at present. Entrepreneur's clubs are clearly not a threat to the financial system since they are very small in size.

Internet lending businesses in the realm of informal finance complete the whole process of lending and borrowing through the internet. The internet lending platform includes three modes: business-business (B2B), business-commodity (B2C) and person-person (P2P) lending. B2B belongs to the upstream flow of "goods" and consists of lending from business to business. B2C belongs to the terminal sales of the "commodity" from institutions to individuals, where money is lent through credit institutions. P2P is the most important financial internet lending platform, and combines personal lending and internet lending. All of the lending processes including information, money and contracts are made through the internet, so that it can save costs and improve efficiency[13]. In 2011, the scale of the whole internet lending platform in China

[12] For example, in 2011 and 2012, there were some cases of Ponzi schemes in Hongsi in Jiangsu province, Zhengzhou in Henan province and Erdos in Inner Mongolia, but these brought about local informal financial problems that did not spread to other areas.

[13] It is also the future trend of financial services. Furthermore, P2P mode is a platform that takes fees (usually provide a third party risk guarantee) to be the intermediary of the individuals who need money and other individuals who supply it.

exceeded 14 billion RMB. The prospect looks bright. At present, the market risk of China network lending platform still exists, so it is essential to strengthen the regulation.

The investment company is another informal financial intermediary, obtaining funds from investors and providing loan to enterprises or individuals. The funds of investment companies generally come from idle enterprise funds and households[14]. Investment companies are common in Wenzhou, Ordos and Northern Shaanxi where the folk debit and credit had developed prosperously. Influenced by the economic situation and macro-control, lending business of Investment companies had developed fast and was not cooled until the Wenzhou private lending and owners Of MSEs escaped (Paolu) crisis. However, due to the lack of statutory restriction, out-dated risk management method, unreasonable internal control design and the lack of regulation, some problems such as raising interest rates in disguise and illegal raising fund emerged.

In 2012, China began to once again permit banks and financial corporations to undertake securitization. As a result, three banks and one financial corporation issued asset backed securities. In past 10 years, China's financial institutions issued ¥56.94 Billion RMB ($7.76 billion) of ABS. Money market funds are one of the main types of shadow financial institutions which serve the purpose of providing alternatives to banks deposits and transform credit to broker-dealers. The net value of money market funds in China was ¥4.255 billion RMB at the end of 2003 and reached ¥707.5 billion RMB at the end of 2012.

