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Abstract

The current account imbalance between the U.S.A. and China is the principal cause of the ongoing trade friction. China's domestic savings, which have exceeded domestic investment for many years, are flowing into the U.S.A. We sought to explain why China saved so much in terms of all of gross national, household, corporate, government, and other savings from 1952 to 2018. We prepared two sets of time-series data based on the SNA and deposits in domestic banks, and compared them. Over the 67 years (1952-2018), corporate saving was the largest source of domestic saving, except from 1988-2007. Household saving was determined by income growth, consumption habits, income distribution, social security payments, the desire to bequeath money, the one-child policy, and speculative saving. To explore corporate saving, we performed panel regression analysis by estimating provincial corporate saving by "certain-sized industries" from 2000 to 2010. All of the Tobin marginal Q, minimum wage growth, the private enterprise ratio, the corporate income tax rate, and population growth significantly impacted corporate saving.

JEL classification: D91, E21, J10

Keywords: domestic, household, corporate, government, saving, Tobin Q, minimum wage, private company, corporate income tax, population growth

1 Introduction

1.1 Saving/consumption (im)balance, domestic and global saving/investment

(im)balance

China's domestic investment attained 46% of GDP in 2010 (Figure 1) but the gross national savings exceeded this value by 52%, more than double the worldwide figure of 24% for 1977-2018 (World Bank 2018, Figure 1). Such high savings and investment rates seem unusual, and are confined to China; this is the "China Saving Puzzle" (Modigliani and Cao 2004). Most savings not used for domestic investment have been lent to the U.S.A. (Meltzer and Shenai 2019), creating a global (U.S.A./China) economic imbalance (Obstfeld 2018); this is a fertile research field for scholars and policymakers (Bernanke 2005; Wan 2015). Former U.S. Federal Reserve Chairmen Bernanke and Greenspan (Bernanke 2005; Greenspan 2009) made it clear that China's excessive savings indirectly caused the U.S. real estate bubble, associated with a long-term decline in U.S. interest rates. Furthermore, the Trump administration has suggested that the U.S.A./China imbalance problem is the primary cause of the U.S.-China trade war that commenced in 2018 (Liu and Woo 2018; Zhang 2018); the imbalance is top of the agenda for U.S.-China negotiations. The unusually high gross national saving rate is associated with an extraordinarily low consumption rate [Horioka and Wan (2007, 2008); Wan (2011, 2015, 2016, 2019)]. To stabilize and

grow China's economy, it is essential to increase consumption, which is the prime driver of domestic demand. In summary, the "China Saving Puzzle" not only contributes to U.S.-China trade friction but is also a major Chinese domestic issue (Wan 2015, 2019). The problem must be solved.

1.2 Research Questions

Many scholars have researched China's governmental and household savings. Many macro- and micro-level empirical works have clarified the principal determinants thereof; we summarize them below. However, domestic corporate saving is poorly understood. Kuijs (2005) found that corporate saving (retained earnings) is an important source of Chinese corporate investment. Bayoumi et al. (2010) compared the saving rates (savings/gross assets) of world companies (29,330 listed enterprises) in 2002-2007. The Chinese saving rates (1,557 listed enterprises) were not significantly higher than those in other countries. However, Chinese enterprises include both listed and non-listed companies. The corporate saving rates, and the determinants thereof, remain unclear. Below, we estimate these rates and define their determinants.

1.3 Principal findings of this study

We analyzed time-series data on the Chinese gross national, household, corporate, governmental, and other sector saving rates from 1952 to 2018 and defined their characteristics. The most distinctive feature was that corporate saving was the largest source of bank deposits, except during the interval 1988-2007. We sought determinants of household saving identified in the literature, and estimated the savings and saving rates of provincial enterprises over “certain-sized industries” from 2000 to 2010. We used panel regression analysis to show that investment opportunities assessed using the Tobin marginal Q and borrowing constraints, employee compensation, corporate income tax, and the population growth rate, significantly impacted the corporate saving rate. These new findings may explain the “China Saving Puzzle”.

1.4 Study structure

The rest of the paper is composed as follows. Section 2 estimates total and sectoral savings. Section 3 defines and estimates corporate saving and the corporate saving rate. To these ends, we use a panel regression model that considers potential determinants of the corporate saving rate. Section 4 describes the panel regression methods and the results, and explains the findings. Section 5 summarizes the principal outcomes and discusses the policy implications and unresolved issues.

