Laboratoire
de Recherche
en Gestion
& Economie

Working Paper
2014-06

Understanding Financial Inclusion in China

Zuzana Fungáčová & Laurent Weill

July 2014

Université de Strasbourg
Pôle Européen de Gestion et d'Economie
61 avenue de la Forêt Noire
67085 Strasbourg Cedex
http://large.em-strasbourg.eu/

IFS
Institut de Finance
de Strasbourg

Understanding Financial Inclusion in China

Zuzana Fungáčová[#]
Bank of Finland

Laurent Weill[*]
EM Strasbourg Business School, University of Strasbourg and Bank of Finland

Abstract

We use data from the World Bank Global Findex database for 2011 to analyze financial inclusion in China, including comparisons with the other BRICS countries. We find a high level of financial inclusion in China manifested by greater use of formal account and formal saving than in the other BRICS. Financial exclusion, i.e. not having a formal account, is mainly voluntary. The use of formal credit is however less frequent in China than in the other BRICS. Borrowing through family or friends is the most common way of obtaining credit in all the BRICS countries, but other channels for borrowing are not very commonly used by individuals in China. We find that higher income, better education, being a man, and being older are associated with greater use of formal accounts and formal credit in China. Income and education influence the use of alternative sources of borrowing. Overall financial inclusion does not constitute a major problem in China, but such limited use of formal credit can create a challenge for further economic development.

JEL Codes: G21, O16, P34
Keywords: financial inclusion, financial institutions, China

[#] Bank of Finland Institute for Economies in Transition (BOFIT), Snellmaninaukio, PO Box 160, FI-00101 Helsinki. Email: zuzana.fungacova@bof.fi
[*] Corresponding author. Institut d'Etudes Politiques, Université de Strasbourg, 47 avenue de la Forêt Noire, 67082 Strasbourg Cedex. Phone : 33-3-68-85-81-38. Fax : 33-3-88-41-77-78. Email : laurent.weill@unistra.fr
We are grateful to Weijie Chen, Iikka Korhonen, Feiran Long, Steven Ongena and Andrei Vernikov as well as the participants of the conference 'China after 35 Years of Economic Transition' in London (2014) for providing valuable comments.

I. Introduction

Financial inclusion, defined as the use of formal financial services, crucially determines economic development. Individuals who are not financially excluded are able to invest in education and launch businesses, and this contributes to poverty reduction and economic growth (Beck, Demirgüc-Kunt and Levine, 2007; Bruhn and Love, 2014). Financial inclusion provides individuals with the possibility of having a safe place to save for the future and so can foster financial stability, as high level of use of bank deposits contributes to a more stable deposit base for banks in troubled times (Han and Melecky, 2013).

A few recent studies investigate financial inclusion using 2011 data from the World Bank's Global Findex database. Demirgüc-Kunt and Klapper (2013) analyze the use of financial services in 148 countries. In addition to average statistics, they examine individual and country characteristics associated with three main indicators of financial inclusion: ownership of a bank account, savings on a bank account, use of bank credit. They show that differences in income among countries and among individuals within countries influence the level of financial inclusion.

Allen et al. (2012) identify the individual and country characteristics that determine the ownership of a bank account and saving on a bank account for 123 countries. They provide evidence of positive impacts of several individual characteristics; in particular individuals' income and education.[1]

However, no work has so far focused on financial inclusion in China, the world's second largest economy, where the process of financial reforms and liberalization is still ongoing. This paper aims to fill this gap by utilizing data from the World Bank's Global Findex database. We contribute to the understanding of financial inclusion in China in two ways. First, we examine the level of financial inclusion in China and compare the country with the other BRICS. These countries provide a relevant benchmark for China as they all are major emerging markets with a strong growth in the last decade. Is China different from the other BRICS in terms of use of bank accounts and bank credit? What are the main barriers to financial inclusion in China? Do they differ in comparison to the

[1] The World Bank's Global Findex database has also been used in other studies; Anson et al. (2013) analyze the influence of post offices on financial inclusion and Demirgüc-Kunt, Klapper and Randall (2013) study the use of formal financial services among Muslim adults.

other BRICS? Second, we investigate the determinants of financial inclusion. Which individual characteristics influence financial inclusion in China? Further, we analyze if and how barriers to financial inclusion and uses of alternative sources of borrowing are associated with individual characteristics, including individuals' income or education. The answers to these questions enlighten us as to the current state of financial inclusion in China and enable us to identify policies to promote it.

The importance of financial inclusion in China is determined by its connection to three major debates currently ongoing in this country that concern sustainable growth, high savings rate, and shadow banking. First, as financial inclusion has been shown to help foster growth in particular in developing countries, this issue has to be examined in the largest developing country in the world. Second, the savings rate is extremely high in China (Yang, 2012). It is therefore necessary to analyze the determinants of saving on bank accounts for individuals. Third, as the availability of bank credit for SMEs and individuals is constrained, alternative sources of borrowing have been increasingly used in China (Geng and N'Diaye, 2012). This has brought about the expansion of the shadow banking system, which not only includes formal funding channels, such as microfinance institutions and company-to-company lending, but also informal ones, such as underground banks and unregulated pawnshops. The development of the shadow banking system raises questions concerning the effectiveness of banking regulation in China further related to financial stability. The analysis of financial inclusion provides insights on the magnitude of the use of formal credit and of alternative sources of borrowing at the individual level in China and helps us identify individual characteristics associated with reliance on different alternative sources of borrowing.

