Journal of Development Economics 111 (2014) 34–47

Contents lists available at ScienceDirect

Journal of Development Economics

journal homepage: www.elsevier.com/locate/devec

Brothers, household financial markets and savings rate in China ☆

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ARTICLE INFO

Article history:
Received 12 January 2014
Received in revised form 1 July 2014
Accepted 17 July 2014
Available online 24 July 2014

Keywords:
Household savings
Family structure
Financial market development

ABSTRACT

This study analyzes the effect of the number of brothers an individual has on that individual's household savings rate under the current underdeveloped household financial market in urban China. I show that having an additional brother reduces an individual's household savings rate by at least 5 percentage points. Brothers help households (1) by sharing risks, providing a source of informal borrowing, and (2) by sharing the cost of supporting parents. Sisters play a minor role in affecting a household's savings rate, mainly because of cultural norms. The decline in the average number of brothers in households induced by population policies explained at least one-third of the increased aggregate household savings rate in urban China.

1. Introduction

It is well documented that the corporate financial markets in China remain underdeveloped despite China's impressive GDP growth in recent decades (Allen et al., 2005; Ayyagari et al., 2010; Chen et al., 2011; Guariglia et al., 2011; Song et al., 2011). Private entrepreneurs usually find it difficult to borrow from banks, relying largely instead on a network of family members or relatives to serve as financial resources (Cai et al., 2013; Estrin and Prevezer, 2011). To date, however, little attention has been paid to household financial markets though they are no less underdeveloped than the corporate financial markets. According to the 2009 China Family Panel Study, even in China's most developed regions, Beijing, Shanghai, and Guangdong, more than 80% of debtors in 2008 borrowed from family members or relatives while fewer than 20% borrowed from financial institutions. Households are suffering from underdeveloped financial markets; at the same time, they also encounter a large uncertainty. Health care reforms, pension reforms, and rising income uncertainties impel households toward high savings rates (Chamon and Prasad, 2010; Chamon et al., 2010). The household savings rate rose from 16% in 1990 to 24% in 2005 in urban areas.[1]

In developing countries where household financial markets are underdeveloped, research has provided evidence as to how extended family members help households experiencing negative economic shocks by sending them transfers and gifts (Fafchamps, 2011; Fafchamps and Quisumbing, 2011). But the extent to which the existence of family members who can represent *potential* transfers affects a household's savings rate and whether the gender of the family members matters has so far remained unknown.

This paper explores the consequences of a weak household financial market by studying the effect of brothers, the most important members of a household in the extended family, on the household savings rate in urban China. This is one of the first papers to estimate the sibling effect on a household's savings rate using micro-level data.

Although individuals rely largely on their brothers under the current environment of increasing uncertainties and incomplete financial markets, population control policies such as the One-Child Policy (1979) made the situation even worse. In contrast to the generation born during the baby boom period (1946–1978), where an individual has on average more than three siblings, individuals in the One-Child Policy generation have fewer or even no siblings.[2] In addition to suffering from incomplete financial markets, the One-Child Policy generation also suffers from the lack of a family-based safety net. A simple calculation suggests that the decline in the average number of brothers can explain at least one-third of the increased aggregate household savings rate.

☆ I thank Thomas Lemieux and Siwan Anderson for their advice, encouragement and guidance. I am also grateful to co-editor Gerard Padro i Miquel, two anonymous referees, Hiroyuki Kasahara, Xin Meng, Giovanni Gallipoli, Paul Beaudry and Ashok Kotwal for their detailed suggestions.

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[1] The savings rate is defined as 1 − *LivingExpenditure*/*DisposableIncome*. Data source: China Statistical Year Book.

[2] Although the overall fertility rate was high during the baby boom period, it was low during the Chinese famine period (1959–1961).

http://dx.doi.org/10.1016/j.jdeveco.2014.07.002
0304-3878/

In estimating the effect of the number of brothers an individual has on that individual's household savings rate, endogeneity problems arise: the number of brothers an individual has could potentially be correlated with that individual's unobserved characteristics such as parents' preferred number of children. This paper has found that conditional on an individual's number of siblings, the gender of the siblings can be considered as a random assignment by nature for urban residents born during the baby boom (1946–1978). The gender assignments of siblings by nature help us identify the effect of having a brother instead of a sister (a *relative* effect).

The identification strategy relies on the assumption that conditional on the number of siblings, the gender of the siblings is only determined by nature. It is well known that in recent decades China has had a growing missing female problem (Anderson and Ray, 2010; Qian, 2008). However, I find it unlikely that, among urban residents born during the baby boom (1946–1978), parents would have been able to control the gender of their children for a given family size.[3] The main reason is that ultrasound technology that can identify gender before birth was only introduced in the 1980s, after the baby boom. In addition, female infanticide would have been difficult to carry out in urban areas, rendering it unlikely that urban households would have risked criminal prosecution for son preference.