2 China's gross national and sectoral savings

2.1 China's gross national savings

As shown in Figure 1, from 1952 to 1978, the real GDP per capita rose moderately in the socialist era; China's gross national saving rate increased from 20 to 30% except for a sharp rise and fall from 1958 to 1963. During this time, China's economy was almost closed; any trade surplus and GDP deficit were so small that they may be neglected. Therefore, the total saving rate was almost equal to the total investment rate. However, real GDP per capita increased rapidly from 1979 to 2000 because of China's "opening", and rose very rapidly from 2001 to 2018 after China joined the World Trade Organization in 2001. In terms of the current account deficits and surpluses, the total saving and total investment rates exhibit similar trends, but the difference between them has persisted for many years. In particular, the total saving rate in the period 1979-1993 seems to be generally balanced, sometimes exceeding and sometimes falling below the total investment rate. However, the total saving rate in the period 1994-2018 exceeded the total investment rate; the current account balance has remained in continuous surplus for 25 years. This may be because the "opening" effect of the words of Deng Xiaoping (delivered on an inspection tour of southern China in 1992) was followed (after a lag of more than 1 year) by

acceleration of “opening” reform. In detail, the total saving rate declined from 1994 to 2000, rose from 2001 to peak in 2010, and tended to decline from 2011 to 2018.

The trend in China’s gross national saving and the peak of the saving rate at 52% in 2010 were predicted by Horioka and Wan (June 8 2006).² The projection was based on the median value of the U.N. Chinese population estimates. As the Chinese youth dependency ratio (the number aged 14 years and under to that of the number aged 15 to 59 years) fell drastically when the one-child policy was introduced, and as (conversely) the elderly dependency ratio (the number aged 60 years and older to the number aged 15 to 59 years) has gradually increased, given longer life expectancies, the overall dependency ratio (the sum of the two dependency ratios) attained a nadir of 0.48 in 2010 and began to rise from 2011. The life cycle hypothesis states that the lower the overall dependency ratio, the higher the total saving rate. It is necessary to

² This was also published in an English-language newspaper (Horioka and Wan, June 5 2006). The theoretical generation overlap model was used to analyze the effects of the one-child policy and consumption habits, and the Chinese domestic savings rate trend was then derived (Horioka and Wan, June 21, 2006; Wan, August 7, 2006). These reports (in Chinese) indicated that China’s domestic savings rate would begin to decline in 2011 after peaking in 2010. The history of the two Chinese documents is as follows: The author presented a seminar paper (in English) entitled: “Why Does China Save So Much?” (by Charles Yuji Horioka and Junmin Wan) at the China Center for Economic Research (CCER) of Peking University on Wednesday June 21 2006 (13: 30-15: 00). In the paper, the domestic and household saving rates were analyzed from both theoretical and empirical perspectives. Many faculty members and graduate students from Peking University attended; a lively discussion (in English) ensued. Immediately thereafter, the seminar talk and question-and-answer session were transcribed (in Chinese) by CCER; the transcript was entitled “The 591th (the 29th of 2006) Policy Research Brief; Horioka and Wan, June 21 2006”; [five single-spaced A4 pages]. A supposed summary of the seminar talk (in Chinese) (Liao Wang Weekly, Xinhua, August 7, 2006, one single-spaced A4 page) was not written by the author and is not known to the author. In terms of corporate savings, the attributions were made to the owners of the companies. As each owner is part of a household, the corporate savings are indirectly (but essentially) household savings in a broad sense.

examine savings by sector to identify the economic entity principally responsible for the gross national saving rate. Therefore, we placed deposits on the debt side of the balance sheets of domestic banks to define four types of saving by economic entity: household, corporate, government, and “other entity”, and we calculated the ratio of total savings to GDP (Figure 2). Figure 3 summarizes the ratios of the four entity savings to total savings on a stock basis. As shown in Figure 2, although total savings fluctuated from 1952 to 2015, they exhibited a rising trend that turned downward from 2016. Figure 3 shows that the government and “other entity” savings were small. With the exception of the 1988-2007 interval, corporate saving exceeded household saving in 1952-2018, being the most important source of gross national saving. Therefore, high domestic saving reflects not only household but also corporate saving, as emphasized by Wolf (2006).

