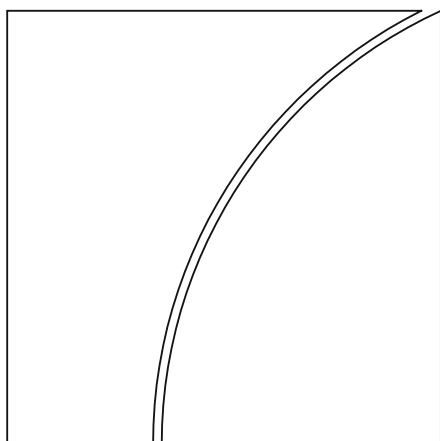




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Mapping shadow banking in China: structure and dynamics

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Table of contents

Mapping shadow banking in China: structure and dynamics	1
1 Introduction.....	3
2 Related literature	5
3 The structure of the shadow banking system in China	7
3.1 Definition.....	7
3.2 A stylised shadow banking map for China	9
3.3 The five key characteristics.....	10
i) Banks are at the centre of shadow banking in China.....	10
ii) Shadow banking provides alternative savings instruments and credit to underserved sectors	10
iii) Shadow banking generates tight financial system interlinkages	11
iv) Still limited complexity of shadow banking	12
v) Perceived and actual guarantees are pervasive.....	12
4 The main shadow banking instruments	13
4.1 The ultimate creditor stage.....	13
4.1.1 Wealth Management Products	13
4.1.2 Trust products.....	16
4.2 The intermediate stage and financial system interlinkages.....	17
4.2.1 Channelling business	17
4.2.2 Shadow funding of capital markets	18
4.2.3 Structured shadow credit intermediation.....	19
4.3 The ultimate borrower stage.....	21
5 Size and dynamics.....	22
5.1 Double-counting issues and existing size estimates	27
5.2 Size and dynamics at the ultimate creditor stage.....	27
5.3 Size and dynamics at the intermediate stage.....	28
5.4 Size and dynamics at the ultimate borrower stage.....	29
5.5 The changing face of shadow banking in China	30
6 Conclusions.....	31
References.....	32
Appendix I: Shadow banking instruments.....	35
Appendix II: Data description and sources	38
Appendix III: Size estimates for shadow banking maps.....	39

Mapping shadow banking in China: structure and dynamics

Torsten Ehlers, Steven Kong and Feng Zhu¹

Abstract

We develop a stylised shadow banking map for China with the aim of providing a coherent picture of its structure and the associated financial system interlinkages. Five key characteristics emerge. One defining feature of the shadow banking system in China is the dominant role of commercial banks, true to the adage that shadow banking in China is the “shadow of the banks”. Moreover, it differs from shadow banking in the United States in that securitisation and market-based instruments play only a limited role. With a series of maps we show that the size and dynamics of shadow banking in China have been changing rapidly. This reveals a marked shift in the relative importance of different shadow banking activities. New and more complex “structured” shadow credit intermediation has emerged and quickly reached a large scale, while the bond market has become highly dependent on funding channelled through wealth management products. As a result, the structure of shadow banking in China is growing more complex.

Keywords: shadow banking, wealth management products (WMPs), investment receivables, entrusted loans, trust loans

JEL classification: G2

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1 Introduction

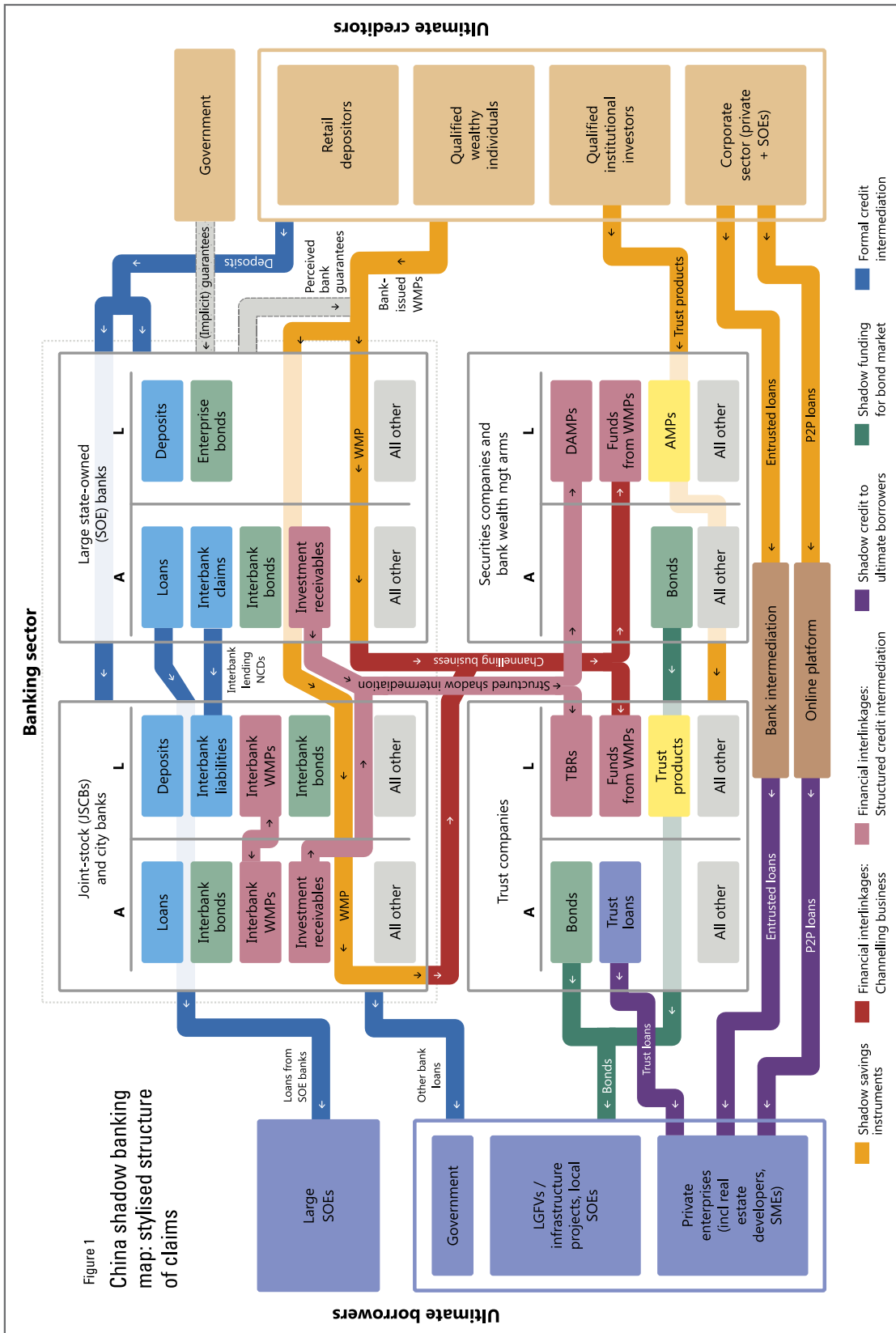
While an increasing number of studies have analysed various aspects of shadow banking in China, we attempt to provide a more comprehensive and structured view. We develop a stylised shadow banking map (Figure 1), with a particular focus on the central role of commercial banks as well as the financial system interlinkages generated by shadow banking activities. We rely on an activities-based approach and distinguish between three main stages of shadow credit intermediation in China to facilitate our analysis: the ultimate creditor stage, the intermediate stage and the ultimate borrower stage. Each stage involves distinctive financial instruments. Even though the fundamental economic drivers of shadow banking activities are similar, in China, such activities take markedly different forms from those in advanced economies such as the United States. They as well imply very different financial system interlinkages, which need to be taken into account when analysing potential financial stability risks.

We identify five key characteristics of shadow banking in China. The first distinct feature is the dominant role of commercial banks. For this reason, it is often dubbed the “shadow of the banks”. Securitisation and market-based instruments play only a limited role. Second, shadow banking serves important economic functions, especially in the form of providing alternative savings instruments and intermediating credit to private firms with less privileged access to formal bank credit. Third, shadow credit intermediation generates tight linkages within the financial system, including the bond market. Fourth, it is far less complex than its US counterpart. Fifth, perceived and actual guarantees are pervasive. Although pervasive guarantees are not at all unique to shadow banking in China, the form and nature of such guarantees are.

Our series of maps for the period 2013–2016 (Figures 2–5) reveal significant changes in the size and dynamics of shadow banking activities, suggesting a rapidly evolving structure of the shadow banking system in China.² While much of the expansion during China’s Great Stimulus in 2009–2010 was due to a push for shadow credit growth to ultimate borrowers, such growth has slowed recently. Yet, shadow savings instruments (eg wealth management products and trust products) at the ultimate creditor stage have kept expanding at a rapid pace. At the same time, new and more complex “structured” shadow credit intermediation has emerged and quickly reached a large scale, with the purpose of reclassifying bank assets to ease regulatory burdens (eg non-performing loan provisions, or loan-to-deposit ratio ceilings). As a result, the shadow banking system in China has grown more complex and thereby somewhat more similar to that in the United States.

The rest of the paper is structured as follows. The next section provides an overview of the related literature and outlines our contribution. Section 3 gives a detailed description of the structure map of China’s shadow banking system and illustrates its five key characteristics. The fourth section examines the main shadow banking instruments in more detail. Section 5 analyses the size and dynamics at the three main stages of shadow credit intermediation, and the last section concludes.

² Figures 2–5 present the shadow banking maps with the estimated outstanding amounts (in CNY) of the main shadow banking instruments from end-2013 to end-2016.



See Section 4 for a more detailed description of the shadow banking instruments depicted in the stylised shadow banking map.

2 Related literature

We provide a structured and coherent view of shadow banking in China. Our newly developed shadow banking map delineates the structure of the shadow banking system in China, with a particular emphasis on the interconnections between banks and shadow banking entities. We view this as a useful basis for further analysis, in particular on financial stability and regulatory issues.

The activity-based approach we take allows us to distinguish between three main stages of shadow credit intermediation in China, and to provide detailed information on its size and dynamics at each stage. Most size estimates for shadow banking in China either attempt to measure credit to ultimate borrowers and neglect the other stages of shadow credit intermediation, or add up volumes across different stages which involves a significant degree of double-counting. By documenting the different sizes and dynamics at the three main stages of credit intermediation, we find that the structure of shadow banking in China has evolved rapidly in recent years.

Our work builds on a growing literature on shadow banking, sparked by the Great Financial Crisis (GFC) of 2007-09 and the role of non-bank financial intermediaries in the US financial system (Acharya et al (2010), Brunnermeier (2009)). The focus in the literature on US, and to some extent European, shadow banking entities (eg money market and investment funds, brokers and dealers, special purpose vehicles) and activities (eg securitisation, wholesale financing, securities lending) has in effect become the basis for monitoring shadow banking activities globally (Adrian and Ashcraft (2016), FSB (2016)). Nevertheless, in many emerging economies including China, market-based financial instruments or securitisation have not been as relevant a factor as in advanced economies. The financial institutions involved are different, reflecting the economies' different histories and stages of financial development. The aim of our paper is to describe the specific characteristics and elements of shadow banking in China and thereby provide a basis for monitoring and analysing it.

While the current structure and form of shadow banking in China are unique, the fundamental economic *raison d'être* and drivers of shadow banking are similar. A key driver of shadow banking is the existence of some form of implicit guarantee or public backstop (Claessens and Ratnovski (2014), Kane (2014)). It enables the creation and widespread use of shadow banking products, especially those assets perceived as "safe" by investors. Dang et al (2014) note the asymmetric perception of risks among shadow banking entities, banks, and investors in China, given widely perceived credit guarantees from banks by investors.

On the supply side, the evasion of banking regulations (IMF (2014), Adrian et al (2013)), rapid financial development that outpaces financial regulation (Rajan (2005)), and financial repression have been widely discussed (Gilbert (1986) and Berger et al (1995) for the United States, Wang et al (2016) for China). Borst (2013) draws parallels between shadow banking in the United States during the 1960s and 1970s and in China more recently, arguing that both were driven by the rise of shadow deposits to circumvent bank deposit rate ceilings. More generally, the demand for shadow banking is driven by the fundamental economic functions it performs (Claessens et al 2012), which in turn can be welfare improving (Gennaioli et al (2013)). One typical function it fulfils is to satisfy the demand for "safe" assets by investors and savers

(Gorton et al (2012)), which is also a key characteristic of shadow banking in China (see section 3.3).

Despite the similar fundamental drivers of shadow banking activities in different jurisdictions, the distinct forms they take are important for identifying financial system interlinkages and assessing potential financial stability risks. Detailed structural analyses of shadow banking have been conducted for other economies, most notably the United States (Pozsar et al (2010)). Several papers examine specifically the structure of shadow banking systems, such as Pozsar and Singh (2011) for the United States, Bakk-Simon et al (2012) for the euro area, Acharya et al (2013) for India, and Harutyunyan et al (2015) for 26 mostly developed countries.