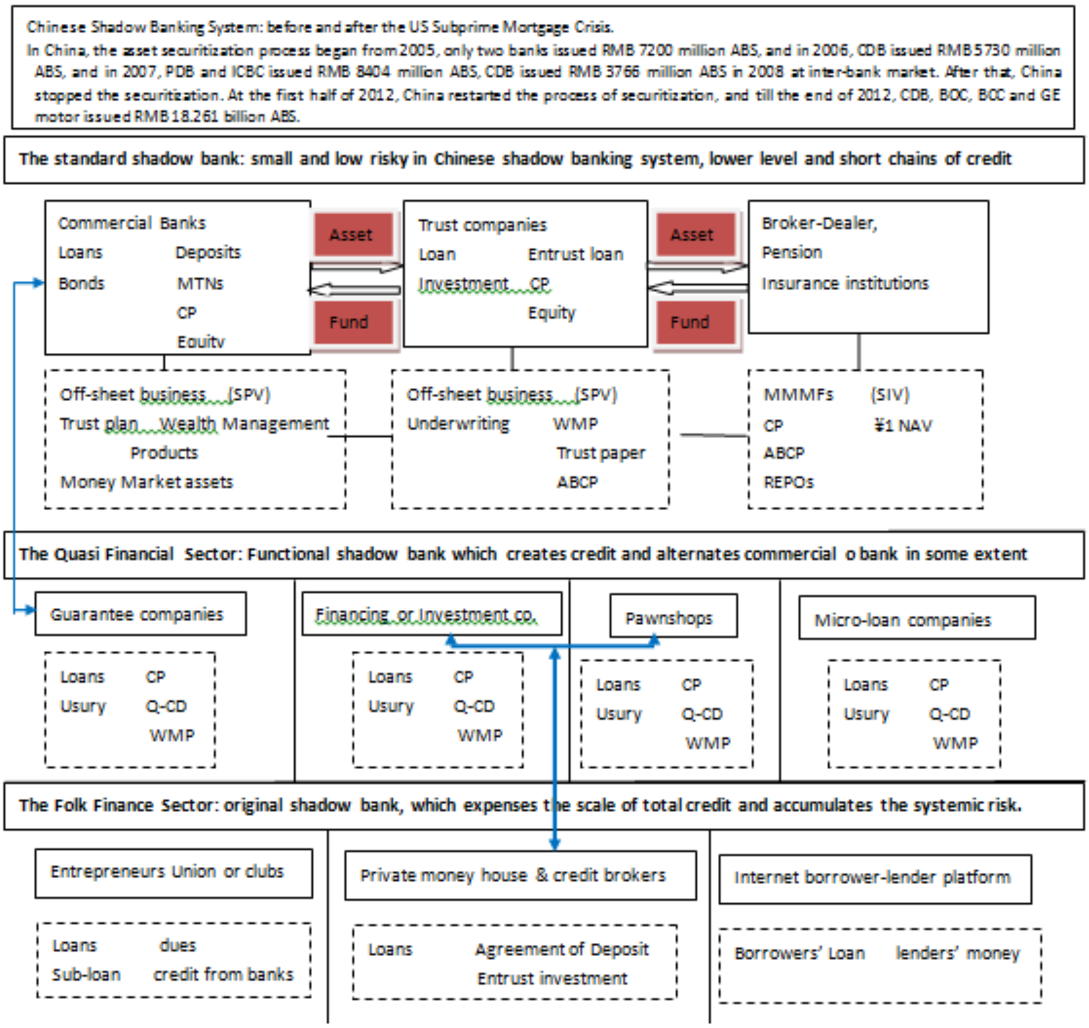
Bond repo transactions began in 1997, and the scale of the repo market was ¥18.42 trillion RMB in 2005, reaching ¥147 trillion in 2012. At the end of 2012, the first hedge fund, Zhongjin Aerfa FOHF, registered in Shenzhen Qianhai Modern Service Industral District. Hence China has an increasingly sophisticated shadow financial system.

Technical Analysis

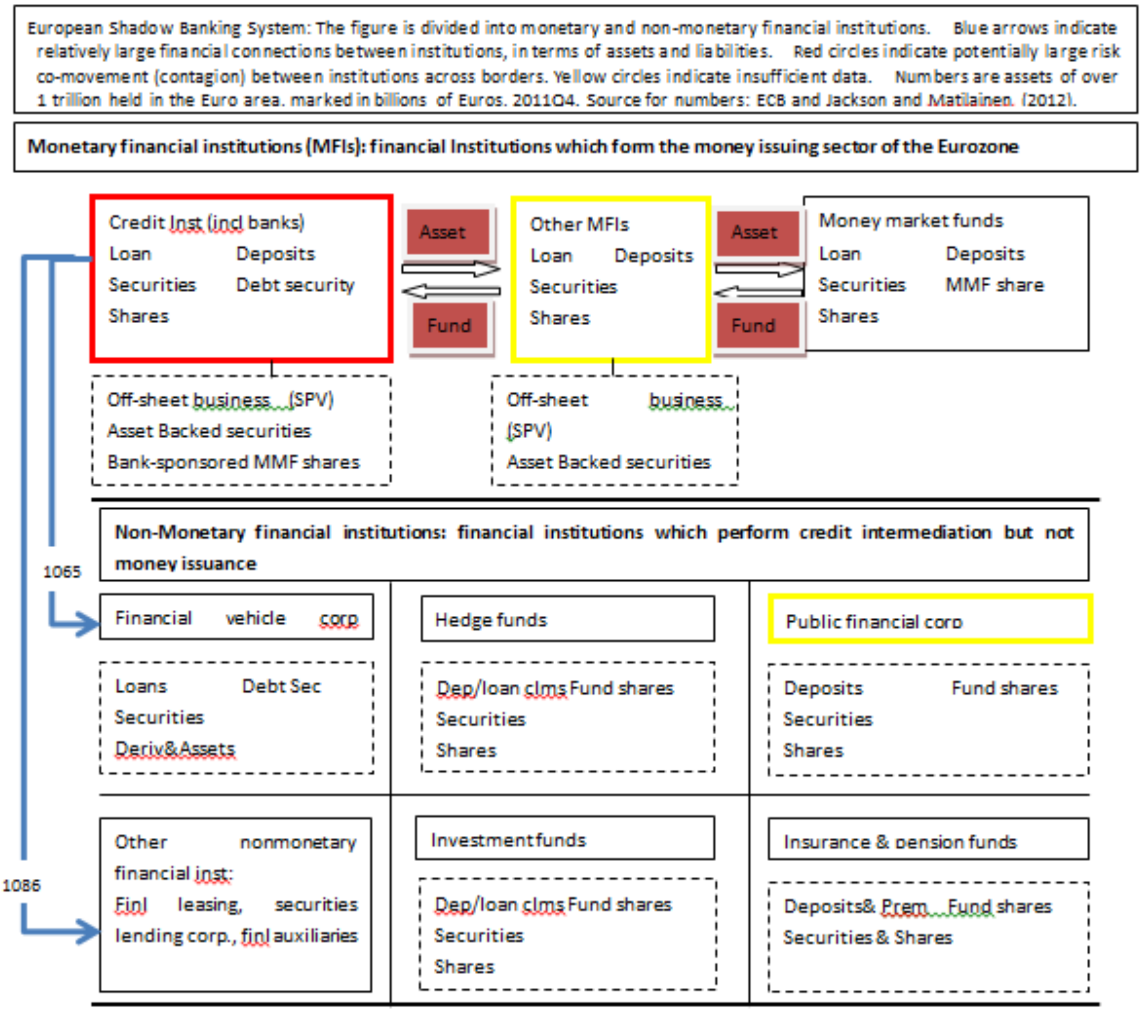
At a later date, we shall incorporate measures of systemic risk in China and Europe, based on Battiston et al (2009), discussed above. We shall include a proxy for robustness, a bankruptcy indicator, and average number of balance sheet connections to other institutions.