I find that having a brother instead of a sister reduces that household's savings rate by at least 5 percentage points. If, like brothers, sisters should also affect the household savings rate, the estimated *relative* effect would be a lower bound. That is, the absolute effect (having one more brother rather than not) would be larger than the relative effect (having a brother instead of a sister). The statistical evidence for the baby boom generation reveals that sisters have almost no effect on a household's savings rate. Therefore, the estimated *relative* effect of a brother is likely to be the same as the *absolute* effect. The lack of a sisters effect on the savings rate may result from the relatively weak connections in Chinese culture between female and male siblings and between parents and daughters. This said, interestingly, as the number of siblings declines among the young generation, given the change in family planning policy, sisters come to affect the savings rate in the way that brothers do. Where there are too few brothers, young households may use sisters as a substitute for brothers.

I show that brothers can reduce a household's savings rate through two channels: (1) sharing risks and extending borrowing limits, and (2) sharing the cost of supporting parents. In order to examine the effect of risk sharing/extending borrowing limits, this paper tests the effect that brothers have on households with different levels of (a) wage uncertainties, (b) health risks, (c) regional financial development, and (d) income or asset levels. The estimation results are consistent with the risk-sharing/extending-borrowing-limits hypothesis: households that encounter larger wage uncertainties, have higher health risks, live in a financially less developed province, have lower incomes or have fewer assets, have a larger brothers effect. The robust and consistent results suggest a strong risk-sharing/extending-borrowing-limits effect of having brothers.

In Chinese culture, the expectation is that male children will support their parents (Banerjee et al., 2013).[4] A household with several brothers would need to save less for parents' risks, in particular for medical expenditure risks, as these are largely shared among the brothers. To test the parent-supporting aspect, I utilize information on whether parents are deceased. Once the parents have passed away, brothers no longer play a role in sharing parents' risks. The difference in the number of parents still living helps to identify the parent-supporting effect of brothers.

Recent papers have emphasized that changes in the demographic structure could affect household savings rates given the effect of the intergenerational support. Ge et al. (2012) explore the regional variation in One-Child Policy fines to examine the effect of changing demographics on household savings rates. Choukhmane et al. (2013) estimate an OLG model incorporating endogenous fertility, intergenerational transfers, and human capital accumulation; they find that changes in the demographics explain more than one-third of the rise in the aggregate savings rate. Banerjee et al. (2013) suggest that the partial equilibrium model could overstate the effect of changing demographics on the savings rate. Wei and Zhang (2011) suggest that the rising gender ratio induced parents to save more for their male children, helping them secure a better outcome in the marriage market.

This is one of the first papers to emphasize that in addition to the intergenerational support effect, the risk-sharing effect among brothers could also explain why changes in demographics could raise the aggregate household savings rate. Furthermore, the role of risk sharing/extending the borrowing limits among family members could vary greatly depending on the gender of a family member. This paper discovers a new dimension to gender difference in China.

In further comparison to existing literature in which most papers examine increases in savings at a particular point in time, such as reduction in the provision of social services, housing reform, or having a single child, this paper also explains why in China savings rates continue to rise. First, the informal risk-sharing networks continue to shrink because future generations will have even fewer or no cousins given the One-Child Policy. Second, because households with fewer brothers require greater savings to support elderly parents, these households may not have sufficient savings for their own retirement. As such, they may continue to consume relatively little even after the parents have passed away.

This paper also helps explain why mixed evidence prevails regarding whether the decreasing dependency ratio could explain the rising savings rate. Modigliani and Cao (2004) use long-term national-level data and find that the decrease in both the young and old population contributes to the rising savings rate in China. On the other hand, Horioka and Wan (2007) use more recent data and find that the change in the dependency ratio does not adequately explain the increasing savings rate. By emphasizing that individuals of prime age could save less because they have more brothers, this paper helps solve the puzzle. The recent younger generation contributes to the high savings rate because it does not have siblings.

The paper proceeds as follows. Section 2 introduces the background to household financial markets, population policies, and the current savings rate in China. Section 3 introduces the identification strategies and presents the estimation results. Section 4 explores the reason why a household with more brothers could reduce the savings rate. Section 5 provides a robustness check for the identification strategy. Section 6 shows how much of the savings rate puzzle can be explained by the brothers effect. Section 7 concludes the paper. The Data Appendix provides information on all the data used in this paper.

2. Background

2.1. Financial markets and household borrowing resources

It is a well-known fact that the corporate financial market in China is underdeveloped; private entrepreneurs have to rely largely on such networks as family members or relatives for financial resources (Allen et al., 2005; Ayyagari et al., 2010; Chen et al., 2011; Guariglia

[3] The baby boom was induced by family planning policies introduced in the 1950s and carried on until the early 1970s.

[4] This is the main reason why we observe a large increase in the male–female gender ratio of newborns after the One-Child Policy.