Research on shadow banking in China has grown in recent years, but often has a narrow focus on entrusted loans and wealth management products (WMPs). Allen et al (2015) find that entrusted loans are essentially a market reaction to credit shortages, as they increase when bank credit becomes tight. Allen et al (2016) and Chen et al (2016) conduct a transaction-level analysis of China's entrusted loans. Chen et al (2016) suggest that shadow banking is strongly linked to commercial banks' balance-sheet risks, as banks are prone to engaging in channelling risky entrusted loans. Acharya et al (2016) point out that the swift rise of shadow banking was triggered by China's stimulus plan announced in November 2008, with small and medium-sized banks significantly increasing shadow banking activities by issuing WMPs. Cai et al (2015) state that banks use WMPs for regulatory arbitrage or window-dressing, and Hachem and Song (2016) argue that tightening the loan-to-deposit ratio regulation led to a rise in bank-issued WMPs. Chen et al (2017) find that those provinces with abnormally higher bank loan growth in 2009 showed a higher degree of shadow banking activities, including entrusted loans and WMPs.

Several papers have argued that shadow credit serves Chinese private enterprises as an important source of funding, given the strong preference of the large state-owned banks for lending to large state-owned enterprises (Song et al (2011)). Ayyagari et al (2010) use firm-level data to examine firm financing patterns, including those of SMEs. They find that 80% of firm financing goes through informal channels, and firms with access to formal bank loans tend to grow faster. Hale and Long (2010), Lu et al (2015) and Tsai (2016) find that small and medium-size enterprises (SMEs) particularly rely on informal financing, as their access to formal credit is limited.

A few papers take a quantitative approach to analyse financial stability risks of shadow banking. Li et al (2014) run a stress test on the Chinese financial system and conclude that there is some risk of bankruptcies and potentially a risk of liquidity shortages. Hsu et al (2014) conclude, based on their network analysis, that trust companies present a systemic risk and banks absorb most of this risk.

A number of investment bank analyses have analysed the volume and dynamics of shadow credit intermediation in China (eg JP Morgan (2013), as well as the regular Moody's Quarterly China Shadow Banking Monitor). Perry and Weltewitz (2015) and Standard Chartered (2016) provide detailed accounts of WMPs. Li and Hsu (2012) give some historical background, while Elliott, Kroeber and Qiao (2015) provide a descriptive overview of shadow banking institutions and instruments in China. Li (2014) describes the evolution and some structural aspects of shadow banking in China, and Engle et al (2015) compare and contrast these with US shadow banking. Compared to these studies, our work has a strong focus on the interconnections among shadow banking institutions and banks, and on the rise of new forms of structured credit intermediation. While Li (2016) argues that shadow banking in China

is changing its face, our study goes into considerably greater detail. Using our shadow banking map and the three-stage distinction of shadow credit intermediation, we document how the structure and nature of shadow banking in China have evolved.

3 The structure of the shadow banking system in China

To illustrate the structure of the shadow banking system in China, we map the flow of funds from ultimate creditors to ultimate borrowers, analogous to the seminal wall chart of US shadow banking by the Federal Reserve Bank of New York (Pozsar et al (2010)). In Section 5 we provide annual snapshots of the Chinese shadow banking system for 2013-2016, giving rise to a “movie” of how the system has evolved. Our stylised shadow banking maps are constructed based on an in-depth analysis of publically available data from different sources on the main shadow banking entities and shadow credit instruments.³

3.1 Definition

Most existing definitions of shadow banking are tailored to advanced economies. For this reason, we first develop a definition that can better capture the structural characteristics of shadow banking in China.

We adopt an activity-based definition, namely “all financial instruments that fulfil functions of credit intermediation typically performed by banks (such as liquidity, maturity, and credit risk transformation), but reduce the burden of or bypass banking regulation.”⁴ Our definition is close to the one given by the People’s Bank of China (PBOC).⁵ It specifically includes credit intermediation activities performed by banks themselves that lower or circumvent regulatory requirements.⁶

Definitions of shadow banking can broadly be divided into three categories: activity-based, entity-based, and a mixture of the two (IMF (2014)). As existing empirical studies typically build on entity-based definitions, our activity-based analysis is not directly comparable to those studies. The most widely used definition of shadow banking is from the Financial Stability Board’s (FSB) 2012 shadow banking monitoring report: “credit intermediation involving entities and activities (fully or partially) outside the regular banking system” (FSB (2012)). The de-facto entity-based approach facilitates the collection and comparison of data across different jurisdictions for which the FSB monitors shadow banking activity, using data from

³ Appendix II and III provide further details on the source and destination of funds.

⁴ In light of our definition, we use the terms *shadow banking* and *shadow credit intermediation* interchangeably.

⁵ The PBOC’s Financial Stability Report (2013) defines shadow banking as “credit intermediation involving entities and activities outside the regular banking system, with the functions of liquidity and credit transformation, which could potentially cause systemic risks or regulatory arbitrage.”

⁶ Kane (2014) use the expression “shadowy banking” to describe “... instruments that, given the boundaries of current laws or control procedures, are either actually or potentially outside the statutory grip of the several agencies currently charged with monitoring and managing the financial safety net”.

national accounts as the starting point.⁷ Since our definition is not based on balance sheet positions but rather on a set of financial instruments, including those used or held by banks, our perspective on shadow banking in China is different from that taken in the FSB's analyses.

Our definition is consistent with other prominent and more general activity-based definitions that define shadow banking on the basis of fundamental economic characteristics (Kane (2014), Claessens and Ratnovski (2014)).⁸ Further, the financial instruments we include in our definition are generally consistent with those used in other studies on shadow banking in China, such as Elliott, Kroeber and Qiao (2015), JP Morgan (2013) and Moody's (2017a). We examine the relevant instruments in Section 4. Table A1 in Appendix I contains the list of instruments and key characteristics, and Tables 1-3 in Section 5 provide size estimates corresponding to each stage of shadow credit intermediation.

Our analysis brings to light some additional aspects which have received less attention in the literature thus far. For instance, a large share of bond issuance is funded by shadow savings instruments, creating strong linkages between the bond market and shadow banking activity. We also document new forms of "structured" shadow credit intermediation.

We exclude several instruments often considered to be part of shadow banking in China. In particular, we exclude bonds and investments in funds.⁹ In these cases of market-based intermediation, the associated risks are (to a large extent) directly passed on to investors. Therefore it is not bank-like credit intermediation, where liquid short-term and safe deposits are transformed into less liquid longer-term and risky loans. We further exclude banker's acceptances, both discounted and undiscounted, from shadow banking, as we view them merely as facilitating tools, but not as a form of shadow credit intermediation in itself. In the case of money market funds, comprehensive and sufficiently granular data was lacking. Hence, their potentially relevant activities are not included in our analysis. Nevertheless, the current structure and past dynamics of shadow banking are unlikely to be affected in a material way, as total assets of money market funds are still relatively small compared to those related to other shadow banking activities.¹⁰

Our activity-based definition comes with several caveats. Some shadow banking activities may be hidden and evade our coverage. Further, the activity-based view is relatively static and requires adaptation over time. As China's financial system undergoes fast-paced and sometimes fundamental changes, new instruments and shadow credit intermediation channels can emerge and develop rapidly.

⁷ Recently, the FSB has refined its approach for its global shadow banking monitoring report, adopting a narrow measure of shadow banking which takes into account economic functions. The overall approach, however, including the data collection, remains institution-based. We therefore put the definition from FSB (2012) into the entity-based category, in contrast to IMF (2014) which categorises it as a mixture of entity- and activity-based.

⁸ IMF (2014) categorises the definition by Kane (2014) as a mixture of entity- and activity-based, although its main emphasis is on activities and financial instruments.

⁹ Any equity-related instruments are also excluded, as they do not present credit intermediation.

¹⁰ See McLoughlin and Meredith (2017) for a detailed analysis of money market funds in China.

3.2 A stylised shadow banking map for China

Our shadow banking map in Figure 1 illustrates the basic structure of the shadow banking system in China. The map is stylised, in that it presents a greatly simplified structure, focussing only on the main shadow banking instruments and entities in China that currently exist, as well as the most relevant interlinkages among commercial banks and the key non-bank financial intermediaries. The orange, rose, red, and purple arrows depict the main shadow banking instruments and the resulting claims. Formal credit intermediation by banks is represented by the blue arrows. The green arrows stand for shadow credit intermediation through the bond market.¹¹

We distinguish three main stages of shadow credit intermediation to facilitate the analysis of the structure.¹² The ultimate creditor stage (Figure 1, right-hand side) is the source of funding, consisting mainly of private and corporate depositors. The most relevant shadow savings instruments are represented by the orange arrows. At the intermediate stage (centre), the received funds are then intermediated and transformed into different shadow banking assets. The various forms of shadow credit intermediation generate tight interlinkages (rose and red arrows) among banks and other shadow banking entities (trust companies and securities companies including banks' wealth management arms). The ultimate borrower stage (left-hand side) is the final destination of shadow credit, represented by the purple arrows.¹³ Each stage involves different types of instruments and entities, and performs different economic functions (see Section 4).

Our shadow banking map points to a number of notable differences between shadow banking in China and that in the United States (see Pozsar et al (2010)). First, banks are the dominant players in the shadow banking system.¹⁴ Banks issue key instruments (ie wealth management products), they then channel the proceeds to non-bank entities such as trust companies. Banks are also the driving force behind the new and more complex forms of "structured" shadow credit intermediation. Second, shadow credit intermediation in China hardly involves securitisation or wholesale funding, which are the ultimate sources and drivers of US shadow banking. In fact, shadow banking in China has been much more akin to traditional banking: it collects "deposits" or cash from retail and corporate investors, and then transforms their savings into credit of different forms to provide funding to firms. Given the banks' central role, shadow banking in China is often dubbed the "shadow of the banks", as opposed to a capital market-based form of credit intermediation. Furthermore, it is important to point out that the role of foreign investors or foreign financial entities is negligible. Shadow banking activity in China is driven by domestic financial institutions, savers and investors. It also involves fewer types of entities, as

¹¹ We abstract from the equity market in our map, focusing on *credit* intermediation.

¹² Figure 1 illustrates the structure from the right- to the left-hand side, consistent with the convention of listing assets on the left-hand side of the balance sheet and liabilities on the right-hand side.

¹³ Some borrowers, such as state-owned enterprises or local government financing vehicles, may be viewed as ultimately belonging to the public sector. We abstract from these issues and refer to ultimate borrowers as entities or individuals using the credit to produce goods and provide services, or finance private or government expenditures.

¹⁴ Banks also play an important role in the US shadow banking system, especially as the originator of securitised debt. But banks are far from being dominant, since much of US shadow banking activity relies on market-based credit intermediation, involving a host of non-bank entities.

well as fewer steps of shadow credit intermediation than in the United States (Adrian and Ashcraft (2016)).

3.3 The five key characteristics

The stylised shadow banking map illustrates five key characteristics of shadow credit intermediation in China.

i) Banks are at the centre of shadow banking in China

Commercial banks are the key players at the centre of shadow credit intermediation (Figure 1, rose and red arrows). They are the main linkage between the suppliers and borrowers of funds in both the formal *and* the shadow banking system. Banks issue key shadow banking instruments such as wealth management products (WMP), they channel investors' funds and provide liquidity to other shadow banking entities (eg trust companies), and they are holders of shadow banking instruments such as trust beneficiary rights (TBR) or interbank WMPs.

All types of commercial banks in China, but especially the smaller joint-stock and city commercial banks, are actively and directly involved in shadow credit intermediation. In the process, they create tight interlinkages between formal and shadow banking activities and entities. A significant share of the proceeds from bank-issued WMPs, for instance, are channelled into trust products ("channelling business"). Further, banks hold TBRs which are participation rights to the proceeds from trust products issued by a trust company.

Besides their direct role, banks facilitate shadow credit in various ways. For instance, since direct loans between non-financial firms are legally not permissible, banks act as the trustee and middleman of the so-called entrusted loans between firms. The trustee bank collects the principal and interest and charges a handling fee. It either does not take credit risk in the process, or absorbs part of the credit risk through so-called entrusted rights (Chen et al (2016)). By distributing and intermediating a wide range of shadow banking products themselves, as well as on behalf of other entities, banks are the central player within China's shadow banking system. In this role, banks are perceived as providers of implicit guarantees to their customers in case of defaults, even though they have no such legal obligation.

More recently, banks have resorted to a combination of existing shadow credit instruments to reduce regulatory burdens. Through this "structured" form of shadow credit intermediation, bank assets are reclassified into investment receivables. Banks can thereby lower non-performing loan (NPL) provisions and alleviate loan-to-deposit (LTD) ratio constraints (see Section 4.2.3).

ii) Shadow banking provides alternative savings instruments and credit to underserved sectors

Shadow banking plays the important role of providing alternative savings instruments (Figure 1, orange arrows) and of intermediating funds to private firms with less privileged access to formal bank credit (Figure 1, purple arrows). While this is not a unique feature of the shadow banking system in China, the different types of products and institutions involved give rise to a distinctive structure of financial interlinkages.