Below, we first examine systemic risk within the Chinese and European shadow banking system in diagram form. We lay out both financial systems and draw arrows between institutions that are highly interconnected. For Europe, this qualifies as holding assets of the other institution of over 1 trillion Euros. We shall quantify interconnections for China at a later date. An incomplete list of assets and liabilities held by these institutions is also given.

[14] Investment companies' business can be divided into three types: corporate loans, individual private business loans and individual loans. The forms of loans include mortgage loans, secured loans and credit loans.



Chinese Shadow Banking System: before and after the US Subprime Mortgage Crisis.
In China, the asset securitization process began from 2005, only two banks issued RMB 7200 million ABS, and in 2006, CDB issued RMB 5730 million ABS, and in 2007, PDB and ICBC issued RMB 8404 million ABS, CDB issued RMB 3766 million ABS in 2008 at inter-bank market. After that, China stopped the securitization. At the first half of 2012, China restarted the process of securitization, and till the end of 2012, CDB, BOC, BCC and GE motor issued RMB 18.261 billion ABS.
The standard shadow bank: small and low risky in Chinese shadow banking system, lower level and short chains of credit
Commercial Banks
Loans Deposits
Bonds MTNs
CP
Equity
Asset
Fund
Trust companies
Loan Entrust loan
Investment CP
Equity
Asset
Fund
Broker-Dealer,
Pension
Insurance institutions
Off-sheet business (SPV)
Trust plan Wealth Management Products
Money Market assets
Off-sheet business (SPV)
Underwriting WMP
Trust paper
ABCP
MMMFs (SIV)
CP ¥1 NAV
ABCP
REPOs
The Quasi Financial Sector: Functional shadow bank which creates credit and alternates commercial o bank in some extent
Guarantee companies
Loans CP
Usury Q-CD
WMP
Financing or Investment co.
Loans CP
Usury Q-CD
WMP
Pawnshops
Loans CP
Usury Q-CD
WMP
Micro-loan companies
Loans CP
Usury Q-CD
WMP
The Folk Finance Sector: original shadow bank, which expenses the scale of total credit and accumulates the systemic risk.
Entrepreneurs Union or clubs
Loans dues
Sub-loan credit from banks
Private money house & credit brokers
Loans Agreement of Deposit
Entrust investment
Internet borrower-lender platform
Borrowers' Loan lenders' money