The remainder of this article is structured as follows. Section 2 provides indicators for financial inclusion in China and the other BRICS. Section 3 presents the estimations on how individual characteristics are associated with financial inclusion indicators in China, and section 4 concludes.

II. Measuring financial inclusion

In this section we document financial inclusion in China and the other BRICS. We describe the data and then examine the three main financial inclusion indicators. Next we discuss barriers to financial inclusion, and finally we analyze the use of alternative sources of borrowing.

II.1 Data

Our data are from the World Bank's Global Findex database, which includes individual level data originating from a survey of more than 150,000 adults in 148 countries in 2011.[2] The survey was conducted by Gallup, Inc., in association with its annual Gallup World Poll. Since 2005, Gallup has surveyed about 1,000 people yearly in each of the countries. However the sample can be larger for large countries. Our dataset includes 4,220 individuals for China, 1,042 for Brazil, 3,518 for India, 2,000 for Russia, and 1,000 for South Africa. The target population is the entire civilian, noninstitutionalized population aged 15 and above. Additional information on this database can be found in Demirgüc-Kunt and Klapper (2012).[3]

The Global Findex questionnaire provides detailed information on financial inclusion. It contains a large set of questions on the use and the motives for use of financial services. In addition the database includes information on four characteristics of individuals (income, education, age, and gender), which we utilize in the estimations in the next section.

II.2 Main indicators of financial inclusion

To provide insights on the level of financial inclusion in China and the other BRICS, we measure financial inclusion from different perspectives. We focus on the three main indicators, in line with Demirgüc-Kunt and Klapper (2013). The first and most traditional one is the ownership of an account in a formal financial institution (*Formal Account*). This is defined using the following survey question: Do you currently have a

[2] This database is only available for this year. A new edition for 2014 will be released in April 2015.
[3] The Global Findex database is freely available on the World Bank website: http://datatopics.worldbank.org/financialinclusion/.

bank account at a formal financial institution?. The second indicator is based on saving behavior in a formal financial institution[4] (*Formal Saving*). The survey question used in this case is: Have you saved or set aside money on a bank account in the past 12 months? This question only concerns those who said they have saved or set aside money in general in the past 12 months. That is why the number of respondents is lower when compared to the first indicator. This measure provides the information on the willingness of savers to save money in a formal financial institution relative to alternative forms of saving.

The third perspective considers usage of bank credit (*Formal Credit*). The question asked in this case aims to uncover whether an individual has a bank loan: Have you borrowed from a financial institution (bank, credit union or microfinance institution) in the past 12 months? Table 1 presents the main descriptive statistics for these three indicators for all BRICS countries. It should be noted that the number of respondents is not the same for each indicator.

Financial inclusion can take different forms, the broader one being the ownership of an account in a formal financial institution. A formal account serves as an entry key to the banking industry because it enables the individual to open a savings account and to apply for a loan.

We observe that 66 percent of Chinese individuals have an account at a formal financial institution. This figure is much higher than for the other BRICS. Only 55 percent of Brazilian and 57 percent of South African individuals have a formal account, and still smaller figures are reported for Russia (44 percent) and for India (37 percent). The Chinese figure is also very high in comparison with the world average, as half of the world adult population still does not have a formal account (Demirgüc-Kunt and Klapper, 2013).

The leading position of China among BRICS in formal account use should be interpreted by taking into account the country's level of economic development. Demirgüc-Kunt and Klapper (2013) argue that GDP per capita plays a major role in explaining cross-country differences in the use of formal accounts. They find wide

[4] A bank, credit union or microfinance institution.

discrepancies in formal accounts use between high-income and low-income countries and their multivariate estimations confirm a positive relationship between GDP per capita and use of formal accounts. However GDP per capita in China is not the highest among BRICS. Figures from the World Development Indicators Database for 2011 show that China has a per capita GDP of 5,615 USD, which is far below the corresponding figures for Russia (13,571 USD), Brazil (12,500 USD), and South Africa (8,039 USD), although clearly higher than India's (1,500 USD). This indicates that China's average use of formal accounts is high given its level of economic development.

In terms of formal saving, the survey results show that on average 82 percent of Chinese individuals who have saved in the past 12 months have saved at a financial institution. This is again much higher than in the other BRICS where the corresponding indicator ranges between 50 percent and 72 percent, and far higher than the world average of 22 percent (Demirgüc-Kunt and Klapper, 2013).

This evidence of extensive use of bank accounts to save money accords with the finding that the ratio of aggregate deposits to GDP in China is among the highest in the group of G20 countries (Iorgova and Lu, 2013). Using IMF statistics, they stress that the aggregate deposits to GDP ratio is much higher for China than for the other BRICS. It also exceeds the ratio for the EU and Japan.

The large share of individuals with formal saving in China is related to the extremely high savings rate in this country (Zhang, 2012). Mees and Ahmed (2012) note that the household savings rate was 27 percent in 2009, compared with rates of 6 to 16 percent for the OECD countries. The savings behavior of Chinese households can be explained by precautionary savings associated with the underdeveloped social insurance and private insurance, but also by sex ratio imbalance (Wei and Zhang, 2011). The figures also indicate that this high-savings behavior is associated with a high propensity to place savings in formal financial institutions, even though savings can also flow into informal channels. This observation suggests a satisfactory level of trust in banks in China where, unlike e.g. in Russia, depositors have not experienced a major crisis in the recent past and so have not had negative experiences involving banks.