Alternative shadow savings instruments such as WMPs, trust products, and entrusted loans have diverted household and corporate savings away from regular

bank deposits. Arguably, there are two main drivers. First, the low deposit rate ceiling that was only abolished in October 2015 (Wang et al (2016), Lardy (2008)). Until then, shadow instruments allowed banks to circumvent the ceiling and offer significantly higher yields. Second, competition for funds and savers' growing demand for higher-yield savings products have driven the rise of shadow savings instruments, especially since these are often perceived as safe (Dang et al (2014)). Direct access to the bond market is rather limited. Bond mutual funds and other unit trusts are still in their early stage of development. Even after the full liberalisation of bank deposit rates in October 2015, shadow savings instruments have continued to pay a noticeable premium over bank deposits.

Shadow banking provides credit to private firms which otherwise would be unavailable or too difficult to obtain. As these firms are typically more productive than their state-owned counterparts (Hsieh and Klenow (2009), Dollar and Wei (2007)), shadow credit is likely to lead to direct economic gains. Traditionally, most private firms as well as smaller state-owned enterprises (SOEs) have difficulties in accessing the formal credit market, as large state-owned banks prefer to lend to large SOEs (Hale and Long (2010), Lu et al (2015), Tsai (2016)). Banks' preferences for large SOEs reflect historical relationships and high creditworthiness due to implicit or explicit government backing, reducing the credit supply to potentially more productive private firms. Shadow credit intermediation has helped to fill this gap.

Shadow credit to private enterprises mainly takes the forms of loans from trust companies (trust loans) and direct company-to-company loans intermediated by banks (entrusted loans). Entrusted loans are driven by the fact that many firms have excess savings at their disposal. Large SOEs also take advantage of their easier access to bank credit and better loan terms to lend to their subsidiaries and associates. Another small but rapidly expanding form of shadow credit is peer-to-peer (P2P) lending intermediated through online platforms, which directly match savers and borrowers. Thus far, online lending platforms have operated without full-fledged banking licenses under relatively light "Provisional Rules" (CGFS and FSB (2017)).

iii) Shadow banking generates tight financial system interlinkages

Shadow credit intermediation not only implies tight interlinkages between commercial banks and shadow banking entities (Figure 1, rose and red arrows), but also generates close ties with China's bond market (Figure 1, green arrows). A large share of the proceeds from WMPs have been invested in the bond market. This is an intended consequence of regulation on WMPs, stipulating that at least 75% of the underlying assets of WMPs must consist of so-called standardised debt instruments, including bonds, money market instruments, and bank deposits. WMPs have effectively provided a channel for retail investors to invest in bonds, as direct access to the interbank bond market is restricted to financial institutions.

Proceeds from issuing WMPs are largely channelled to non-bank institutions – typically a trust company or a bank's investment or wealth management arm – and are thereby moved off banks' balance sheets (see Section 4.1.1). The non-bank institution in turn invests the funds in bonds or other money market instruments, including bank deposits. The resulting linkages between banks, shadow savings instruments and the bond market in effect constrain the diversification role of bond markets intended by the Chinese regulators, limiting its potential to support credit supply when bank lending is impaired (Chan et al (2012), De Fiore and Uhlig (2015)).

New forms of “structured” credit intermediation have flourished in recent years, in particular those related to banks’ investment receivables. The reclassification of bank assets into investment receivables is generating even tighter and more complex and opaque linkages between the formal banking sector and shadow banking entities. In a first step, a bank’s exposures are usually transferred to trust companies or its’ asset or wealth management arms (Figure 1, rose arrows). In return, the bank receives full participation rights in the profits and losses of the underlying loans or debt securities, through TBRs and directed asset management products (DAMPs). The credit exposures are sometimes transferred among banks through interbank WMPs (Figure 1, rose arrows within joint-stock and city banks), for which the TBRs or DAMPs serve as the underlying securities.

iv) Still limited complexity of shadow banking

Shadow banking in China is less complex than in the United States, as it involves fewer entity types and fewer steps of credit intermediation. Mostly, shadow credit intermediation in China is a one-step or two-step intermediation process, as it is effectively based on “plain vanilla” loans or instruments that entail a one-to-one link to the revenues from the underlying debt instruments. In contrast, a typical shadow credit intermediation process in the United States involves seven steps (“vertical slicing”) and a large number of financial entities (Adrian and Ashcraft (2016)).

Nevertheless, the tight linkages between shadow savings instruments and bond market, as well as the new forms of structured shadow credit intermediation, signal that shadow banking in China is growing more complex.

v) Perceived and actual guarantees are pervasive

While shadow credit intermediation operates without access to central bank liquidity and does not benefit from deposit insurance protection, shadow banking instruments in China are backed by implicit and explicit guarantees (Figure 1, grey arrows). In both China and the United States, the expectation of an eventual government rescue of systemically important financial institutions that get into trouble provides implicit guarantees to investors and creditors. In the United States, high credit ratings for market-based financial instruments gave a false sense of safety ahead of the GFC. In addition, banks and other financial institutions explicitly offered conditional liquidity provision arrangements to special purpose entities issuing such instruments.

In China, by contrast, shadow banking activities are driven by banks, and the buyers of WMPs or other products typically assume that the distributing bank provides compensation in case of a default. In fact, banks have no such legal obligation to do so, as any recourse to the issuing entity is explicitly excluded in the contracts. Nevertheless, the precedents set by past bail-outs and the perceived priority placed by the authorities on maintaining financial market and social stability contribute to perceptions of implicit bank guarantees. If a state-owned bank is involved, customers may view the products as being ultimately backed by a government guarantee. In a competitive environment, banks have an incentive to encourage such assumptions. In addition, credit guarantee companies provide explicit guarantees for a wide range of shadow banking activities in China. While these companies help smaller and newly founded enterprises access the credit market, they also create opaque financial interdependencies. Credit guarantee companies are often lightly regulated by provincial and local authorities. In some instances, defaults

of trust products or WMPs have entailed secondary defaults of credit guarantee companies (Caixin (2012)).

4 The main shadow banking instruments

Each of the three main stages of shadow credit intermediation in China features a distinct set of instruments. At the ultimate creditor stage, shadow banking is directly and primarily funded by depositors, who purchase bank-issued WMPs or trust products. Consequently, shadow credit intermediation does not require collateralisation or securitisation at this stage, in contrast to US shadow banking system.¹⁵ For this reason, shadow banking in China is better characterised as a bank-like credit intermediation process, with deposits being collected through higher-yield WMPs or trust products. The lack of collateralisation or securitisation on the funding side is one key reason for why the structure of the shadow banking system in China remains so different from that in the United States.

4.1 The ultimate creditor stage

Apart from entrusted loans and P2P loans (see Section 4.3), shadow bank funding in general relies on two main instruments: wealth management products (WMPs) and trust products.

4.1.1 Wealth Management Products

Bank-issued WMPs serve as alternative savings instruments, which promise higher returns than traditional bank deposits, but are still regarded as safe. Banks are the dominant issuers of WMPs and offer two main types of WMPs.¹⁶ First, the principal- or return-guaranteed WMPs (PRG-WMPs) that entail full bank guarantees either on the principal or on the return. They are recorded on banks' balance sheets along with the underlying investment which they finance. PRG-WMPs are akin to negotiable certificates of deposit (NCD) and subject to normal banking regulations. We therefore do not consider them to be part of shadow banking.¹⁷ Second, banks offer non-principal guaranteed WMPs with no explicit bank guarantees, which are not recorded on banks' balance sheets. The underlying investment of the non-principal guaranteed WMPs is usually held by a channelling company, eg banks' investment or wealth management arms, but the issuing bank normally retains full control over the investment. Effectively, banks act as asset managers, charging fees to investors, without being subject to regulatory restrictions, except for those governing the

¹⁵ By "collateralisation" we mean a process that generates asset-backed instruments, which are not tradeable. We use the term "securitisation" strictly for cases in which the generated assets are tradeable on financial markets.

¹⁶ Some studies, such as Standard and Chartered (2016), subsume a variety of investment instruments under WMPs (eg trust products, asset management products). However, we differentiate these investment products as they typically generate distinct financial system interlinkages.

¹⁷ Guaranteed WMPs used to fulfil the function of circumventing deposit rate ceilings, which have been gradually relaxed and were eventually abolished in October 2015.

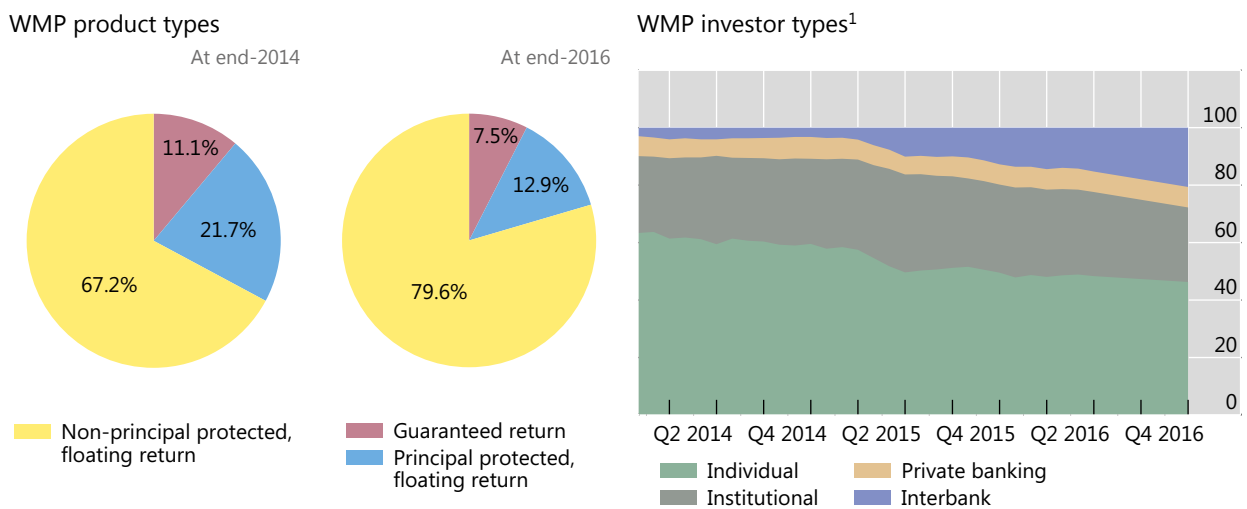
admissible design of WMPs.¹⁸ By the end of 2016, the share of non-guaranteed WMPs in total outstanding WMPs reached almost 80% (Graph 1, left-hand panel).

Most WMPs are closed-ended, meaning that they have a definite life cycle and investors have to subscribe during specific periods. They accounted for around 57% of outstanding balances in mid-2016. In the case of open-ended WMPs, investors can subscribe and redeem at any time (Credit Suisse (2014)). Open-ended WMPs have risen to 43% in mid-2016 from 35% at the end of 2014. Importantly, only a small share of outstanding WMPs (6% in mid-2016) are open-ended instruments where regular information on the net asset value (NAV) of the underlying assets is available. In all other cases, investors typically do not have timely information on the value of the underlying assets (non-NAV WMPs). In this sense, WMPs are a relatively opaque savings instruments compared to bank deposits or debt securities.

WMP sources of funds: breakdown by product types and investor types

Per cent of total WMP asset balance

Graph 1



¹ Monthly data between June 2016 and December 2016 was not available.

Sources: China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn); authors' calculations.

A major part of the funding for WMPs comes from individual investors, but their share has declined in recent years (Graph 1, right-hand panel). At the same time, the share of interbank WMPs has risen rapidly since the second quarter of 2015. This signals a shift in the use of WMPs from providing an alternative savings instrument to savers towards supporting the more complex forms of “structured” shadow credit intermediation (see Section 4.2.3). By the end of 2016, about 53% of WMP funds were obtained from retail investors and wealthy individuals through private banking, down

¹⁸ Recently, the PBOC strengthened its Macroprudential Assessment (MPA) framework. Under the MPA framework, a bank's capital adequacy requirement is determined by the growth of a broad range of credit assets. Since the first quarter of 2017 this also includes off-balance sheet WMPs. According to Moody's (2017c), newly proposed regulations envisage that “asset management products with implicit guarantee features will be regulated as bank deposits and originating entities need to pay deposit reserve and deposit insurance premium”. But the proposed regulations are not expected to take effect before mid-2019.

from over 70% in early 2014. Similarly, the share pertaining to institutional and corporate investors has fallen since mid-2015, to 26% at the end of 2016.