European Shadow Banking System: The figure is divided into monetary and non-monetary financial institutions. Blue arrows indicate relatively large financial connections between institutions, in terms of assets and liabilities. Red circles indicate potentially large risk co-movement (contagion) between institutions across borders. Yellow circles indicate insufficient data. Numbers are assets of over 1 trillion held in the Euro area. marked in billions of Euros. 2011Q4. Source for numbers: ECB and Jackson and Matilainen. (2012).
Monetary financial institutions (MFIs): financial Institutions which form the money issuing sector of the Eurozone
Credit Inst (incl banks)
Loan Deposits
Securities Debt security
Shares
Asset
Fund
Other MFIs
Loan Deposits
Securities
Shares
Asset
Fund
Money market funds
Loan Deposits
Securities MMF share
Shares
Off-sheet business (SPV)
Asset Backed securities
Bank-sponsored MMF shares
Off-sheet business (SPV)
Asset Backed securities
Non-Monetary financial institutions: financial institutions which perform credit intermediation but not money issuance
1065
Financial vehicle corp
Loans Debt Sec
Securities
Deriv&Assets
Hedge funds
Dep/loan clms Fund shares
Securities
Shares
Public financial corp
Deposits Fund shares
Securities
Shares
1086
Other nonmonetary financial inst:
Finl leasing, securities lending corp., finl auxiliaries
Investment funds
Dep/loan clms Fund shares
Securities
Shares
Insurance & pension funds
Deposits& Prem. Fund shares
Securities & Shares

For the European shadow banking system, the largest financial linkages can be found between credit institutions such as banks and other financial institutions (non-bank financial institutions), and between credit institutions and financial vehicle corporations. Hence strong linkages are directly between banking and shadow banking entities. The following table illustrates these linkages in terms of assets:

Table One. Assets of euro area credit institutions to other financial institutions and to financial vehicle corporations (billions of Euros)

	Loans to OFIs and MMFs	(of which) Loans to Other OFIs	Debt securities held by credit inst from OFIs and MMFs	(of which) from FVCs
2010Q2	1,113	851	1,263	912
2010Q3	1,093	811	1,294	905
2010Q4	1,108	845	1,298	954
2011Q1	1,109	839	1,264	900
2011Q2	1,132	854	1,246	938
2011Q3	1,171	864	1,240	969
2011Q4	1,117	842	1,309	1065

Source: ECB and Jackson and Matilainen (2012)

Besides these very large linkages, there are linkages across the entire shadow banking system. Additional relatively large connections exist between credit institutions and investment funds, credit institutions and money market funds, nonfinancial companies and investment funds, households and financial vehicle corporations, and credit institutions and government. Insurance and pension funds also have extensive connections to the European financial sector, although at this time we lack data to distinguish which institutions bear the greatest connections to these entities.

We possess data on balance sheet linkages between entities, however, as Jackson and Matilainen (2012) state, “the data are not complete with regards to counterparties and instruments which would allow the full macro-mapping of the interactions between the financial sub-sectors. In particular, there is a lack of information on holdings of securities issued by MFIs and OFIs.”

For Europe, we can also look at the shadow banking system by country. The largest security issuers are the Netherlands and the UK, issuing mainly residential mortage-backed securities (see Tables Two and Three). Other large security issuers include Spain and Italy, included in the table below. France and Ireland are large issuers of asset backed commercial paper (not shown).

Table 2. Security Issuance by European Nation (€ Billions)

	2012	2011	**2010**	**2009**	**2008**
Belgium	5.1	**19.0**	17.7	27.4	34.9
Denmark	0.0	**0.0**	1.5		
France	8.4	**16.4**	9.0	6.9	14.2
Germany	5.4	**12.9**	13.4	26.5	50.1
Greece	2.0	**6.4**	1.0	22.5	12.7
Ireland	1.2	**0.0**	6.6	13.9	40.7
Italy	28.5	**48.1**	16.0	67.9	82.2
Netherlands	27.4	**85.6**	138.5	43.8	72.6
Portugal	1.1	**9.9**	16.9	12.9	14.8
Spain	7.0	**61.7**	54.9	62.4	80.7
UK	39.0	**99.5**	102.6	88.4	271.9
PanEurope	0.2	**3.0**	2.6		
Other Europe	1.1	**3.4**	1.6		
Multinational[7]	0.5	**6.0**	0.7	41.6	36.3
European Total[2]	126.9	**372.0**	382.9	414.1	711.1
US Total[1,2]	709.0	**1013.7**	1,276.7	1,358.9	933.6