2.2 Household saving

Figures 2 and 3 show that household saving was the largest source of saving in 1988-2007 and the second-largest source in 1979-1987 and 2008-2018. In 1952-1978, household saving accounted for about 20% (thus, a low level) of gross national saving; labor income was low in the socialist era and households lived in extreme poverty but, nonetheless, saved. In this regard, household situations, desires,

and saving types deserve further research.

Household saving since 1979 has received much attention. Modigliani and Cao (2004) used time-series data to show that income growth caused by reform and “opening”, and an increase in the working-age population ratio, increased the household saving rate. Chamon and Prasad (2010) attributed this to the rising costs of education and healthcare. Social security challenges, such as low pension payments, increased household saving (Ge et al. 2010). In terms of siblings: if parental assets are inadequate and social security defective, the elderly must rely on the support of their children; sibling number and composition may thus affect the household saving rate. Zhou (2014) reported that households with fewer siblings saved more to ensure later parental security.

In terms of income risk, Meng (2003) found that the greater the income uncertainty in urban households, the higher the saving propensity; income dispersion was concentrated. Such precautionary saving was explored in more detail by Chamon et al. (2013). Jin et al. (2011) reported that increasing income inequality boosted the household saving rate; the saving propensity rose as income increased. As economic development proceeds, the number of elderly households that are asset-rich is increasing and the desire of the elderly to bequeath money significantly influences saving behavior. Almas et al. (2020) extracted data from a Chinese household survey.

In terms of second-generation income (that of the children), elderly parents saved more (less) when that income was low (high) because they wished to bequeath money to their children. This empirical result indicates that social security policymakers should consider the combined incomes of parents and their children.

The Chinese one-child policy (the first such policy worldwide) was in effect for 38 years (1978-2015) and decisively influenced household saving behavior.

Horioka and Wan (2007, 2008) used provincial panel data from 1995 to 2004 to explore reductions in the numbers of children caused by the one-child policy; this was a “quasi-natural experiment”. The reduced dependency ratio and thrifty consumption boosted household saving rates. In Chinese traditional culture, the family serves as an insurer. The one-child policy drastically reduced child numbers and the family insurance system collapsed; households thus had to save more. Imrohoroglu and Zhao (2018) emphasized that this attitude is a core feature of China’s economy today, and will remain so in future.

The one-child policy markedly disrupted the gender balance; there were about 40 million more males (0-40 years-old) than females (0-40 years old), attributable to cultural views on family inheritance, and economic factors (male laborers would be required by rural households). Fetal selection was extensive for many years, despite being illegal and severely punishable. Thus, fewer

marriage-ready females were available to marry. Wei and Zhang (2011) used macro and individual data on Chinese households to identify competitive saving: households with unmarried males saved more to render those males financially competitive in the marriage market.

A recent study found that China's declining interest rate policy significantly increased the household saving rate (Aizenman 2019); this is "targeted" (purposive) saving, and the logic is as follows: A household must have 200,000 Chinese Yuan (CNY) to fund a child's university education 10 years in the future. Over this period, an average of 20,000 CNY must be saved annually if the interest rate is zero. However, if the annual interest rate is 10%, the first-year saving will increase 2.59-fold after 10 years (1.1^{10}). Therefore, the first-year saving need be only 7,700 CNY ($20,000/2.59$), thus, less than half of 20,000 CNY, and will attain 20,000 CNY only in year 10. In other words, lower interest rates raise the target household saving rate.

Wan (2011, 2015, 2016, 2019) developed a theory of speculative saving. Theoretically, the lower the interest rate and the more severe the housing bubble, the greater the inducement to save speculatively. If a housing bubble develops, a speculative household will loan as much money as possible to those who want to purchase property. The interest repayments may be low (saving is thus not greatly

enhanced), but speculative households make very large loans; the interest repayments (savings) are considerable. If such a scheme is to work, interest-only loans must be constrained. If not, everyone will wish to borrow, exhausting all loan resources. The Chinese financial market is underdeveloped; it is difficult to raise funds either domestically or internationally, so a decline in interest rates would be expected to raise the household saving rate. If the domestic and international financial markets were as developed as those of the U.S.A. (Wall Street deals with funds worldwide), the lower the interest rate was, the more severe the housing bubble would be, and the lower the household savings rate (because many people borrow) would be. This is the exact opposite of the Chinese situation.