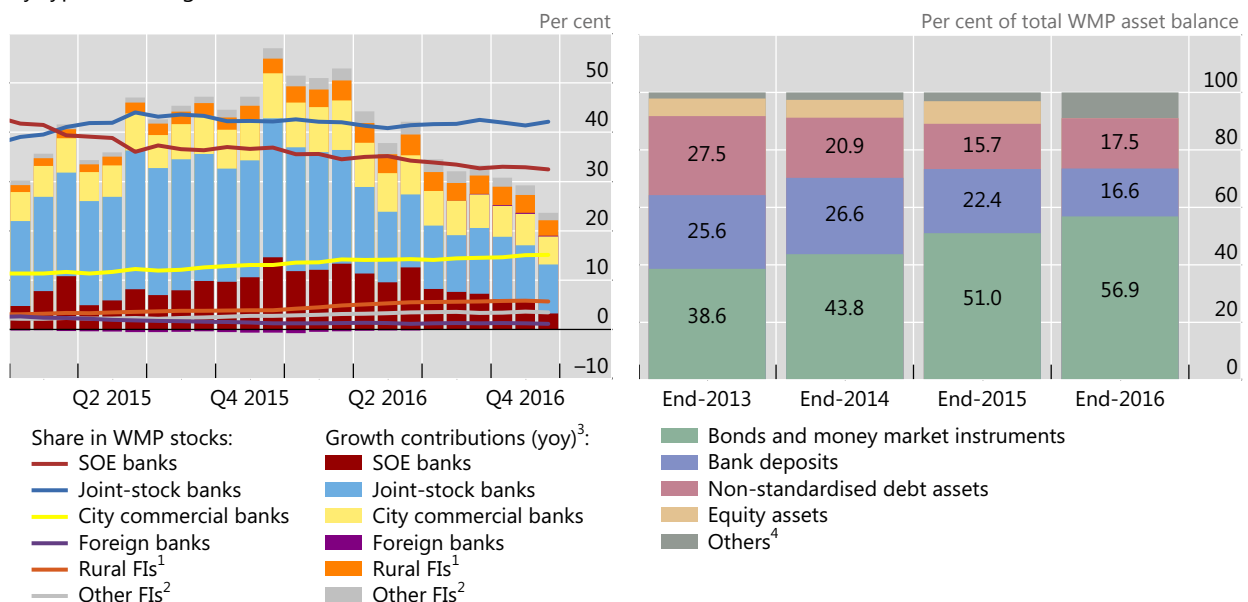
In recent years, there has been a notable shift in the types of banks issuing WMPs. While large state-owned banks used to be the main issuers, the share of outstanding WMPs issued by joint-stock banks overtook that of the large banks in early 2015 (Graph 2, left-hand panel). As joint-stock banks are less likely to benefit from government backing in the event of WMP defaults, this shift in composition may have increased credit risks for investors¹⁹. Joint-stock banks had issued over 42% of the outstanding WMPs at the end of 2016, compared to 32% issued by large state-owned banks. In addition, smaller city commercial banks as well as rural banks have significantly expanded their WMP issuance activity over time, although they remained relatively small players. Issuance by foreign banks has been rather small and their share in the outstanding WMPs has further declined.

WMP issuers and destination of funds

Graph 2

Year-on-year growth in outstanding WMP asset balances by type of issuing bank

Asset balance of WMPs by underlying investment



¹ Rural financial institutions, including local banks in rural areas. ² Other financial institutions. ³ Contributions to the year-on-year growth in the stock of outstanding instruments. ⁴ Others include investments in funds, financial derivatives, QDII, wealth management direct financing instruments, credit asset transfer projects and commodities. Includes equity assets in December 2016 due to changes in reporting.

Sources: China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn); authors' calculations.

The proceeds from bank-issued WMPs are invested in a range of financial assets. Under the current regulations, the share of "non-standardised assets" for a given WMP is limited to no more than 25% of the total. The non-standardised assets are mainly non-tradable debt securities such as trust and entrusted loans, direct equity stakes, equity-repos, and beneficial ownership rights including entrusted rights and

¹⁹ The joint-stock banks typically have a much smaller deposit base and a greater reliance on interbank markets and bond issuance for funding than the large banks. While deposits remained stable for the large banks at about 80% of total liabilities in 2014-16, the ratio fell from 69% to 60% for joint-stock banks. The smaller banks have as well invested far more in interbank products and equities and therefore have greater risk exposures.

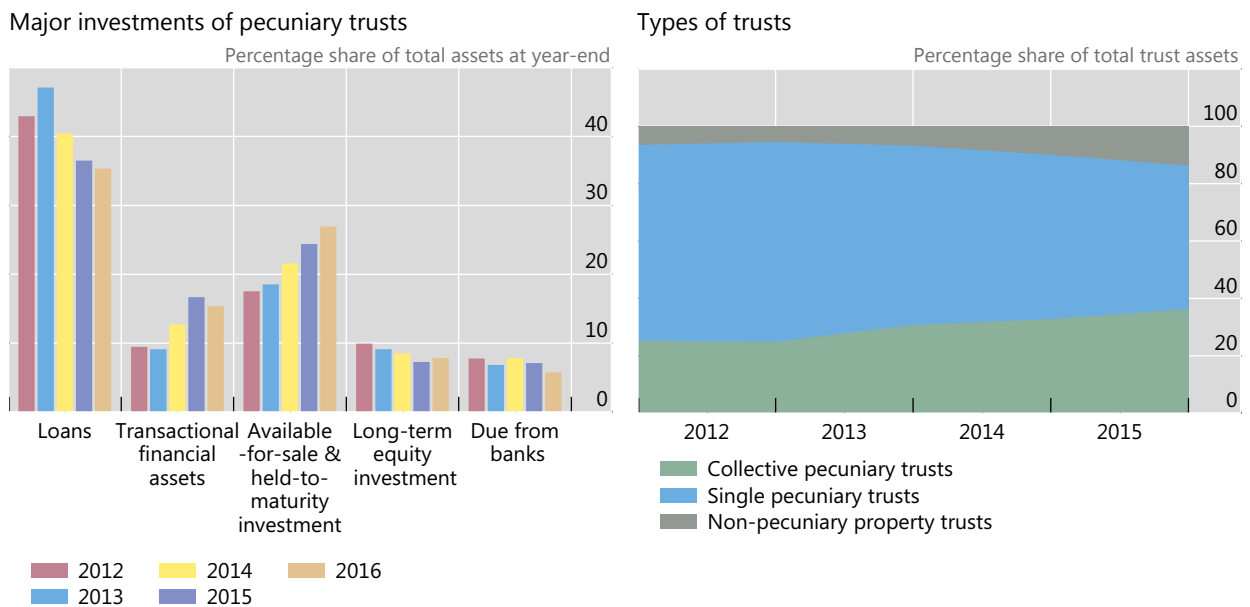
TBRs. The “standardised assets”, which are essentially cash-like assets (eg bank deposits and money market instruments) or tradable securities (eg tradable bonds), now make up the lion’s share of the underlying WMP investments (Graph 2, right-hand panel). The nature of the underlying investments of bank-issued WMPs suggests a potentially large maturity mismatch. At end-2015, more than 27% of outstanding close-ended WMPs had maturities of less than three months, 59% less than six months, and over 90% less than 12 months. The underlying debt and equity investments as well as non-standardised assets, however, typically have significantly longer maturities.

4.1.2 Trust products

Trust products are issued by trust companies which perform credit intermediation functions like commercial banks, but are not subject to the same regulations. Traditionally, they have played an important role in China as lenders to the less-favoured and riskier borrowers with limited access to bank credit – in particular new and smaller private firms. This was helped by the relatively looser regulations in comparison to banking regulations. But since 2007, a series of regulatory measures have significantly altered the framework under which trust companies could operate (Zhu and Conrad (2014)). Regulators aimed to transform trust companies into professional third-party wealth managers, and the measures resulted in an increase in the share of tradable securities in trust investments (Graph 3, left-hand panel). Nevertheless, trust loans remain the single most important type of underlying assets held by trust companies.

Trust companies: trust types and investment instruments

Graph 3



Sources: CEIC; authors’ calculations.

Trust companies issue single- or collective-investor trust products, as well as property trust products. Each type is directly linked to the type of shadow credit intermediation that is performed. Single-investor trust products (SITP) are related to the channelling business by banks and other large-scale investors, eg securities firms, investment funds, pension funds and insurance companies. They are specifically

tailored to the needs of a single investor and typically have either one or a small number of underlying investment assets. SITPs are also used when banks channel proceeds from WMPs to trust companies. More generally, they facilitate investment in specific assets determined by a large investor, who cannot or does not want to hold them directly on its balance sheet. The share of SITPs in all trust products fell to 50% at end-2016, from close to 70% at end-2012 (Graph 3, right-hand panel).

Collective-investor trust products (CITPs) bundle funds from various investors and have a larger number of underlying assets, though typically the underlying investments are less diversified than in the case of WMPs. Financial institutions are large investors in CITPs. In addition, CITPs are sold to wealthy individuals and retail investors. Their share rose steadily from around 25% in 2012 to 36% at end-2016.

Non-pecuniary property trusts manage non-monetary assets such as physical or other illiquid assets, mostly on behalf of a single client. In many cases, property trusts are used to achieve bankruptcy isolation, rather than for investment management purposes. They have grown over time, but their share remains small.

4.2 The intermediate stage and financial system interlinkages

The intermediation of shadow credit in China is where banks, as the dominant players, become most closely linked with other financial institutions. Funds are intermediated from banks to shadow banking entities (“channelling business”), and bank balance sheet positions are reclassified through a “restructuring” of different shadow banking instruments (“structured” shadow credit intermediation). An important recent phenomenon is the growth of linkages between shadow savings instruments and capital markets – in particular the bond market.

4.2.1 Channelling business

The channelling business is driven by banks directing a substantial portion of funds raised through bank-issued WMPs towards other shadow banking entities and instruments. The main examples are the channelling of funds to trust companies (the so-called “bank-trust cooperation”) or to securities brokerages (the so-called “bank-security brokerage cooperation”). This not only creates strong ties between banks and other shadow intermediaries, but also significantly boosts the volume of shadow credit, as banks effectively redirect the raised funds into shadow banking instruments.

At the end of 2016, bank-trust cooperation provided 23.5% of funding for trust products. Assuming that single-investor trusts are the main recipient of funds channelled by banks, the dependence on funding channelled through bank-issued WMPs is even higher. (Graph 4, left-hand panel). While the amount of funds channelled from bank-issued WMPs into trust companies and trust products has declined steadily starting in 2010, the dependence of trust companies on bank-trust cooperation has actually risen from 2013 onwards.

The large scale of bank-trust cooperation has entailed substantial maturity and credit risk transformation, given the relatively short maturity of WMPs and potentially risky and longer term underlying assets of trust products. Bank-trust cooperation may therefore pose significant liquidity risks, to the extent that there is the possibility of bank-issued WMPs not being rolled over, or of banks stopping to channel funds to trust companies.

4.2.2 Shadow funding of capital markets

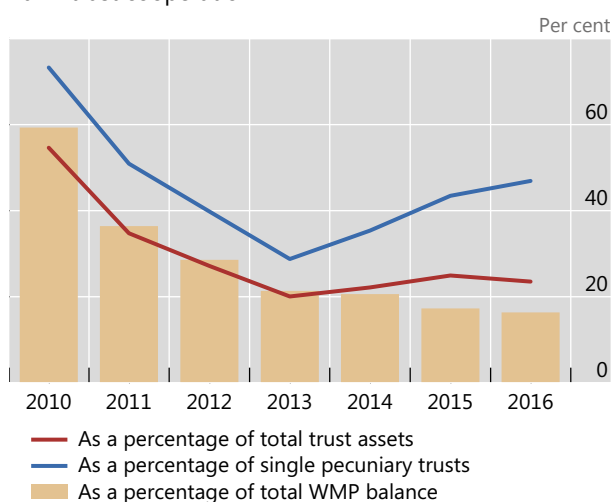
Another key financial sector linkage engendered by shadow credit instruments is with capital markets. In particular, funding for bonds has come to a significant extent from WMPs; and to a lesser extent also trust products. At end-2016, around 25% of funding for outstanding bonds issued in the Chinese market came from bank-issued WMPs and around 3% from trust companies (Graph 4, right-hand panel). Since a portion of proceeds from bank-issued WMPs flows to trust companies, calculating the total share of outstanding bonds funded by WMP and trust investment requires some estimation to avoid double-counting. Our estimates for end-2016 range from 26.1% to 27.6%. Similarly, funds raised through WMPs and trust products have also been channelled into equity markets, but at a much smaller scale.

Bank-trust cooperation and shadow funding of bond and equity markets

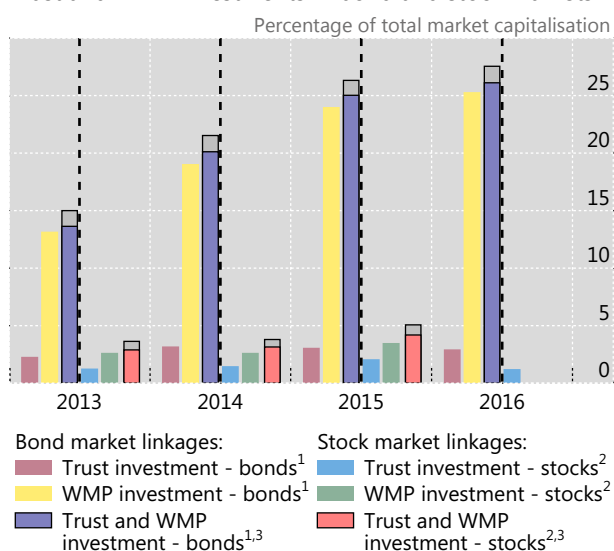
Positions at year-end

Graph 4

Bank-trust cooperation



Trust and WMP investments in bond and stock markets



¹ As a percentage of total domestic bond market capitalisation. ² As a percentage of total domestic stock market capitalisation. Break-down for WMPs not available for 2016. ³ Estimated sum of trust investment and WMP investment. The grey area at the top of the bar represents the estimation range due to potential double-counting.