Sources: Bloomberg, Citigroup, Dealogic, Deutsche, JP Morgan, Bank of America-Merrill Lynch, RBS, Thomson Reuters, Unicredit, AFME & SIFMA

Table Three. Security Issuance by Country and Collateral

2.7. Outstandings by Collateral and Country
2012:Q1

	ABS	**CDO**	**CMBS**	**RMBS**	**SME**	**WBS**	**TOTAL**
Austria	0.0		0.2	2.0			2.2
Belgium	0.1		0.2	71.1	14.5		85.9
Finland				3.7			3.7
France	18.1	0.2	3.8	18.3	3.8		44.2
Germany	35.3	2.5	16.2	19.0	8.6	0.1	81.8
Greece	15.3	3.0		6.0	9.4		33.7
Ireland		0.3	0.4	57.4	2.5		60.5
Italy	55.2	4.8	10.2	131.3	17.7	1.4	220.6
Netherlands	5.7	1.3	6.3	281.6	12.2		307.3
Portugal	6.5			38.2	9.6		54.3
Russia	0.9			2.7			3.5
Spain	21.7	1.2	0.5	162.7	80.4		266.5
Turkey	3.2						3.2
UK	35.6	7.8	70.6	353.6	7.2	56.2	531.0
Other[7]	2.2	2.9		0.3	0.4		5.8
PanEurope[9]	3.2	41.1	20.9	0.2	5.8	0.2	71.4
Multinational[5]	1.9	121.1	2.4	0.2	0.8	0.6	127.1
European Total[4]	204.9	186.2	131.8	1148.4	173.0	58.5	1902.7

2012:Q2

	ABS	CDO	CMBS	RMBS	SME	WBS	TOTAL
Austria	0.0		0.2	2.0			2.2
Belgium	0.1		0.2	69.9	17.7		88.0
Finland	0.5			0.0			0.5
France	18.9	0.2	3.7	18.9	3.6		45.4
Germany	33.8	2.5	15.8	18.6	7.4	0.1	78.2
Greece	15.2	1.9		6.9	9.9		33.9
Ireland	0.3	0.3	0.4	56.2	2.4		59.6
Italy	52.1	4.8	10.1	110.1	17.2	1.4	195.8
Netherlands	6.3	1.3	5.5	271.0	12.2		296.2
Portugal	6.6			30.9	9.2		46.7
Russia	0.9			2.6			3.5
Spain	20.3	1.1	0.5	159.4	70.6		251.9
Turkey	2.9						2.9
UK	40.4	7.7	66.0	310.2	7.0	56.5	487.8
Other[7]	2.3	2.8		0.3	0.4		5.7
PanEurope[9]	3.6	33.8	20.5	0.2	5.3	0.2	63.6
Multinational[5]	1.3	118.5	2.4	0.2	0.8	0.6	123.9
European Total[4]	205.6	174.9	125.2	1057.7	163.8	58.7	1785.9

Sources: Bloomberg, AFME, SIFMA

From the tables above, it is clear that security issuance is spread across Europe. Regulation of these sectors, where they are issued or held by shadow banking institutions, is especially important in these countries.

In China, systemic risk in the shadow banking system does not arise from the process of credit asset securitization, because the scale of securitization is very small. Risks may come from wealth management products, since these have been increasing in volume. In 2012, banks issued more than ¥20 trillion RMB products, exceeding the scale of new loans. Of these products, some floating return financial products present greater risks. However, the CBRC requires banks to back their risks, so they, and going further, the government which in turn backs the banks, take on all the risks.

The CBRC has been very sensitive to preventing financial fallout from the shadow banking sector to the banking sector. The CBRC has asked to build firewall between banks and trust companies, so that trust companies themselves will face market risks, such as enterprise default risks that occur with an economic downturn. In late June 2012, an announcement titled "Interim Report of the No.1 Collective Trust Fund Plan of China Credit-ChengZhiJinKai in 2010" aroused a storm. The announcement explained that the borrower of the mineral trust, which is listed as China Credit Trust Co., Ltd with a scale of ¥3.030 billion, brought about lawsuits with the allegation that it was hiding funds in secret accounts. This presented a special case of trust risk rather than systemic risk.