When interest rates are low and housing bubbles develop in both the U.S.A. and China, “over-saved” China funds are lent to the “under-saving” (over-consuming) U.S.A., affording a completely new interpretation of simultaneous domestic and global imbalances (Wan 2019). The policy implications are that low interest rates are not desirable; neither are housing bubbles, and speculative investment should be regulated. In addition, Wan (2015) showed that, when an urban housing bubble arises, speculative urban households significantly increased their savings, maximally cutting consumption to invest in real estate. The provincial panel and household data showed that housing bubbles and lending for house purchases significantly boosted overall

saving.

2.3 Corporate saving

As shown in Figures 2 and 3, corporate saving was the largest source of saving in 1952-1978, thus, during the socialist period; public enterprises such as state-owned enterprises (SOEs) played leading roles. Although incomes were very low, the huge accumulations reflected a national “transcendence strategy” that prioritized heavy industry. Such industry required a great deal of capital, which was scarce in China at the time (Lin et al. 2003). Therefore, the public enterprises responsible for heavy industry were forced to save a lot. In other words, this was “forced saving” in a socialist era of planned “rationing”. In the time since reform and “opening” in 1979, private enterprise has grown significantly. Figure 2 shows that corporate savings (on a stock basis) have risen sharply, but not at the rate of household saving (which is faster). Therefore, the corporate saving share of total savings fell from 54 to 31% from 1979 to 1993 (Figure 3), but fell below that of household saving in 1988 for the first time; it will be profoundly interesting to discover if this is temporary or permanent. However, the corporate saving share began to rise again from 1994 as the profits of private enterprises rose, attributable to economic revitalization triggered by the reform acceleration heralded by Deng

Xiaoping during an inspection tour of southern China in 1992. Most notably, the corporate saving share jumped from 38% in 2006 to 48% in 2007; companies established precautionary buffers to allow them to overcome the U.S. subprime loan financial crisis of 2007. In 2008, the share of corporate saving fell slightly, but rose again in 2009, attained 52% in 2010, and fell thereafter, possibly attributable to the the “400 Million Yuan Economic Measures”, planned in 2009 and instituted in 2010.

In the next section, we utilize 2000-2010 provincial panel data on the “certain-sized industry” category; these include the year 2001 when China joined the World Trade Organization, and 2007, when the corporate saving share changed dramatically because of the subprime loan crisis, as well as 2010, when the “400 Million Yuan Economic Measures” came into effect. Using these data, we discovered the determinants of corporate saving rates in the manufacturing industry. As manufacturing industry data are not available for other years, and as we lack annual service industry data, we cannot offer current figures.

3 Determinants of corporate savings

3.1 Definition of the corporate savings rate

Following Karabarbounis and Neiman (2012) and Chen et al. (2017), we defined corporate savings and savings rates based on available Chinese data. The

definitions included corporate value-added saving, value-added distribution, net profit, corporate savings, and the corporate saving rate:

$$\text{Value added} = \text{Sales minus intermediate input of raw materials}; \quad (1)$$

$$\begin{aligned} \text{Value added} = & \text{Personnel expenses} + \text{rent} + \text{tax} + \text{net interest payment} \\ & + \text{depreciation} + \text{amortization} + \text{net profit}; \quad (2) \end{aligned}$$

$$\text{Corporate savings} = \text{Net profit minus dividends}; \quad (3)$$

$$\text{Corporate savings rate} = \text{corporate savings/value added}. \quad (4)$$

Corporate savings, also termed retained earnings, are used to repay debt on the liability side of the balance sheet, increase or decrease net assets, and increase or decrease capital. If corporate savings are positive, zero, or negative, the corporate saving rate is also positive, zero, or negative. In addition, the denominator of Equation (4) is value-added; however, when considering the corporate “disposable income” (corresponding to the household saving rate), the corporate saving rate may be defined as:

$$\text{Corporate saving rate} = \text{Corporate saving/net profit}. \quad (5)$$

However, in terms of net profit, a corporation with a profit deficit because of sluggish sales often reports a negative profit; if so, the signage (plus = minus numerator/ minus denominator) becomes complicated and difficult. Accordingly, we use the definition of Equation (4).