Sources: China Central Depository & Clearing Co., Ltd. (chinawealth.com.cn); CEIC; authors' calculations.

Funding from shadow savings instruments accounts for a sizeable share of purchases of newly issued bonds and equities. Official data on WMP and trust investments into bond (and equity) markets is only available since 2013. Since then there is a pronounced trend of an increasing share of capital market funding being supplied by shadow banking instruments. Analysing the annual net increases in bonds outstanding, between 29.8% and 31.7% (ie between CNY 4.5 trillion and CNY 4.8 trillion) of funding for net issuance of bonds during 2016 was supplied by channelled funds from WMPs or trust products. Even higher shares can be observed for 2015 (between 32.3% and 35.8%, ie CNY 5.3 trillion and CNY 5.4 trillion respectively) and 2014 (between 37.7% and 38.7%, ie CNY 3.2 trillion and CNY 3.3 trillion respectively).

The large share of WMP investments into the bond market is associated with recent regulatory changes, which have strongly encouraged investments in tradable

debt assets. Another factor has been the rapid development of China's bond market, opening the door to a wider range and much larger volume of investable debt securities being offered on the primary and secondary markets. The regulations are designed to increase the resilience of the financial system, by steering more funds from ultimate creditors into the formal financial sector and by diversifying firms' funding sources. Yet, as bank-issued WMPs have become a major source of funding for bonds, the bond market remains dependent on the ability of banks to continue to issue and roll-over large volumes of WMPs. The growing dependence of bond market funding on bank-issued WMPs therefore significantly reduces the potential diversification benefits of increased bond financing.

4.2.3 Structured shadow credit intermediation

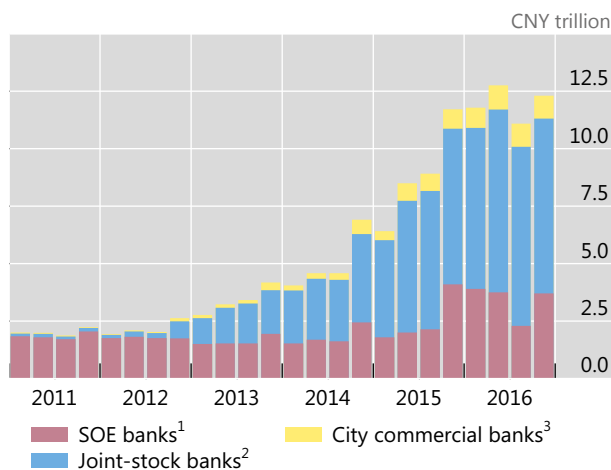
Shadow banking in China is growing more complex, although its complexity remains relatively limited compared to that of the US shadow banking system. An important driver is the recent rise of structured shadow credit intermediation, in particular the reclassification of banks' on-balance-sheet assets into so-called investment receivables. Not all investment receivables are necessarily related to shadow banking, as they may also correspond to regular investments in bonds or funds. But the sudden and rapid growth of investment receivables (Graph 5, left-hand panel) may signal a possible change in the nature of shadow banking in China. This is illustrative of how pockets of risks can quickly emerge as a by-product of the rapid change in China's financial landscape.

Investment receivables

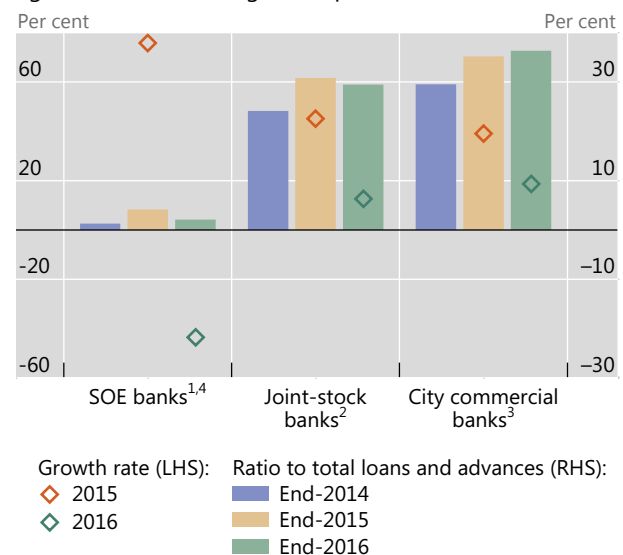
On-balance sheet investment receivables of major banks

Graph 5

Investment receivables – total amount



Investment receivables associated with trust beneficiary rights and asset management products



¹ SOE banks: Industrial and Commercial Bank of China, Bank of China, China Construction Bank, Agricultural Bank of China, Bank of Communications, Postal Saving Bank. ² Joint-stock banks: China Merchants Bank, China Citic Bank, Ping An Bank, China Everbright Bank, China Industrial Bank, China Minsheng Bank, Shanghai Pudong Development Bank and Hua Xia Bank, Zheshang Bank. ³ City commercial banks for Beijing, Shanghai, Jiangsu, Nanjing, and Ningbo. ⁴ Does not include Industrial and Commercial Bank of China, as investment receivables associated with trust beneficiary rights and asset management products could not be determined. Excludes Postal Saving Bank in 2014 due to lack of publicly available financial data.

Sources: Banks' financial reports; WIND; authors' calculations.

The use of investment receivables allows banks to reclassify on-balance-sheet loans and debt securities in order to avoid or reduce regulatory burdens – especially the required provisions for NPLs or the LTD ratio.²⁰ As NPLs have risen steadily in recent years, necessary provisions for new and old loans have become an increasingly binding regulatory constraint. In addition, as the growth of bank deposits slowed, a reclassification of existing loans would provide space for banks to concede additional loans under stringent LTD ratio requirements. But, the reclassification also creates additional linkages between banks and trust companies, as well as securities firms. Furthermore, reclassifying assets into investment receivables allows banks to obscure the eventual credit risks associated with the underlying loans or debt securities.

In its simplest form, an investment receivable results when a bank transfers an on-balance-sheet loan or debt security to a trust company or an asset management firm (Figure 1, rose arrows).²¹ In return, banks receive TBRs or DAMPs, and thereby become entitled to the full participation rights in the gains and losses of the transferred assets. Since direct loan transfers to trust companies are prohibited, the trust company instead issues a trust product with the loan as the underlying asset. The trust company can then issue a TBR on the trust product back to the bank. But the trust product can also be used by a securities firm as an underlying asset for a DAMP. In either case, the resulting asset shows up on the bank's balance sheet as a TBR or DAMP, which are broadly classified as investment receivables.

In a more complicated form of bank-to-bank TBRs transfer (Lu et al (2015)), Bank A is unable to extend a loan given the regulatory constraints it faces, and therefore asks Bank B to lend on its behalf. Bank B then records the investment receivable on its balance sheet, and it issues an interbank WMP to Bank A (Figure 1, rose arrows within joint-stock and city commercial banks; see also Table A1). The interbank WMP allows Bank A to fully participate in the profits and losses of the underlying assets held by Bank B. Since the interbank WMP does not count as a loan, it therefore has little impact on Bank A's NPL provisions or its loan-to-deposit ratio. Thus far, interbank WMPs have been largely issued and held by joint-stock and city commercial banks (Moody's (2017b)).

While investment receivables have grown rapidly in recent years, growth has levelled off as regulators have weighed in. Investment receivables held by joint-stock banks and smaller city commercial banks, however, still grow at a considerable rate (Graph 5, right-hand panel). To better proxy the structured shadow credit intermediation associated with the growth in investment receivables, we identify those that are associated with TBRs and asset management products from the financial reports of the major banks. This suggests that the reclassification of bank loans and debt securities holdings into investment receivable is much more prominent among joint-stock banks and city commercial banks. These banks have typically been more exposed to loans to private sector borrowers and smaller SOEs, which could have left them more exposed to rising corporate NPLs. State-owned

²⁰ After the lifting of the LTD ceiling in October 2015, banks have less incentive to reduce the associated regulatory burden. But this incentive is unlikely to have disappeared. Alleviating the LTD constraint can still be worthwhile for banks, if they want to expand their loan book.

²¹ The transfer of assets can take various different forms. For instance, an existing on-balance sheet asset can be directly sold to a trust company or an asset management company. Alternatively, a loan can be terminated and replaced with a new loan from a trust company. A transfer can also occur to a new loan arranged by a bank, but provided by a trust company. Similarly, an asset management company can package specific debt securities for a bank to buy.

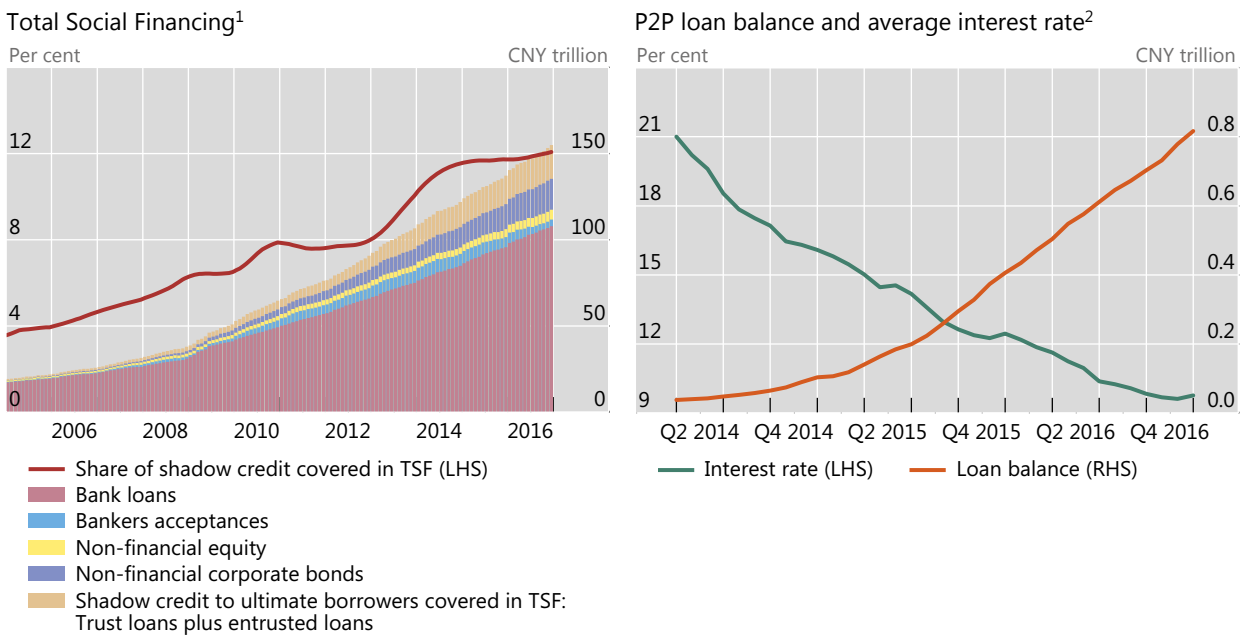
banks, on the other hand, lend primarily to large SOEs which often receive explicit government guarantees or are perceived to have implicit guarantees from different levels of government. Therefore, their loan books and debt securities portfolios have been less affected by NPLs.

4.3 The ultimate borrower stage

Trust loans and entrusted loans account for the bulk of shadow credit to ultimate borrowers (Graph 6, left-hand panel).²² Both are components of total social financing (TSF) – a measure of aggregate financing to the real economy published by the People’s Bank of China.²³ In addition, new internet-based forms of credit intermediation, such as P2P lending, are fast-growing but still relatively small components of China’s shadow credit.²⁴ Another relevant component is informal credit provided by small private lenders, which is hard to quantify and therefore is not part of our shadow banking map.

The stock of Total Social Financing and P2P lending

Graph 6



¹ Prior to 2016 stocks are estimated based on the latest reported stocks and observed flows between periods where stocks are reported. ² 12-month moving average.

Sources: CEIC; Wind; authors’ calculations.

²² As we will argue in Section 5.4, there are additional indirect sources of credit to ultimate borrowers, in particular WMP funding for bonds.

²³ The PBOC now uses the official term “aggregate financing to the real economy” instead of total social financing, but both terms refer to the same aggregate.

²⁴ In some instances, credit guarantee companies, regulated by provincial governments, were reported to have ventured into offering credit to firms (Caixin 2012). However, the availability of data and information on such exposures is very limited.

Shadow credit to ultimate borrowers provides funding for firms and individuals with limited access to formal bank credit, which is dominated by state-owned banks that favour lending to large SOEs. Trust loans, akin to bank loans but extended by trust companies, have traditionally served the important function of supplying credit to new and smaller firms, as well as higher-risk projects. Entrusted loans are loans between two companies with a bank serving as a middle-man. Their growth is both driven by mostly larger corporates looking to earn a better return on their extensive savings and the intermediation of credit from large SOEs to their subsidiaries or associates that have a more restricted level of access to formal financing.