The situation is nonetheless very different as regards the levels of formal credit. Less than 7 percent of Chinese individuals reported their having obtained a formal credit in the past year. This figure is low in comparison to the average for high-income countries (14 percent) but also in comparison to the other BRICS. Based on our survey data South Africa reports the highest use of formal credit with 11 percent, followed by Russia (9 percent), India (8 percent) and Brazil (7 percent). Thus China's use of formal credit is the lowest for the BRICS.

It is of particular interest to compare these figures with the importance of domestic credit in general, as measured by the ratio to GDP of domestic credit to the private sector. Demirgüc-Kunt and Klapper (2013) find a positive relationship between this indicator of financial development and the use of formal credit in their worldwide analysis of financial inclusion.

Global Financial Development Database (Cihak et al., 2012) provides information on the ratio of bank private credit to GDP[5]. Figures for 2011 show that the ratio of bank private credit to GDP is very high in China, standing at 121 percent, which is more than twice the ratios for Brazil (52 percent), India (47 percent) and Russia (41 percent), and also higher than in South Africa (68 percent). This value clearly associates China with the group of high-income countries in terms of financial development, for which the average value of this indicator is 106 percent, compared with 33 percent for middle-income countries.

Thus when considering the high level of this measure of financial development in China, it is surprising that the use of formal credit by individuals is so low in the survey data. This can be explained by the fact that credit is highly concentrated in China, in particular because it is directed to large state-owned firms (Hale and Long, 2010; Geng and N'Diaye, 2012).[6]

[5] Defined as the "financial resources provided to the private sector by domestic money banks as a share of GDP".

[6] In the World Bank's Doing Business ranking for 'Getting Credit', China is 73th while India and South Africa are 28th, and Brazil and Russia are 109th. This intermediate ranking for China among BRICS suggests that some companies, i.e. state-owned ones, do not have difficulties to get credit.

II.3 Motives for financial exclusion

Investigation of the motives for financial exclusion requires an analysis of the reasons the individuals in the survey give for their decision not to have a formal account. The survey includes seven possible reasons for such behavior and allows multiple answers. The reasons considered are: “too far away”, “too expensive”, “lack of documentation”, “lack of trust”, “lack of money”, “religious reasons”, “family member has one”.

Allen et al. (2012) point out that some of these answers can be considered voluntary exclusion (“lack of money”, “religious reasons”, “family member has one”) while the others are associated with involuntary exclusion (“too far away”, “too expensive”, “lack of documentation”, “lack of trust”). The distinction between voluntary and involuntary exclusion is crucial for policy implications. It is noteworthy that only the reasons associated with involuntary exclusion help us identify barriers to financial inclusion that can be reduced by means of suitable policies.

Table 2 presents the main statistics for the different barriers to financial inclusion reported in the survey. Lack of money is the most often cited reason for not having a formal account in all the BRICS. In China, 61% of individuals without a formal account give this reason for not having one. Allen et al. (2012) report the same result after examining data from all around the world: individuals without sufficient cash earnings do not benefit enough to bear the overall cost of having a bank account. In this respect, China is not exceptional.

But the other reasons given for not having a formal account do not have the same importance for financial exclusion among BRICS.

The second most frequently given reason for not having an account in China is that another family member has one, which was reported by 34 percent of individuals. Proximity to a bank also matters: “too far away” is cited by 16 percent of individuals. Cost of documentation (10 percent answering “too expensive”), documentation requirements (“lack of documentation” 9 percent), and trust in banks (“lack of trust” 5 percent) are less important in explaining financial exclusion in China. The religious

motive has a very weak impact on financial exclusion in China (cited by less than 1 percent of individuals).

A comparison between answers provided by individuals from China and from the other BRICS highlights some features influencing how individuals view the Chinese banking industry. The reasons associated with the price of having an account, documentation related to the account and trust in banks are much less frequently cited in China than in the other BRICS. While only less than 10 percent of Chinese individuals consider a formal account too expensive, 48 percent of Brazilian and 43 percent of South Africans think this way. And as to trust, 43 percent of Russian individuals without a formal account cite lack of trust as the reason for this. This is as expected when dealing with a country characterized by numerous bank failures and more generally financial instability (Fungáčová and Weill, 2013).

The above discussion thus suggests a fairly limited role for motives related to involuntary financial exclusion in China. Chinese individuals not having a formal account mainly explain this by insufficient cash earnings or the ownership of a formal account by another family member. Only a very small proportion of Chinese individuals without a formal account are discouraged by excessive bank charges or the absence of trust in financial institutions.

These results indicate a major difference between China and the other BRICS, where both voluntary and involuntary reasons contribute to the financial exclusion of a large share of individuals. This would seem to be a positive factor for financial inclusion in China relative to the other BRICS: financial exclusion is limited and is mainly motivated by voluntary exclusion. For these reasons, policymakers need not play a large role in reducing financial exclusion in China compared to the other BRICS.

II.4 Alternative sources of borrowing

A key policy issue in China is the poor access to credit. Several studies have confirmed that access to credit is a major concern for small businesses, while large state-

owned companies get the vast majority of funds granted by banks (Hale and Long, 2010). This limited access to credit constitutes a potential source of economic loss for the country, as access to credit has been shown to alleviate poverty (Bruhn and Love, 2014). Constrained access to credit also contributes to the growth of a shadow banking system with potential negative impacts on financial stability. A large shadow banking system dilutes the effectiveness of banking regulation, and the use of unregulated channels of funding and amplifies procyclicality (Iorgova and Liu, 2013).

Our dataset enables us to measure the importance of sources of borrowing other than formal credit. As mentioned above, only less than 7 percent of Chinese individuals have obtained a formal credit in the last 12 months, which is lower than in the other BRICS. Does this indicate that the Chinese individuals rely more on alternative ways of borrowing in comparison to formal credit?