3.2 Data

We estimated the saving rates of “certain-sized industries” in 31 Chinese provinces, cities, and autonomous regions in 2000-2010. The data are those of the China Statistical Yearbooks, China Tax Statistics, China Labor Statistics Yearbooks, and the China National Statistics Bureau (CNSB). The CNSB reports that coverage of “certain-sized industries” has changed over time. In 1996-2007, such industries included all state-owned enterprises (SOEs) and non-SOEs with annual operating revenues of not less than 5 million CNY. The “certain-sized industries” of 2008-2011 all had annual operating revenues of 5 million CNY or more. The “certain-sized industries” of 2012-2014 had operating revenues of 20 million CNY and over. Given the data constraints, we estimated the corporate saving and corporate saving rates of “certain-sized industries” in 31 provinces, cities, and autonomous regions from 2000 to 2010.

3.3 Regression model of the industrial enterprise saving rate

We sought factors controlling the saving rate by focusing on domestic parameters using provincial panel data on the corporate saving rates of “certain-sized industries”. The regression model was:

$$Y_{it} = \beta_0 + \sum_{n=1}^5 \beta_n X_{nit} + \sum_{n=6}^{15} \beta_n X_{nt} + \rho_i + \epsilon_{it} \quad (6)$$

In Equation (6), i and t represent information from province i (1 to 31) in year t (2000 to 2010). Unobservable fixed factors in each province (fixed-effects), and those that changed over time, are represented by ρ_i and ϵ_{it} respectively. The corporate savings rate is Y_{it} (the dependent variable).

The Tobin marginal Q (Tobin 1963; 1968) is included in the explanatory variable X_{1it} . The value is measured as described by Qiu and Wan (2018), and serves as a proxy of the future rate of returns (thus, the value can be considered to reflect investment opportunities). Qiu and Wan (2018, Table 2 a-d and Figure 4) showed that the Tobin marginal Q of China’s industrial enterprises was greater than 1 in 2000-2010, and indeed very close to 2, indicating that many investment opportunities were available. When making such investments, enterprises tend to use corporate savings (internal finance) to eliminate external finance premiums and borrowing

constraints (Miller and Modigliani 1961; Jensen 1986). Chinese enterprises, especially private enterprises, encounter severe financial constraints (Poncet et al. 2010). Consequently, the Tobin marginal Q would be expected to correlate positively with the corporate savings rate.

The minimum wage growth rate by province is expressed in the explanatory variable X_{2it} . This is a proxy for wage changes, capturing fluctuations in personnel expenses. As profit is obtained by subtracting expenses (such as personnel expenses) from sales [as shown in Equation (2)], profit is negatively related to personnel expenses. China has few unions that engage in wage negotiations, and wages are low (Cai and Du 2011). The lower the wages, the higher the net profit and corporate savings are; minimum wage and corporate savings exhibit a negative relationship.

The corporate income tax rate is represented by the explanatory variable X_{3it} ; this is the ratio of income tax to total profit. As the net profit is obtained by subtracting income tax from the total profit [Equation (2)], the corporate income tax is negatively related to the net profit. Tax competition among regions is widespread; companies find tax exemptions attractive (Liu and Martinez-Vazquez 2014). Thus, corporate income tax rates are low, significantly increasing saving rates. Exporters, in particular, pay little tax (Yang et al. 2011). Thus, the corporate income tax rate would be expected to be negatively correlated with the corporate saving rate.

The private enterprise ratio is represented by the explanatory variable X_{4it} , which is a proxy for the borrowing restrictions imposed on private enterprises. The term is the ratio of the number of private enterprises to the total number of companies (SOEs + private enterprises). As private enterprises are mostly small or medium-sized, and have few collateral assets such as land, they find it difficult to obtain finance (this is a global problem). Such enterprises commonly go bankrupt if management is poor (Titman and Wessels 1998). Chinese SOEs own many real assets such as land; they also benefit from various government incentives, and enjoy long-term financial relationships with state-owned banks. Consequently, they find it easier to obtain finance than do non-SOEs. Private enterprises are thus required to engage in precautionary saving. In conclusion, the higher the private enterprise ratio, the higher the corporate savings rate. Thus, the private enterprise ratio would be expected to correlate positively with the corporate savings rate. Horioka and Terada-Hagiwara (2013) reported that private Asian enterprises (including those of China) are cash-heavy; saving is precautionary, in anticipation of financing difficulties.