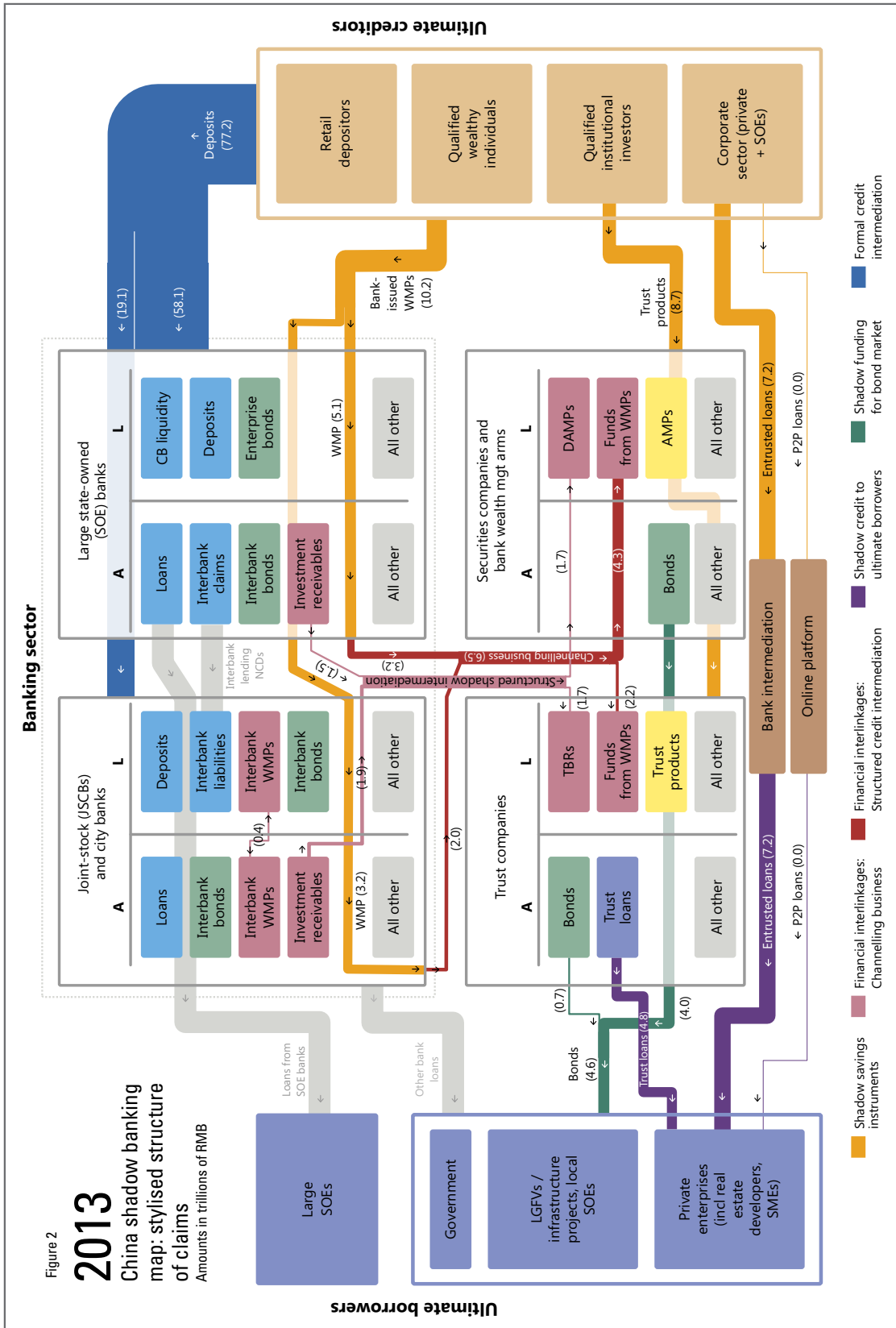
In recent years new forms of internet-based shadow credit intermediation have emerged. Peer-to-peer (P2P) lending has grown fast, as borrowing costs have fallen (Graph 6, right-hand panel). Yet, the overall size of P2P credit is still rather small compared to bank credit. Some P2P platforms have specialised in consumer credit; others such as Ant Financial of Alibaba and Tencent have set up P2P platforms dedicated to loans to small and medium enterprises. Thus far, these platforms have been operating without full banking licenses (CGFS and FSB (2017)). They are, however, subject to binding borrowing limits for individuals (a maximum of CNY 200,000) and institutions (a maximum of CNY 5 million). Regulations have been strengthened recently, outlining the basic requirements and core obligations of online lenders, including the requirement to appoint a commercial bank as fund custodian (Caixin (2017)).

In contrast to other studies, we do not include bank acceptances (BAs) in shadow banking. BAs are essentially letters of credit issued by banks and therefore can be seen as a form of formal bank credit. Normally, a bank issues a BA promising the future payment by Firm A to Firm B, for which it provides a full guarantee. At the maturity date, the bank pays the promised amount to Firm B, even if Firm A is in default. BAs can play a facilitating role in the shadow banking system, as they provide a bank-guaranteed and hence trusted means of payment that can be used for a wide range of transactions. In this way, BAs can serve as a link between the formal and the shadow banking sectors. However, we do not regard BAs as shadow credit intermediation in itself. As regulations on the usage of BAs have tightened, the amount of outstanding BAs has dropped substantially in recent years (Graph 6, left-hand panel).

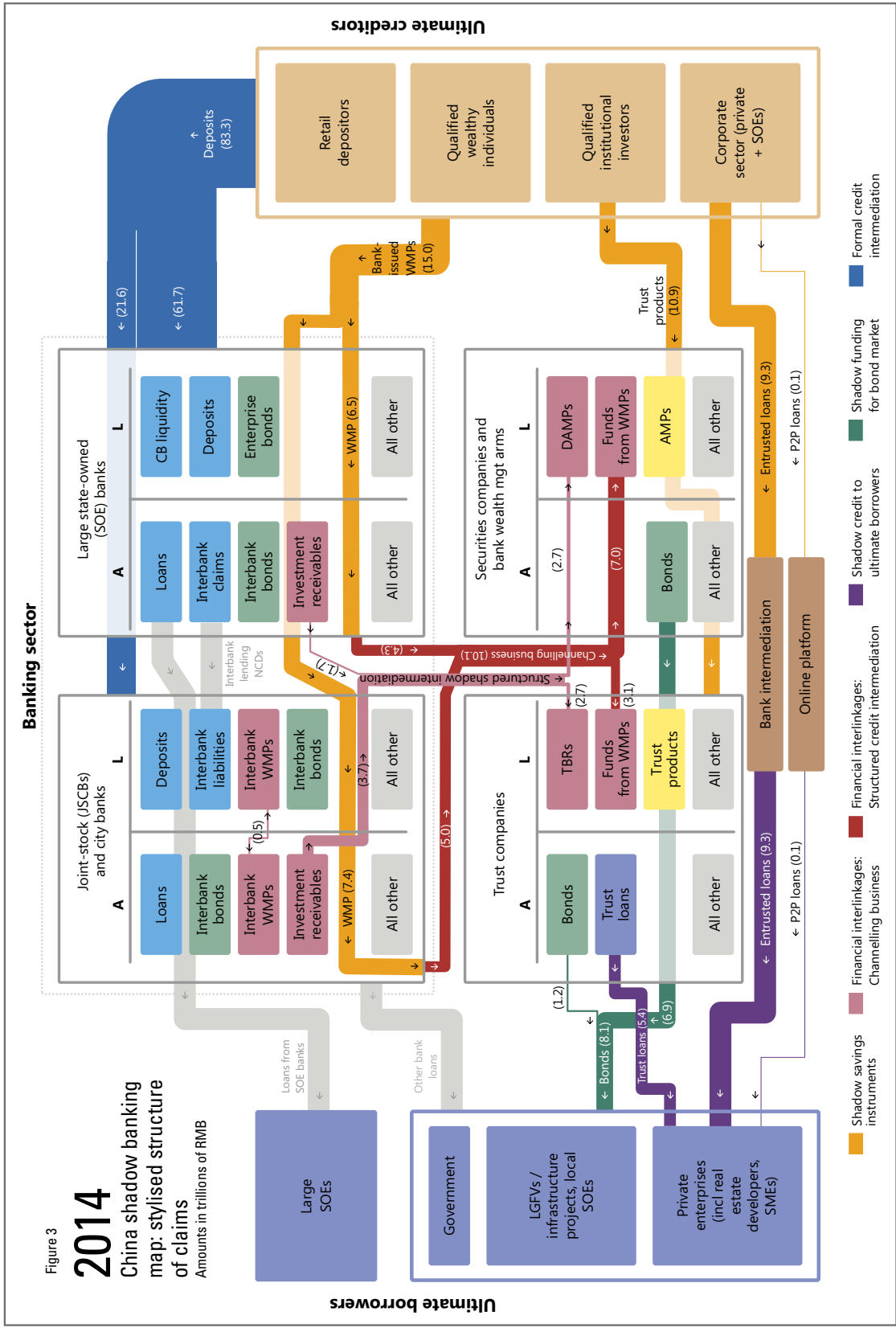
5 Size and dynamics

Based on our stylised shadow banking map (Figure 1), Figures 2–5 display the size and dynamics of shadow banking activities from 2013 to 2016. The size of the arrows is determined by the outstanding stocks of the corresponding shadow credit instruments at the end of each year. Quickly paging through Figures 2–5 reveals that growth in shadow credit intermediation at the ultimate creditor stage and the intermediate stage has outpaced growth in the ultimate borrower stage by a sizeable margin. This points to a rapidly changing structure of shadow banking in China.

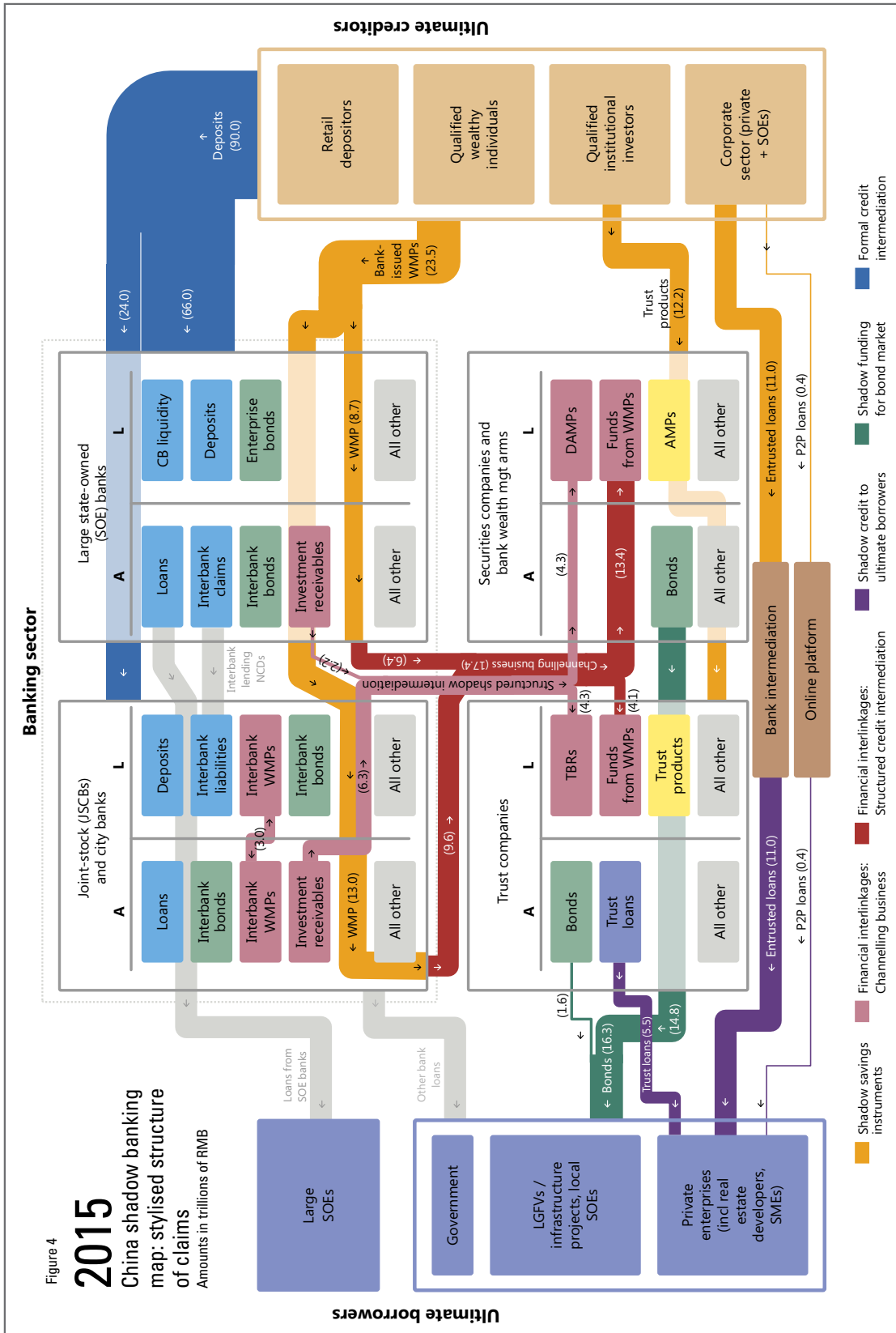
We construct size estimates for each main stage of shadow credit intermediation in China in Tables 1–3. As each stage is associated with a distinct economic function, the different size estimates give a clearer picture of the role and importance of shadow banking in financial intermediation in China. The estimates for the three different stages illustrate and circumvent the problem of double-counting.