In addition to the use of formal credit, our dataset provides information on different alternative sources of borrowing: "borrowed money from a store", "borrowed money from family or friends", "borrowed money from employer", "borrowed money from another private lender". Thus we have information on five different sources of financing for individuals, which we aggregate to produce information on all borrowings in the last 12 months. Table 3 shows the main statistics for the alternative sources of borrowing.

First, we examine how much on average individuals have borrowed altogether within the last 12 months. This measure reaches 26 percent for China. With the exception of Brazil (24 percent), it is the lowest proportion among all BRICS, as India (29 percent), Russia (33 percent), and South Africa (48 percent) posted higher figures. This suggests that the problem in China concerns not only formal credit; rather the overall proportion of Chinese individuals relying on borrowing is relatively low.

Second, we analyze the importance of the alternative sources of borrowing. As mentioned, only less than 7 percent of Chinese individuals use a formal credit. By far, the most important way to borrow money is through family or friends: 21 percent of Chinese individuals have used this source. The same pattern holds true for all BRICS, with shares of individuals who rely on borrowing from family and friends ranging from 15 percent in Brazil to 36 percent in South Africa.

Formal credit is the second most frequently used mode of borrowing for all BRICS. Further, the ranking of borrowing sources in China continues so that the third most important source is borrowing from a store (3 percent), followed by still lower shares of individuals borrowing money from their employer (1 percent) and from another private lender (1 percent). Overall, the same pattern holds for the other BRICS, with greater reliance on the last two sources of borrowing in India and South Africa.

It is interesting to use these observations to assess informal finance in China. On the one hand, they confirm that formal credit represents only a limited source for borrowing money. On the other hand, the most frequent way to borrow is through friends or family whereas borrowing through alternative sources, such as other private lenders or directly from stores, is not as important. Overall, this indicates that individuals do not frequently rely on alternative private lenders but prefer resorting to personal relations.

III. Determinants of financial inclusion

III.1 Methodology

In this section we utilize the data on individuals' characteristics in the Global Findex database to examine how these different characteristics are associated with financial inclusion in China. We perform probit estimations to explain measures of financial inclusion and estimate the following equation:

$$finInc_i = \alpha + \beta * income_i + \gamma * education_i + \delta * age_i + \sigma * gender_i + \varepsilon_i \qquad (1)$$

where *finInc* denotes one of three indicators of financial inclusion and *i* is the index for individuals. The explanatory variables belong to four groups of individuals' characteristics provided in the survey dataset: income, education, age, and gender. Income is indicated by including four dummy variables, each equal to one if the individual's income is in a given quintile, from the first (*poorest 20%*) to the fourth (*fourth 20%*). The omitted dummy variable is for the fifth income quintile. We consider two dummy variables for education, equal to one if the individual has secondary

education (*Secondary Education*) or tertiary education (*Tertiary Education*). We include age defined as the number of years (*Age*) and squared age (Age^2) in the estimations, in order to consider possible nonlinearity in the relation between age and financial inclusion. Gender is taken into account by introducing a dummy variable equal to one if the individual is a female (*Female*). Descriptive statistics for the characteristics of individuals are reported in Table 4. We first estimate equation (1) for the main indicators of financial inclusion and then continue with analyses of the other indicators.

III.2 Determinants of main financial inclusion indicators

Table 5 displays our results for the probit estimations, in which we use the main financial inclusion variables as dependent variables. We consider the following variables: formal account, formal saving, and formal credit.

We find that having a formal account is related to the individuals' income level. Dummy variables for the three lowest income quintiles are all significant and negative with larger coefficients for the quintiles indicating lower income. This result is in line with that of Demirgüc-Kunt and Klapper (2013) who find that income is positively related to financial inclusion. Interestingly, the effect of income is mainly not significant when we investigate formal saving and formal credit. We do not find any significant effects of income in the case of formal savings. Turning to formal credit, the dummy variable for the fourth income quintile is negative and significant, i.e. only the 20% individuals just below the richest 20% have significantly less use of formal credit in comparison to the richest ones.

Education is positively associated with the ownership of a formal account. Dummy variables for secondary education and tertiary education are significantly positive, with a larger coefficient for the latter one. We also find evidence of a relation between education and financial inclusion when considering formal credit: *Tertiary Education* is positive and significant. Nonetheless no effect of education is observed for the use of formal saving. This result might not be surprising taking into account the relatively high proportion of Chinese who have savings.

We find that women are less likely to report having a formal account or a formal loan. Hence gender exerts an impact on financial inclusion as regards formal account and formal credit. However we would note that women are not less likely to have formal saving.

The impact of age is identical for the three financial inclusion indicators. We find significant effects for *Age* and Age^2, which are respectively positive and negative. Hence there is a nonlinear relation between age and financial inclusion. This means that older people use more formal financial services than does the rest of the population, but this obtains only up to a certain age. Why do we find less usage after a certain age? We interpret this result in terms of a "generational effect", which may derive from the demand side or the supply side. Older individuals might be more reluctant to use formal financial services as they are not used to using them. Alternatively, financial institutions might put less effort into attracting older clients. Allen et al. (2012) find a similar nonlinear relation between age and formal account in data from all around the world.

All in all, our findings suggest that characteristics of individuals can help explain the use of formal financial services. However we observe major discrepancies between the three main financial inclusion indicators, with individual characteristics having a more significant influence on formal account use, which is considered the main indicator for financial inclusion.