There were only 65 trust companies in China through the first half of 2012, with total trust assets worth ¥7 trillion RMB at the end of 2012. Negotiable securities companies possess total assets less than ¥2 trillion while financial leasing companies possess total assets of ¥1.2 trillion RMB. We also know that the stock of banks' wealth management products measures in at ¥6.73 trillion RMB. Therefore we can calculate the scale of the first level of the Chinese shadow banking sector in 2012 at nearly ¥18 trillion RMB.

Credit guarantee companies may encounter more risks because they lend money directly to small and medium sized enterprises. If some enterprises cannot repay their loans, they may encounter financial problems and will transfer some risks to banks. The good news is that, because banks do not supply many loans to small and medium sized enterprises, risk can be controlled.

Policy Recommendations

One aim of the European Union has been to provide the ability of financial conglomerates to operate across borders. Member states are responsible for their own financial supervision, and EU financial regulation is carried out by the Council of Ministers within the Lamfalussy framework (Vander Stichele 2008). There are now a significant number of intracountry bank connections, both within Western Europe and between Central, Eastern and Southeastern European nations and Western European nations. Clearly there were gaps in the Lamfalussy framework however. During the crisis, financial shocks were transmitted between banks and subsidiaries in other countries, as credit diminished. Contagion then spread to other banks within affected foreign countries. As Árvai, Driessen, and Ötker-Robe (2009) show, contagion can spread between parent and daughter company in either direction, from home to foreign country, or from foreign to home country.

Additional policies were recommended or implemented after the crisis to address systemic risk. The Independent Commission on Banking in the UK recommended that total separation between retail and wholesale and investment banking is unnecessary, but that domestic retail banking services should be ring-fenced to safeguard them from external influences. The Commission also recommended increased transparency of accounts and a minimum equity capital of at least 10% of risk-weighted assets for retail banks (Smith 2011).

The EU imposed restrictions on hedge funds and private equity. Although neither caused the financial crisis, both pose potential threats to systemic financial stability—hedge funds through the credit channel, with potential losses in the banking sector, or through the market channel, with potential losses in highly correlated trading strategies (Ferran 2011). Private equity can pose systemic risk when high leverage levels in private equity-backed buyouts increase the amount of debt servicing carried out by portfolio companies. After a series of conversations about the need to supervise hedge funds and private equity, a compromise was reached. This policy, called the Alternative Investment Fund Managers Directive, regulates fund activity. Under this policy, fund managers must be authorized in their own state, under a minimum amount of capital and own funds, with remuneration restrictions and administrative requirements. Assets must be independently valued at least once a year. There are also transparency and disclosure requirements, ensuring the production of an annual report.

What may be more important and relevant to the prevention of systemic risk is Europe's commitment to the implementation of Basel III under Capital Requirements Directive (CRD) IV (Cœuré 2012). Basel III would increase bank liquidity and reduce bank leverage, impose additional regulations on market and counterparty credit risk, and reduce procyclicality. This, coupled with the adoption of capital surcharges on globally systemic banks and clear instructions for the resolution of "too big to fail" banks, reduces the likelihood of another banking system meltdown, which is critical in the EU since Europe is highly dependent on bank financing. Further, OTC derivative contracts have begun to be traded on exchanges or electronic trading platforms.

China's shadow banking sector is in its infant stage and rapidly growing. Although the sector currently does not pose a systemic threat, new products and institutions must continue to be monitored and regulated. Currently, regulations control trust companies, finance guarantee companies, personal wealth management business carried out by banks, securitization, micro loan companies, bank-trust business, and illegal financial institutions. These have been created in response to the rise of new types of business, and the China Banking Regulatory Commission, State Council, and Central Bank regularly monitor financial activity.

Conclusion

In this paper, we have discussed the topography of shadow banking systems in Europe and China as well as potential for systemic risk. More precise calculations of systemic risk must be made in order to inform policy. As our understanding of shadow banking grows, we will have more ammunition to prevent or curtail future financial crises.

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