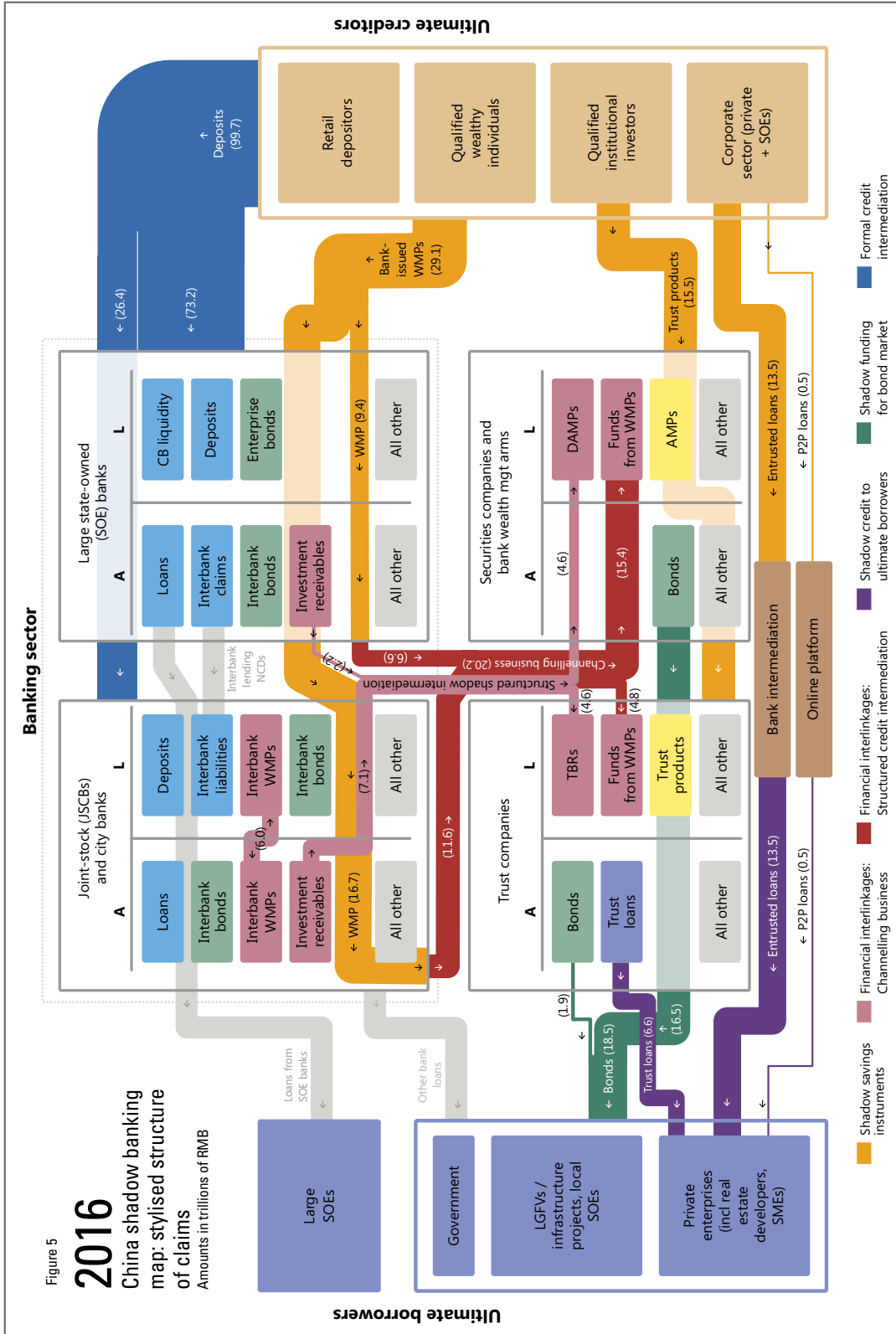
See Appendix III for details on the construction of the above estimates.



See Appendix III for details on the construction of the above estimates.



See Appendix III for details on the construction of the above estimates.



See Appendix III for details on the construction of the above estimates.

5.1 Double-counting issues and existing size estimates

Measures of the size and dynamics of shadow banking in China depend on the specific perspective that is taken. For instance, taking the ultimate creditor view yields a much larger size estimate than taking the ultimate borrower perspective, as a large portion of the proceeds from WMPs is channelled into the bond market. Taking a holistic view by summing up the volumes of shadow credit intermediation over the entire credit intermediation process naturally results in an even higher estimate. But doing so introduces a high degree of double-counting, if the measure of interest is shadow credit to ultimate borrowers. A sizeable share of the underlying investment of bank-issued WMPs, for instance, appears on trust companies' balance sheets. Adding up the two may capture the total volume of activity by shadow banking intermediaries, but it substantially overstates the amount of shadow credit that eventually flows to ultimate borrowers.

Recent estimates of the relative size of shadow credit in China usually focus on the credit provided to ultimate borrowers and broadly range between 15% and 70% of GDP.²⁵ The wide range is due both to differences in which items are considered as shadow credit and to double-counting. From the ultimate borrower perspective the size of shadow credit in China is not particularly high, as even the highest estimates are still smaller, or similar, to those for advanced economies. The FSB's 2015 estimates for the total size of shadow banking were 147% of GDP for the United Kingdom, 82% for the United States, and 60% for Japan (FSB (2016)).

The ultimate borrower perspective, however, leaves out important elements of shadow credit intermediation in China. These include WMPs and trust products at the ultimate creditor stage, or the rapidly rising structured shadow credit intermediation driven by joint-stock and city commercial banks. Those elements are highly relevant for understanding the structure and dynamics of shadow banking in China and particularly important for regulators and analysts conducting research on financial stability issues.

5.2 Size and dynamics at the ultimate creditor stage

At the ultimate creditor stage, we estimate the volume of outstanding shadow savings instruments at end-2016 at around 71% of GDP, or 46% of total bank deposits (Table 1). Shadow savings instruments are therefore a very important alternative to bank deposits; and their importance has been growing rapidly in recent years. The outstanding amount of non-guaranteed WMPs rose by 33% in 2016 and at an annual rate of 63% between 2013 and 2015. Outstanding trust products were of similar size as WMPs at end-2016 and have also expanded at a fast pace.

An important feature of shadow credit intermediation in China is that the funds raised through shadow savings instruments significantly exceed direct shadow credit to ultimate borrowers (Table 1, last row, last column). This is due to the large portion of WMP funds being invested in the bond market (Table 2), which presents an indirect form of shadow credit to ultimate borrowers. Another factor is the role of interbank

²⁵ See Li (2014), Bernstein Research (2014), Elliott, Kroeber and Qiao (2015), and FSB (2016).

WMPs in the more complex form of structured shadow credit intermediation, which typically does not lead to direct credit to ultimate borrowers.

The ultimate creditor/funding stage of shadow banking in China

Outstanding stocks at end-2016, unless stated otherwise

Table 1

Instrument	Amount (CNY trillion)	Growth 2016 in % p.a.	Growth 2011-15 in % p.a. ¹	Size in % of GDP	Relative size	
1. WMPs guaranteed (not included in total) ²	5.9	-2.1	28.0	8.0	4.8 19.3 25.1	% of total bank deposits ³ (a) % of bank time deposits (b) % of direct shadow credit to ultimate creditors ⁴ (c)
2. WMPs non- guaranteed	23.1	32.6	63.3	31.1	18.6 75.0 97.5	(a) (b) (c)
3. Trust products	20.2	24.0	35.7	27.2	16.3 65.6 85.3	(a) (b) (c)
4. Entrusted loans	13.2	19.8	25.7	17.7	10.6 27.9 55.7	(a) % of non-financial corporate deposits (end-April 2016) (c)
5. P2P loans	0.8	101.0	320.4	1.1	0.7 2.7 3.4	(a) (b) (c)
Total (=2. + 3. + 4.)	57.3	27.0		77.1	46.2 186.2 241.9	% of total bank deposits ³ % of bank time deposits % of direct shadow credit to ultimate creditors ⁴

¹ For WMPs, annual average growth during 2013–2015. ² As discussed in section 4.1.1, bank-guaranteed WMPs are excluded from shadow banking. ³ Total bank deposits are calculated as demand deposits + time deposits + savings deposits. Excludes interbank deposits and deposits with the central bank. This measure is based on aggregate data and is different from the stock of deposits depicted in Figures 2-5, which is directly estimated from bank balance sheet data of state-owned banks, joint-stock banks and major city banks. ⁴ Direct shadow credit to ultimate borrowers corresponds to our narrow measure in Table 3, item 6.

Sources: BIS; China Central Depository & Clearing Co., Ltd.; CEIC; People's Bank of China; authors' calculations.

5.3 Size and dynamics at the intermediate stage

Shadow banking instruments at the intermediate stage have grown at an even higher pace in recent years (Table 2).²⁶ Growing bank-trust cooperation, structured credit intermediation, and WMP investments in the bond market imply heightened and increasing financial system interlinkages. The rapid rise in structured credit intermediation between end-2014 and end-2016 signals the growing importance of regulatory avoidance as a driver of shadow banking activities. Even though regulators have managed to contain the overall growth in investment receivables associated

²⁶ As the shadow banking instruments at the intermediate stage can appear on both the asset and liability sides of the involved institutions, adding up the individual outstanding amounts may lead to double-counting. Table 2 therefore only lists the individual estimates for the five main instruments, but does not provide an estimate for the total.

with structured shadow credit intermediation in 2016, joint-stock and city commercial banks appear to continue to engage in such intermediation on a large scale.

The intermediate stage of shadow banking and financial system interlinkages in China

Outstanding stocks at end-2016, unless stated otherwise

Table 2

Type of interlinkage	Amount (CNY trillion)	Growth 2016 in % p.a.	Growth 2011-15 in % p.a. ¹	Size in % of GDP	Relative size	
Bank-trust cooperation	4.8	16.9	24.9	6.4	16.4	% of total outstanding WMPs
					23.5	% of trust products
WMP and trust investments in bond markets ²	17.1	35.7	75.2	22.9	26.1	% of total bond market capitalisation
WMP and trust investments in equity markets ² (end-2015)	2.2		79.3	3.0	4.2	% of total equity market capitalisation (end-2015)
Investment receivables related to Trust Beneficiary Rights and Asset Management Products ³	7.0	1.9	47.0	9.4	9.9	% of total bank loans ⁴
Interbank WMPs	6.0	99.7	188.7	8.0	20.6	% of total outstanding WMPs

¹ For WMP and trust investments in bond and equity markets and interbank WMPs, average annual growth rate during 2013–2015. For investment receivables, growth rate for 2015. ² Lower-bound estimates for WMP and trust investments in bond and equity markets (see section 4.2.2). ³ Investment receivables related to TBRs and AMPs of major banks. See the footnotes of Graph 5 for details. ⁴ Ratio of aggregate investment receivables related to TBRs and AMPs over aggregate total loans and advances of major banks.

Sources: Bank financial reports; BIS; China Central Depository & Clearing Co., Ltd.; CEIC; People's Bank of China; WIND; authors' calculations.

5.4 Size and dynamics at the ultimate borrower stage

We distinguish between a narrow and broader measure of shadow credit to ultimate borrowers (Table 3).²⁷ At around 32% of GDP, the narrow measure is in the lower range of the comparable size estimates from other studies, even though we have included in it the estimates of informal credit from a survey by the PBOC from 2011. Notwithstanding the missing times series on informal lending, our narrow measure of direct shadow credit to ultimate borrowers shows much lower growth in recent years in comparison with the other two stages of shadow credit intermediation.

Our broad measure of shadow credit to ultimate borrowers adds indirect shadow credit to ultimate borrowers. The most important form is funds raised through WMPs that are invested in the bond market. The broad measure gauges the growth of total shadow credit to ultimate borrowers at 24.9% in 2016, or 54.8% of GDP at end-2016.

²⁷ We do not view undiscounted or discounted bankers' acceptances as shadow credit and exclude them from our measures of shadow credit to ultimate borrowers. See Section 4.3 for details.

Shadow credit to ultimate borrowers in China

Outstanding stocks at end-2016, unless stated otherwise

Table 3

Instrument	Amount (CNY trillion)	Growth 2016 in % p.a.	Growth 2011-15 in % p.a.	Size in % of GDP	Relative size	
1. Banker's acceptances (not included in totals)	3.9	-33.4	3.7	5.2	3.7	% of total bank loans ¹ (a)
2. Trust loans	6.3	15.8	33.6	8.5	6.0	(a)
3. Entrusted loans	13.2	19.8	25.7	17.7	12.5	(a)
4. P2P loans	0.8	101.0	320.4	1.1	0.8	(a)
5. Informal lending (PBC survey from 2011)	3.4	0.0	0.0	4.5	3.2	(a)
6. Total – narrow (= 2. + 3. + 4. + 5.)	23.7	17.1	25.7	31.9	22.5	% of total bank loans ¹
7. WMP and trust investments in bond markets	17.1	35.7		22.9	26.1	% of total bond market capitalisation
Total – broad (=6. + 7.)	40.8	24.9		54.8	23.9	% of total bank loans and bond market capitalisation

¹ Outstanding bank loans to the non-financial sector in local currency (CNY 105.2trn at end-2016; foreign currency loans were only CNY 2.6trn at end-2016).