We can compare our results with those of Allen et al. (2012) on the influence of individual characteristics on the use of formal account and formal saving in a world sample. We find similarities and differences between what is observed in China and in the world as a whole. The main similarities concern the influence of income, education, and age on the use of a formal account. Allen et al. (2012) also find that richer and more educated people are more likely to have a formal account, and that a nonlinear relation exists for age.

However, there are two major differences. First, no association between gender and use of formal account is observed at the world level. The negative relation that is found for China suggests that being a woman is a greater obstacle for the ownership of a bank account in this country than in the rest of the world on average. Second, richer and more

educated people are on average likely to have formal saving at the world level but not in China. This difference can be explained by the high savings rate in China and less significant differences among different groups of people.

Overall, these findings raise further questions. We wonder if individuals' characteristics also determine the barriers to financial inclusion and the use of alternative sources of borrowing.

III.3 Determinants of barriers to financial inclusion

We investigate how individual characteristics affect the reasons for not having a formal account. As stated before, ownership of a formal account is of prime importance for financial inclusion. It is thus of particular interest to identify the reasons for not having a formal account.

We explain each of the six barriers to financial inclusion reported in the survey with four individual characteristics for which we have data. Table 6 displays the estimations.

Income is related to several explanations for not having an account. As expected, lack of money explains why poor individuals do not have formal account. Dummy variables for the three first income quintiles are all positive and significant, with higher effects for lower income. The presence of another account in the family also influences the use of a formal account for low-income individuals but in the opposite direction from lack of money: the poorer the individual, the less the likelihood that she needs a formal account if another member of the family has already one. In other words, poor individuals do not feel the same need to have several accounts in the household as do rich individuals. We also find limited evidence for the role of lack of documentation, as dummy variables for the second and the third income quintile are significantly negative. This finding suggests that middle-income individuals are less sensitive to the lack of documentation than other individuals as regards having an account. When analyzing the reason for not having account described as "too expensive" we do not find any relationship with income. This finding supports the view that the cost of banking services

is not – or at least is not perceived to be – an obstacle to financial inclusion, as it does not affect the poorest persons' demand.

Education variables are interestingly associated with two reasons which differ from those associated with income. This suggests that educated people are not necessarily influenced by the same motives as are high-income individuals in China. Indeed, we find that the dummy variables for secondary education and tertiary education are positive and significant, with a larger coefficient for the latter, when explaining "too expensive" and "lack of trust".

Thus the more educated people care more about the pricing of the financial services, and are more sensitive to trust in banks as regards having an account. These findings are important, as they suggest that increasing the level of education in China can contribute to major changes in the relation between citizens and financial institutions. Demand can become more elastic to prices, which matters in terms of tighter bank competition in line with efforts aimed at financial liberalization. Trust in banks might also evolve and could become crucial, especially if defaults begin to occur in connection with financial liberalization. Overall, both of these features highlight possible instability in the financial industry with more educated Chinese people being more sensitive and less trustful clients.

Gender is associated only with "lack of documentation" and "family member having an account". This latter result is not surprising since women are less likely to have an account when someone else in the family already has one, and it supports the view of the prominent role of men in the financial behavior of Chinese households. We also find that "lack of documentation" is positively related to women not having formal accounts. Women are then more sensitive to this factor, which might interestingly suggest that they have a higher degree of financial literacy.

Finally, age is associated with many reasons for not having a formal account. Older people are more sensitive to distance, lack of money, and religious reasons but less sensitive to lack of documentation and the existence for another account in the family.

III.4 Determinants of sources of borrowing

We continue the analysis of the use of formal credit by studying how individual characteristics are associated with the different sources of borrowing. Here we also include the aggregate variable for the combined total of borrowing. Table 7 reports the results.

Education influences the decision on the sources of borrowing. *Secondary Education* and *Tertiary Education* are significantly positive in explaining borrowing from a store and significantly negative in explaining borrowing from family or friends.

Looking at these findings against the background of the absence of a significant relation between education and formal credit, it appears that higher education does not enable better access to credit in China, but it does influence the choice of borrowing source. More educated people borrow more from stores and less from family or friends. Nevertheless, education does not contribute to better access to credit in general, as shown by the non-significant effect for *Tertiary Education* in explaining borrowing from all sources.

Income influences to a lesser extent the sources of borrowing. We find that poorer individuals borrow more from family or friends, as dummy variables for the first and second income quintile are positive and significant, with a larger coefficient for the first. We also observe that richer people borrow less from stores.

Gender also influences the sources of borrowing. Being a woman reduces the likelihood to borrow from family or friends and to obtain credit in general, which is in line with what we have observed for formal credit. This suggests that sex discrimination is less important for the other sources of borrowing (store, private lender, and employer). However these sources of borrowing are the least frequently used ones. Moreover, we note that, unlike what we have seen in the case of less educated and poorer people, being a woman is not associated with greater use of credit in general. In other words, there is no substitution between sources of financing for woman. As a whole, these findings support the idea of sex discrimination in access to credit.

Age is related to the majority of sources of borrowing in the same way. A nonlinear relation is observed with all dependent variables except for borrowing from another private lender. Being older enhances the likelihood to get a loan, whatever the source, up to a certain age. There is no difference here between formal credit and other sources of borrowing.

Thus we observe that individual characteristics do influence the sources of borrowing. In particular, the most common source of funding for Chinese individuals, borrowing from family or friends, is related to all individual characteristics.