The population growth rate is represented by the explanatory variable X_{5it} , and is an important indicator of the local economy. The higher the growth rate, the better the corporate product sales. Thus, it would be expected that good sales will increase corporate profits and therefore corporate saving. The corporate saving rate is

positively related to the population growth rate.

The sequential annual dummy is represented by explanatory variables $X_6 \sim X_{15}$. We prepared dummies for each year over the 2000-2010 interval, set 2000 as the base, and used the 10 dummies of 2001-2010 as explanatory variables. The descriptive statistics for all variables are summarized in Table 1; all were highly scattered. The corporate saving rates were both positive and negative, but the average increased from 0.2143 in 2000 to 0.3377 in 2005 and 0.3936 in 2010. The corporate saving trend was thus similar to that seen at the macro level (Figures 2 and 3).

4. Estimation methods and regression results

We used a panel fixed-effect model with robust standard errors. The regression results are summarized in Table 2. The Tobin Q-value significantly (positively) affected the corporate saving rate. The higher the Q value, the higher the saving rate. The minimum wage growth rate exerted a significant negative effect on the corporate saving rate. This indicates that excessively low wages contribute to corporate saving. To reduce corporate saving, the government should raise minimum wages and encourage wage negotiations between employees and employers. The corporate income tax rate had a significant negative effect on the corporate saving rate. This means that competitive reductions in corporate tax in certain regions will raise

that rate. In conclusion, if corporate saving is to be reduced, it is necessary to set a moderate tax rate.

The private enterprise ratio exerted a significantly positive effect on the corporate saving rate. This suggests that private enterprises engage in precautionary saving because of restrictions on borrowing and difficulties in financing. To decrease corporate saving, an improved financing environment for private enterprises and further development of the financial market are required. As expected, the population growth rate exerted a significant positive effect on corporate saving. The faster the population grew, the easier it was to sell goods, and saving rose as profits increased. The effect of the annual dummy varied by year. For example, the effect was significantly positive in 2008, which is likely to be attributable to precautionary saving, given the global financial crisis triggered by U.S. subprime loaning.

5 Conclusion and policy implications

We first derived a time series of domestic and sectoral saving rates in 1952-2018. Although the domestic saving rate fluctuated, this rose from 23% in 1952 to 52% in 2010, and then trended lower to 46% in 2018. The domestic investment rate similarly fell from a peak of 48% in 2010 to 42% in 2018. Typically, the domestic saving rate has exceeded the domestic investment rate by 3-4% since the 1990s. This

may be the direct cause of the U.S.-China trade friction/war caused by China's capital exports and the associated U.S.-China and global imbalances. Moreover, as the U.S.-China economic conflict intensified in 2018 during the Trump administration, the domestic saving rate tended to shrink and then increase; the problem will become more severe in future.

To clarify why China has so much savings, we classified savings by sector. We placed deposit account stocks on the debt side of Chinese banks and estimated household, corporate, government, and other savings from 1952 to 2018. Corporate saving exceeded household saving, being the largest source of bank deposits in 1952 to 2018, except in the interval 1988 to 2007. In particular, the corporate saving trend changed from downward to upward in 1993 and has risen sharply since 2007.

Household saving remained flat at 20% of total savings (on a stock basis) in 1952-1978, but began to trend sharply upward from 1979; the trend slowed from 1991 to peak in 1997, declined to 2016, and began to rise moderately once more in 2017.

The change in household saving rate was greatly affected by falls in the number of children (the "one-child policy") and the dependency ratio, in line with the life cycle and speculative saving hypotheses. In other words, when households maximally invest in real estate during housing bubbles, they reduce consumption and increase saving.

China's corporate saving was the largest source of domestic saving over 47 years (1952-1987, and 2008-2018), but not in the 20 years from 1988 to 2007. No explanatory economic theory has yet been devised. Therefore, we sought determinants of domestic corporate saving rates. First, we estimated the corporate saving rates of "certain-scale industries", by province, from 2000 to 2010, based on all available data. Panel regression analysis showed that the Tobin marginal Q, the minimum wage growth rate, the corporate income tax rate, the private enterprise ratio, and the population growth rate exhibited significant positive, negative, positive, positive, and positive impacts on the corporate savings rate, respectively. To reduce corporate savings, employee wages should be raised; this would further improve financial markets and alleviate financing difficulties encountered by non-financial enterprises.