Sources: BIS; China Central Depository & Clearing Co., Ltd.; CEIC; People's Bank of China; authors' calculations.

5.5 The changing face of shadow banking in China

The distinct dynamics at the three stages of shadow credit intermediation, from ultimate creditors via the intermediate stage to ultimate borrowers, point to major changes in China's shadow banking system.

Following the GFC, and especially during the period of strong stimulus policies in China implemented during 2009-2010, shadow banking has played an important role in channelling funds to the underserved and potentially riskier sectors of the real economy. But direct shadow credit to ultimate borrowers has slowed considerably in recent years, whereas the volume of shadow funding as well as structured shadow credit intermediation has grown at a fast pace. The shift in the relative importance of the different stages of shadow credit intermediation is clearly visible in Figures 2-5.

The structure of the shadow banking system in China, however, is changing. The growth of shadow savings instruments, in particular bank-issued WMPs and trust products, suggests an increasing demand for shadow banking in China to provide alternative higher-yielding savings instruments. At the same time, the increased use of structured products combining existing shadow banking instruments, which are based on the collateralisation of bank assets, points to an increasing degree of sophistication and incipient changes in the shadow banking structure. If NPL ratios rise and NPL provisions become a more binding regulatory constraint, structures designed to convert loans into other types of assets that obscure the underlying credit risks and result in lower provision requirements are unlikely to fade away.

Consequently, shadow banking in China is becoming more complex. It increasingly relies on more sophisticated structures of existing shadow banking instruments, which are based on the collateralisation of bank assets. In this respect, shadow banking in China is becoming somewhat more similar to that in the United States. Nevertheless, the level of complexity still remains substantially lower. Furthermore, the growing de facto dependence of the bond market on funding from bank-issued WMPs has generated tight financial interlinkages, and presents an additional transmission channel for financial shocks between depositors, banks and the bond market.

6 Conclusions

Understanding the structure of China's shadow banking system is crucial for analysing China's financial system. We provide a stylised map of shadow banking in China, which highlights the main forms of shadow banking and the resulting financial system interlinkages. Shadow banking in China takes a markedly different form compared to that in the United States. A key characteristic is that commercial banks are the dominant players in China's shadow banking system. The system is effectively a "shadow of the banks", while securitisation and market-based instruments still play only a limited role.

We show that the structure of shadow banking in China is evolving. Its size and dynamics have changed rapidly in recent years. The main area of growth has shifted from shadow credit provision to private firms with less privileged access to formal bank credit, towards offering alternative savings instruments (eg WMPs and trust products). Similarly, at the intermediate stage, new and more complex "structured" shadow credit intermediation has emerged and quickly has reached a large scale. This is driven by banks trying to alleviate regulatory burdens (eg NPL provisions or LTD ratio ceilings) through a reclassification of existing bank assets into investment receivables. Tight and growing financial sector linkages further raise the potential for the transmission of financial shocks among savers, banks and the bond market. In addition, new forms of internet-based credit intermediation, such as P2P lending, have been expanding at an extraordinary pace. As a result, shadow banking in China is growing more complex and thereby becoming slightly more similar to the US shadow banking.

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Appendix I: Shadow banking instruments

Main types of shadow credit intermediation in China					Table A1	
No	Types and instruments of shadow intermediation	Description	Sources and usage of funds	Credit intermediation functions and regulatory treatment	Balance sheet treatment	
Ultimate creditor stage/ funding stage						
1	Bank-issued wealth management products (WMPs) - principal/return guaranteed and non-principal-guaranteed (NPG-WMPs)	Major shadow savings instrument; banks issue WMPs as a higher yielding alternative to deposits; principal/return guaranteed WMPs are guaranteed by banks; only NPG-WMPs are counted towards shadow banking instruments	Bought by depositors, wealthy individuals – usage of proceeds determined by banks (mostly traded bonds, money market instruments, and deposits; in addition equities and other “non-standardised” assets); recently interbank WMPs have become more relevant (see No 5)	Maturity transformation; liquidity transformation for “non-standardised” assets; intermediation activity of non-principal guaranteed WMPs not subject to banking regulation, but new regulations are being introduced	Principal/return-guaranteed WMPs: on balance sheet of banks Non-principal guaranteed: off-balance sheet of banks	
2	Trust products	Investments products which are not issued by banks; trust products include single- and collective-investor trusts; investment products issued by other financial institutions such as securities brokerages	Bought by qualified wealthy individuals, corporate and institutional investors; usage of funds depends on product; trust products can cover a wide range of investments including trust loans, non-listed equity, and traded financial instruments	Maturity transformation; often substantial liquidity transformation; subject to less strict trust company regulations	Appear on the balance sheet of the issuing trust company; therefore not on bank balance sheets	

Intermediate stage / financial system interlinkages					
3	Bank-trust cooperation (involve WMPs on the funding side and trust products or trust-beneficiary rights (TBRs) on the asset side)	Banks channel money raised from WMPs to trust companies; trust companies can invest the proceeds in a wide range of assets	Proceeds from WMPs invested in trust products (often single-investor trusts) or TBRs (TBRs are one-to-one participation rights in the profits and losses of trust assets) which would be classified as "non-standardised" investments of WMPs	Banks' wealth management arms and holding of individual assets to trust companies; in return, they hold a trust product or a TBR	Off bank balance sheet if funded by NPG-WMPs (on banks' wealth management arm balance sheet); otherwise on bank balance sheet
4	Bank-securities brokerage cooperation	Banks channel money raised from WMPs into investment products from securities brokerages	Proceeds from WMPs invested in investment products from securities companies and brokerages; underlying investments typically are traded financial instruments	Same as above	Same as above
5	Bank-to-bank trust beneficiary rights transfer (involves bank-to-bank WMPs on the funding side, and TBRs and directed asset management plans (DAMPs) on the asset side)	Used to shift loan and debt security (and possibly related credit risks) exposures from bank A to bank B (through WMPs), with the (indirect) loan exposure of bank B taking the form of "investment receivables" (TBRs (see 3), or "directed asset management products" (DAMPs)), with typically an investment in a single-investor trust; trust company extends trust loan to ultimate borrower (see No 7)	Bank A funds exposure of bank B by bank-to-bank WMP (either guaranteed or not); bank B uses proceeds to invest directly or indirectly into TBR, with full participation in profits and losses; indirect investment through DAMP, with single underlying investment in trust product; trust company extends trust loan to ultimate debtor (typically a corporation)	Transforms a loan exposure of bank A into an interbank exposure to bank B; bank B transforms loan into investment receivable, but retains full credit risks; if WMPs are not principal guaranteed, credit risk exposure is with bank A; actively reduces regulatory burden in particular loan loss provisions and loan-to-deposit ratio	Interbank WMPs appear on balance sheet; DAMPs and TBRs appear on bank B's asset side as investment receivables; loan exposure and bank liability on trust company balance sheet

Ultimate borrower stage					
6	Entrusted loans (banks may take exposure through entrusted rights)	Loans from one corporation to another corporation (often among affiliates) with banks acting as a middle-man; higher-yielding alternative to corporate deposits, but credit risks remain with the creditor, unless bank takes explicit exposure through entrusted rights	A corporation deposits funds into a fiduciary account in a bank (banks act as a trustee); funds are used as a loan to another corporation	Direct lending to corporates legally not allowed; banks act as a trustee but may themselves retain credit risks ("entrusted rights")	Off bank balance sheet; entrusted rights may need to be reported by banks but may not appear on bank balance sheet
7	Trust loans	Loans extended by trust companies; trust companies are subject to regulation by CBRC, but to normal banking regulations	Main funding comes from channeled proceeds of bank-issued WMPs (see 1), or from direct investors (often wealthy individuals or institutional investors) investing in trust products (see 2), or from bank loans	Like bank loan: credit risk, maturity and liquidity risk transformation; subject to less strict trust company regulations	On trust company balance sheet; if funded by proceeds from guaranteed bank-issued WMPs, trust products or TBRs typically on bank asset side
8	P2P lending	Credit intermediation by matching a group of borrowers and lenders/depositors; matching is done on electronic platforms	Funding comes from corporations, individuals and banks; recipients are typically SMEs and consumers	If risks remains with the creditors, then pure matching; credit risk-, maturity-, and liquidity transformation directly between lender and borrower; if bank takes exposure, then similar to bank loan; only lightly regulated thus far	Not on bank balance sheet, unless bank takes an exposure
9	Informal lending	Loans extended by small lenders such as pawn shops, small-loan firms, and other informal lenders	Funding is usually provided by own funds of the lender (against collateral)	Like bank loan: Credit risk-, maturity- and liquidity transformation; evades regular banking regulation	Loans may be recorded on lenders' balance sheet, but little or no public information available

Appendix II: Data description and sources

Data sources		Table A2
Data	Description	Sources
WMP asset balance classified by types of return	Bank WMP balance by type of return. Annual from December 2013, semi-annual from June 2016.	China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn)
WMP asset balance classified by types of investors	Bank WMP balance by investor type. Monthly data from January 2014.	China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn)
WMP asset balance classified by types of issuing banks	Bank WMP balance by bank type. Monthly data from January 2014.	China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn)
WMP asset balance classified by types of underlying investment	Bank WMP asset balance by product type. Semi-annual or annual data from December 2013. Available in amount of each type of underlying investment or in share of each type of underlying investment as total WMP asset.	China Central Depository & Clearing Co., Ltd. (www.chinawealth.com.cn)
Trust assets classified by types of trust	Trust asset balance by types of trust. Quarterly data from March 2010.	CEIC
Trust assets classified by business types	Trust asset balance classified by selected business types. Quarterly data from September 2010.	CEIC
Pecuniary trust assets classified by types of investment	Pecuniary trust asset balance classified by types of investment. Quarterly data from March 2010.	CEIC
Total amount of investment receivables of banks	Position of investment receivables on listed banks' balance sheets. Quarterly positions.	Wind
Banks' investment receivables related to Trust Beneficiary Rights and Asset Management Products	Portion of investment receivables on listed banks' balance sheets that are related to trust beneficiary rights and asset management products. End-of-year positions.	Banks' financial reports
Total loans and advances of banks	Positions of total loans and advances on listed banks' balance sheets. Quarterly positions.	Wind
Total social financing	Total credit in the economy. Prior to 2016 stocks are estimated based on the latest reported stocks and observed flows between periods where stocks are reported.	CEIC
Peer-to-peer (P2P) loan balance	P2P loan balance statistics. Monthly data from January 2014.	CEIC; Wandai Zhijia (网贷之家, http://www.wdzj.com/)
Peer-to-peer (P2P) interest rate	P2P interest rate statistics. Monthly data from January 2014.	CEIC; Wandai Zhijia (网贷之家)

Appendix III: Size estimates for shadow banking maps

Construction of size estimates for the arrows in Figures 2-5

Table A3

Type of credit intermediation (by colour of arrows)	Description
Shadow savings instruments (orange arrows)	Split of total outstanding bank-issued WMPs (including guaranteed WMPs) by type of issuing bank is available from Chinawealth.com. Trust products are the total outstanding trust products issued by single-investor-, collective-, and property trusts.
Financial interlinkages: channelling business (rose arrows)	Total amount equal to funds raised from non-principal protected WMPs. Split into channelling by SOE banks and JSCB and city banks based on the shares of total outstanding WMPs issued by these categories of banks (data available on Chinawealth.com). Amount of channelled funds to trust companies equals trust companies' "bank-trust cooperation" (data from CEIC). All other channelled funds are by definition to securities companies and banks' wealth management arms.
Financial interlinkages: structured credit intermediation (red arrows)	Total amount of investment receivables related to trust beneficiary rights or directed asset management products recorded on banks' balance sheets. Sum of balance sheet positions of 6 SOE banks (Industrial and Commercial Bank of China, Bank of China, China Construction Bank, Agricultural Bank of China, Bank of Communications, Postal Saving Bank), 9 JSCBs (China Merchants Bank, China Citic Bank, Ping An Bank, China Everbright Bank, China Industrial Bank, China Minsheng Bank, Shanghai Pudong Development Bank, Hua Xia Bank, Zheshang Bank) and city banks for Beijing, Shanghai, Jiangsu, Nanjing, Ningbo; bank balance sheet data obtained from WIND. In the absence of consistent data, we assume a 50-50 split between the resulting liabilities for trust companies and securities companies. Data on outstanding interbank WMPs is from Chinawealth.com. All interbank WMPs are assumed to be held by joint-stock and city commercial banks, though de facto a small share is also held by SOE banks.
Shadow credit to ultimate borrowers (purple arrows)	Trust loans and entrusted loans are part of total social financing (data from CEIC); P2P loans from CEIC.
Shadow funding for bond market (green arrows)	Only reflects bond investments of WMPs and trust products (ie shadow funding). WMP investment in bond (and money market instruments) from Chinawealth.com; data on trust investments in bond markets is from CEIC.
Formal credit intermediation (blue arrows)	Total bank deposits calculated from bank balance sheet data based on the sample of banks above (see structured credit intermediation) with data from WIND.

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