IV. Conclusion

In this paper we investigate the level and determinants of financial inclusion in China based on the Global Findex database. Financial inclusion is crucial because it helps foster economic growth by increasing the possibilities for education and entrepreneurship.

We obtain several insightful results. First, financial inclusion, as measured by the proportion of individuals having formal account and formal saving, is much more developed in China than in the other BRICS. The decision not to have a formal account is mainly driven by voluntary exclusion. This is a major difference as compared to the other BRICS where involuntary financial exclusion prevails; i.e. individuals are much more often discouraged by excessive bank charges or lack of trust in banks. Second, formal credit is less developed in China than in the other BRICS. Borrowing from family or friends is more common than formal borrowing, but other sources of borrowing are not very frequently tapped. Overall, the use of credit in general is not very common among individuals in China. Third, we find that income, education, but also being a man and being older, contribute to greater financial inclusion, as they are positively related to having a formal account and formal credit. In general, the individual determinants of financial inclusion in China are comparable to what is observed by other studies based on data from all around the world, the only exception being the factors influencing formal saving in China.

Our main conclusion is thus that the level of financial inclusion in China is high relative to comparable countries. However the use of formal credit remains low, which might be a result of the limited access to bank credit for individuals in China.

Our findings have some policy implications. Financial inclusion, as measured by the ownership of a formal account, does not constitute a major problem in China. Chinese authorities could nonetheless enhance the ownership of a formal account by dismantling obstacles related to gender, income and education, all of which constitute more long-run issues. However a major concern in the short run is undoubtedly the limited use of formal credit. Chinese policymakers should thus implement measures to expand the use of formal credit. Even if alternative ways of borrowing, mainly from family and friends, are in general available, the relatively low reliance on formal credit can in the long run lead to slower economic growth, as borrowing prospects for individuals would be reduced. It can also hamper financial stability, since all credits granted outside the formal system are outside of the scope of banking regulation. Hence, focusing on growth and preserving financial stability provide incentives for regulators to encourage the use of formal credit in China.

References

1. Allen, F., Demirgüc-Kunt, A., Klapper, L., Peria, M. (2012). The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts, World Bank Policy Research Paper 6290.
2. Anson, J., Berthaud, A., Klapper, L., Singer, D. (2013). Financial Inclusion and the Role of the Post Office, World Bank Policy Research Paper 6630.
3. Beck, T., Demirgüc-Kunt, A., Levine, R. (2006). Bank Concentration, Competition and Crises: First Results, Journal of Banking and Finance 30, 1581-1603.
4. Beck, T., Demirgüc-Kunt, A., Levine, R. (2007). Finance, Inequality and the Poor, Journal of Economic Growth 12, 27-49.
5. Bruhn, M., Love, I. (2014). The Real Impact of Improved Access to Finance: Evidence from Mexico, Journal of Finance (forthcoming).
6. Cihak, M., Demirgüc-Kunt, A., Feyen, E., Levine, R. (2012). Benchmarking Financial Systems Around the World. World Bank Policy Research Paper 6175.
7. Demirgüc-Kunt, A., Klapper, L. (2012). Measuring Financial Inclusion: The Global Findex Database, World Bank Policy Research Working Paper 6025, World Bank.
8. Demirgüc-Kunt, A., Klapper, L. (2013). Measuring Financial Inclusion: Explaining Variation in Use of Financial Services Across and Within Countries, Brookings Papers on Economic Activity, Spring 2013, 279-340.
9. Demirgüc-Kunt, A., Klapper, L., Randall D. (2013). Islamic Finance and Financial Inclusion: Measuring Use of and Demand for Formal Financial Services among Muslim Adults, World Bank Policy Research Working Paper 6642, World Bank.
10. Fungáčová, Z., Weill, L. (2013). Does Competition Influence Bank Failures? Evidence from Russia. Economics of Transition 21, 2, 301-322.
11. Geng, N., N'Diaye, P. (2012). Financial Development, Corporate Investment and Savings in China. IMF Working Paper 12/80, IMF.
12. Hale, G., Long, C. (2010). What Are the Sources of Financing for Chinese Firms. In The Evolving Role of Asia in Global Finance (editors: Cheung, Y., Kakkar, V., Ma, G.), Emerald.
13. Han, R., Melecky, M. (2013). Financial Inclusion for Financial Stability: Access to Bank Deposits and the Growth of Deposits in the Global Financial Crisis. World Bank Policy Research Working Paper 6577, World Bank.
14. Iorgova, S., Liu, Y. (2013). Structure of the Banking Sector and Implications for Financial Stability. In: China's Road to Greater Financial Stability: Some Policy Perspectives (editors: Das, U., Fiechter, J., Sun, T.), Washington DC, IMF, 123-139.
15. Mees, H., Ahmed, R. (2012). Why Do Chinese Households Save So Much? Working Paper, New York University.
16. Wei, S.-J., Zhang, X. (2011). The Competitive Saving Motive: Evidence from Rising Sex Ratios and Savings Rates in China. Journal of Political Economy 119, 3, 511-564.
17. Yang, D**.** (2012). Aggregate Savings and External Imbalances in China. Journal of Economic Perspectives 26, 4, 125-146.

Table 1
Main indicators for financial inclusion

This table displays the descriptive statistics for the three main financial inclusion indicators. Formal Account refers to adults reported to currently have a bank account at a formal financial institution. Formal Saving refers to adults reported to have saved or set aside money in the past 12 months using a financial institution. Formal Credit refers to adults reported to have borrowed money in the past 12 months using a financial institution.