The poor domestic demand caused by lack of consumption has become a major policy issue. The determinants of household and corporate savings have revealed a new approach to tackling the demand shortage. Reductions in household and corporate savings will solve both domestic problems and global imbalances in the world economy, including the U.S.-China conflict caused by current account imbalances.

Several issues remain unresolved. The corporate savings rate must be more precisely estimated, and the determinants of such rates identified for industries of all

sizes. The impact of shocks imposed by macro-level policies and the U.S.-China tariff arguments on corporate and household savings should be urgently investigated using micro data (thus, at the enterprise level).

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Table 1 : Summary statistics

| Variable | Obs. | Average | Median value | Std. Dev. | Min | Max |
|---|------|---------|-----------------|-----------|----------|----------|
| Corporate saving rate | 341 | 0.3229 | 0.3214 | 0.1251 | -0.0220 | 0.6546 |
| Tobin's marginal Q | 341 | 2.1193 | 1.8398 | 1.3020 | 0.0508 | 9.0738 |
| Growth of minimum wage (previous year=1) | 341 | 1.0713 | 1.0000 | 0.1393 | 0.6087 | 1.6667 |
| Corporate income tax rate | 341 | 0.0579 | 0.0541 | 0.0223 | 0.0249 | 0.2357 |
| Ratio of private firms to total firms | 341 | 0.7527 | 0.8011 | 0.1911 | 0.1283 | 0.9887 |
| Population growth (‰) | 341 | 7.1417 | 5.6400 | 16.1501 | -49.8652 | 188.7208 |

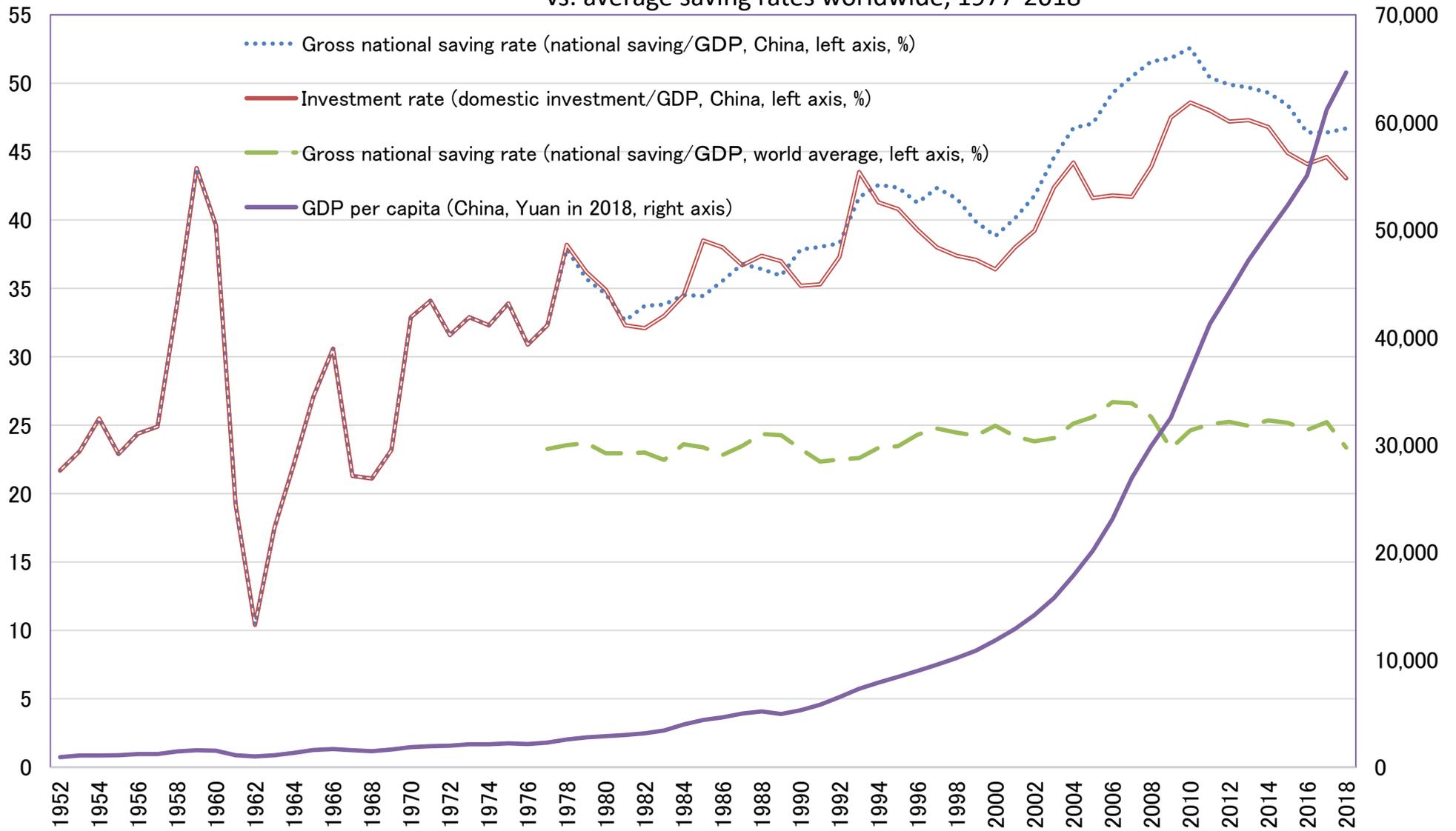
Table 2: Determinants of corporate saving rates (fixed effects with robust standard errors)