	Formal account			Formal saving			Formal credit		
	Obs.	Mean	Std.dev	Obs.	Mean	Std.dev	Obs.	Mean	Std.dev
Brazil	1037	0.5545	0.4973	206	0.5097	0.5011	1037	0.0685	0.2527
China	4184	0.6630	0.4727	1799	0.8193	0.3848	4195	0.0650	0.2467
India	3501	0.3733	0.4838	947	0.5649	0.4960	3460	0.0809	0.2726
Russia	1929	0.4391	0.4964	477	0.5199	0.5001	1970	0.0944	0.2925
South Africa	1000	0.5660	0.4959	365	0.7178	0.4507	1000	0.1110	0.3143

Table 2
Barriers to financial inclusion

This table displays the descriptive statistics for barriers to financial inclusion reported in the survey for all the BRICS.

Reason for not having a formal account	too far away			too expensive			lack of documentation			lack of trust		
	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.
Brazil	415	0.159	0.366	404	0.483	0.500	420	0.243	0.429	402	0.219	0.414
China	1124	0.163	0.369	1099	0.098	0.298	1124	0.088	0.284	1126	0.054	0.226
India	1992	0.232	0.422	1987	0.243	0.429	1966	0.170	0.376	1968	0.087	0.282
Russia	802	0.125	0.331	669	0.196	0.397	803	0.113	0.317	775	0.426	0.495
South Africa	405	0.343	0.475	401	0.426	0.495	405	0.240	0.427	405	0.198	0.399
Total	4738	0.201	0.401	4560	0.239	0.426	4718	0.153	0.360	4676	0.156	0.363

Reason for not having a formal account	lack of money			religious reasons			family member has an account		
	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.
Brazil	418	0.670	0.471	421	0.012	0.108	421	0.292	0.455
China	1127	0.606	0.489	1132	0.010	0.098	1120	0.343	0.475
India	2005	0.626	0.484	1981	0.079	0.270	1990	0.445	0.497
Russia	798	0.747	0.435	798	0.046	0.210	772	0.212	0.409
South Africa	405	0.733	0.443	405	0.030	0.170	402	0.112	0.316
Total	4753	0.655	0.476	4737	0.047	0.211	4705	0.340	0.474

Table 3
Alternative sources of borrowing

This table displays the descriptive statistics for variables describing alternative (other than formal) credit sources of borrowing in BRICS.

Borrowed from	a store			family and friends			employer		
	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.
Brazil	1034	0.038	0.191	1035	0.148	0.355	1036	0.011	0.103
China	4202	0.030	0.171	4196	0.210	0.408	4193	0.014	0.117
India	3461	0.067	0.250	3454	0.190	0.392	3459	0.050	0.219
Russia	1971	0.051	0.221	1959	0.250	0.433	1962	0.022	0.148
South Africa	1000	0.140	0.347	1000	0.357	0.479	1000	0.034	0.181
Total	11668	0.055	0.227	11644	0.218	0.413	11650	0.028	0.164

Borrowed from	another private lender			any credit			formal financial institution		
	Obs.	Mean	St.dev.	Obs.	Mean	St.dev.	Obs.	Mean	Std.dev
Brazil	1037	0.012	0.107	1042	0.238	0.426	1037	0.069	0.253
China	4192	0.011	0.103	4220	0.257	0.437	4195	0.065	0.247
India	3460	0.066	0.248	3518	0.294	0.456	3460	0.081	0.273
Russia	1963	0.015	0.121	2000	0.333	0.471	1970	0.094	0.293
South Africa	1000	0.068	0.252	1000	0.477	0.500	1000	0.111	0.314
Total	11652	0.033	0.178	11780	0.298	0.457	11662	0.079	0.27

Table 4
Descriptive statistics for the main variables in the estimations

	Definition	Obs.	Mean	St.dev.
Female	=1 if female, =0 otherwise	4220	0.530	0.499
Age	age in number of years	4179	43.961	15.921
Income - poorest 20%	=1 if income in the first income quintile, =0 otherwise	4220	0.170	0.376
Income - second 20%	=1 if income in the second income quintile, =0 otherwise	4220	0.170	0.376
Income - third 20%	=1 if income in the third income quintile, =0 otherwise	4220	0.175	0.380
Income - fourth 20%	=1 if income in the fourth income quintile, =0 otherwise	4220	0.207	0.405
Income - richest 20%	=1 if income in the fifth income quintile, =0 otherwise	4220	0.278	0.448
Secondary education	=1 if secondary education, =0 otherwise	4220	0.304	0.460
Tertiary education	=1 if tertiary education, =0 otherwise	4220	0.076	0.264

Table 5
Determinants of the main financial inclusion indicators

This table presents probit estimations of the determinants of financial inclusion in China. The dependent variable is indicated at the top of each column. The explanatory variables are income, education, gender and age, as described in Table 4. We report the estimated marginal effects. Standard errors are in parentheses. Asterisks denote significance at the ***1 percent, **5 percent and *10 percent level.

	Account at formal financial institution	Savings at formal financial institution	Borrowed money from formal financial institution
Female	-0.045*** [0.015]	0.012 [0.018]	-0.025*** [0.007]
Age	0.017*** [0.003]	0.012*** [0.003]	0.009*** [0.001]
Age^2	-0.0001*** [0.000]	-0.0001*** [0.000]	-0.0001*** [0.000]
Income - poorest 20%	-0.350*** [0.027]	-0.070 [0.043]	0.009 [0.012]
Income - second 20%	-0.274*** [0.027]	-0.040 [0.033]	-0.017* [0.009]
Income - third 20%	-0.163*** [0.027]	0.022 [0.027]	-0.014 [0.009]
Income - fourth 20%	-0.030 [0.024]	0.028 [0.023]	-0.033*** [0.007]
Secondary education	0.149*** [0.017]	-0.017 [0.021]	0.008 [0.009]
Tertiary education	0.216*** [0.022]	-0.020 [0.034]	0.035* [0.018]
Observations	4,145	1,785	4,156
Pseudo R^2	0.129	0.015	0.056
Loglikehood	-2311.444	-831.713	-943.265

Table 6
Determinants of barriers to financial inclusion

This table presents probit estimations of the determinants of barriers to financial inclusion in China. . The dependent variable is indicated at the top of each column. The explanatory variables are income, education, gender and age, as described in Table 4. We report the estimated marginal effects. Standard errors are in parentheses. Asterisks denote significance at the ***1 percent, **5 percent and *10 percent level.

	Too far away	Too expensive	Lack of documentation	Lack of trust	Lack of money	Religious reasons	Family member has an account
Female	-0.019 [0.023]	-0.010 [0.018]	0.046*** [0.016]	-0.006 [0.013]	0.002 [0.030]	0.002 [0.003]	0.096*** [0.029]
Age	0.007** [0.003]	0.004 [0.003]	-0.008*** [0.002]	0.002 [0.002]	0.013*** [0.004]	0.002** [0.001]	-0.012*** [0.004]
Age^2	-0.0002* [0.000]	-0.0001 [0.000]	0.0001*** [0.000]	-0.0001 [0.000]	-0.0001*** [0.000]	-0.0002** [0.000]	0.0001*** [0.000]
Income - poorest 20%	0.029 [0.044]	0.030 [0.037]	-0.028 [0.023]	-0.032* [0.018]	0.246*** [0.047]	-0.002 [0.006]	-0.365*** [0.038]
Income - second 20%	-0.028 [0.041]	0.032 [0.038]	-0.044** [0.020]	-0.009 [0.019]	0.184*** [0.048]	-0.002 [0.005]	-0.296*** [0.038]
Income - third 20%	0.048 [0.048]	-0.010 [0.035]	-0.057*** [0.018]	0.003 [0.022]	0.122** [0.052]	0.002 [0.008]	-0.193*** [0.043]
Income - fourth 20%	0.065 [0.053]	0.055 [0.047]	-0.033 [0.021]	-0.016 [0.019]	0.023 [0.059]	0.001 [0.008]	-0.139*** [0.048]
Secondary education	0.024 [0.035]	0.093*** [0.035]	0.067** [0.030]	0.063** [0.027]	-0.009 [0.043]	0.024* [0.014]	0.059 [0.044]
Tertiary education	0.022 [0.113]	0.387*** [0.135]	0.059 [0.084]	0.382*** [0.133]	-0.159 [0.140]	0.145 [0.108]	-0.103 [0.112]
Observations	1,121	1,097	1,122	1,124	1,124	1,129	1,118
Pseudo R^2	0.014	0.037	0.065	0.083	0.040	0.130	0.086
Loglikehood	-488.645	-337.609	-312.943	-217.361	-722.685	-53.849	-657.028

Table 7
Determinants of sources of borrowing

This table presents probit estimations of the determinants of sources of borrowing in China. . The dependent variable is indicated at the top of each column. The explanatory variables are income, education, gender and age, as described in Table 4. We report the estimated marginal effects. Standard errors are in parentheses. Asterisks denote significance at the ***1 percent, **5 percent and *10 percent level.

Borrowing	from the store	from family or friends	from emloyer	from another private lender	from all sources
Female	-0.001 [0.004]	-0.050*** [0.013]	-0.004 [0.003]	0.001 [0.003]	-0.065*** [0.014]
Age	0.002** [0.001]	0.006*** [0.002]	0.001** [0.001]	0.001 [0.001]	0.011*** [0.002]
Age^2	-0.0001*** [0.000]	-0.0001*** [0.000]	-0.0001*** [0.000]	-0.0001 [0.000]	-0.0001*** [0.000]
Income - poorest 20%	0.008 [0.007]	0.135*** [0.026]	-0.001 [0.005]	-0.003 [0.004]	0.116*** [0.026]
Income - second 20%	-0.007 [0.005]	0.075*** [0.023]	-0.005 [0.004]	-0.008*** [0.003]	0.043* [0.023]
Income - third 20%	-0.023*** [0.004]	0.030 [0.021]	-0.008** [0.003]	-0.005 [0.003]	-0.007 [0.021]
Income - fourth 20%	-0.013*** [0.004]	0.008 [0.019]	-0.002 [0.004]	-0.006** [0.003]	-0.033* [0.019]
Secondary education	0.010* [0.005]	-0.046*** [0.015]	-0.006** [0.003]	-0.001 [0.003]	-0.038** [0.016]
Tertiary education	0.047*** [0.015]	-0.055** [0.023]	-0.005 [0.004]	0.001 [0.005]	0.007 [0.028]
Observations	4,163	4,159	4,157	4,155	4,179
Pseudo R2	0.071	0.036	0.038	0.026	0.038
log likehood	-527.789	-2055.332	-293.717	-242.057	-2286.235

Working Papers

Laboratoire de Recherche en Gestion & Economie

http://ideas.repec.org/s/lar/wpaper.html

Université de Strasbourg
Pôle Européen de Gestion et d'Economie
61 avenue de la Forêt Noire
67085 Strasbourg Cedex

http://large.em-strasbourg.eu/