| (Independent variable) | (1) | (2) | (3) | (4) | (5) |
|---------------------------------------|---|-----------------------|------------------------|------------------------|------------------------|
| | (Dependent variable: corporate saving rate) | | | | |
| Tobin's marginal Q | 0.0681*** (0.0088) | 0.0683*** (0.0088) | 0.0607*** (0.0088) | 0.0595*** (0.0078) | 0.0595*** (0.0077) |
| Growth of minimum wage | | -0.0190* (0.0106) | -0.0251** (0.0123) | -0.0264* (0.0141) | -0.0261* (0.0139) |
| Corporate income tax rate | | | -2.4110*** (0.6580) | -2.1980*** (0.5980) | -2.1270*** (0.5710) |
| Ratio of private firms to total firms | | | | 0.1110* (0.0601) | 0.1040* (0.0598) |
| Population growth | | | | | 0.0003** (0.0001) |
| 2000 (base year) | | | | | |
| 2001 | 0.00620 (0.0054) | 0.00619 (0.0054) | 0.0039 (0.0057) | -0.0015 (0.0051) | 0.0036 (0.0058) |
| 2002 | 0.00173 (0.0103) | 0.0016 (0.0104) | -0.0023 (0.0097) | -0.0122 (0.0086) | -0.0065 (0.0082) |
| 2003 | 0.0265** (0.0116) | 0.0263** (0.0116) | 0.0166* (0.0091) | 0.0015 (0.0115) | 0.008 (0.0112) |
| 2004 | 0.0702*** (0.0126) | 0.0700*** (0.0126) | 0.0334*** (0.0118) | 0.0163 (0.0139) | 0.0239* (0.0137) |
| 2005 | 0.0345** (0.0139) | 0.0355** (0.0136) | 0.0014 (0.0140) | -0.0213 (0.0165) | -0.0133 (0.0164) |
| 2006 | 0.0561*** (0.0144) | 0.0596*** (0.0145) | 0.0210 (0.0151) | -0.0039 (0.0198) | 0.0044 (0.0194) |
| 2007 | 0.1480*** (0.0146) | 0.1510*** (0.0144) | 0.1010*** (0.0164) | 0.0699*** (0.0199) | 0.0786*** (0.0195) |
| 2008 | 0.1130*** (0.0163) | 0.1160*** (0.0164) | 0.0666*** (0.0157) | 0.0334* (0.0194) | 0.0424** (0.0188) |
| 2009 | 0.0290** (0.0141) | 0.0290** (0.0142) | -0.0100 (0.0145) | -0.0432* (0.0229) | -0.0343 (0.0223) |
| 2010 | 0.0376** (0.0164) | 0.0416** (0.0166) | 0.0004 (0.0176) | -0.0316 (0.0258) | -0.0225 (0.0251) |
| Constant | 0.1310*** (0.0212) | 0.1500*** (0.0249) | 0.3400*** (0.0490) | 0.2680*** (0.0646) | 0.2600*** (0.0639) |
| Obs. | 341 | 341 | 341 | 341 | 341 |
| R-squared | 0.779 | 0.780 | 0.821 | 0.828 | 0.830 |
| Number of id | 31 | 31 | 31 | 31 | 31 |

Robust standard errors in parentheses

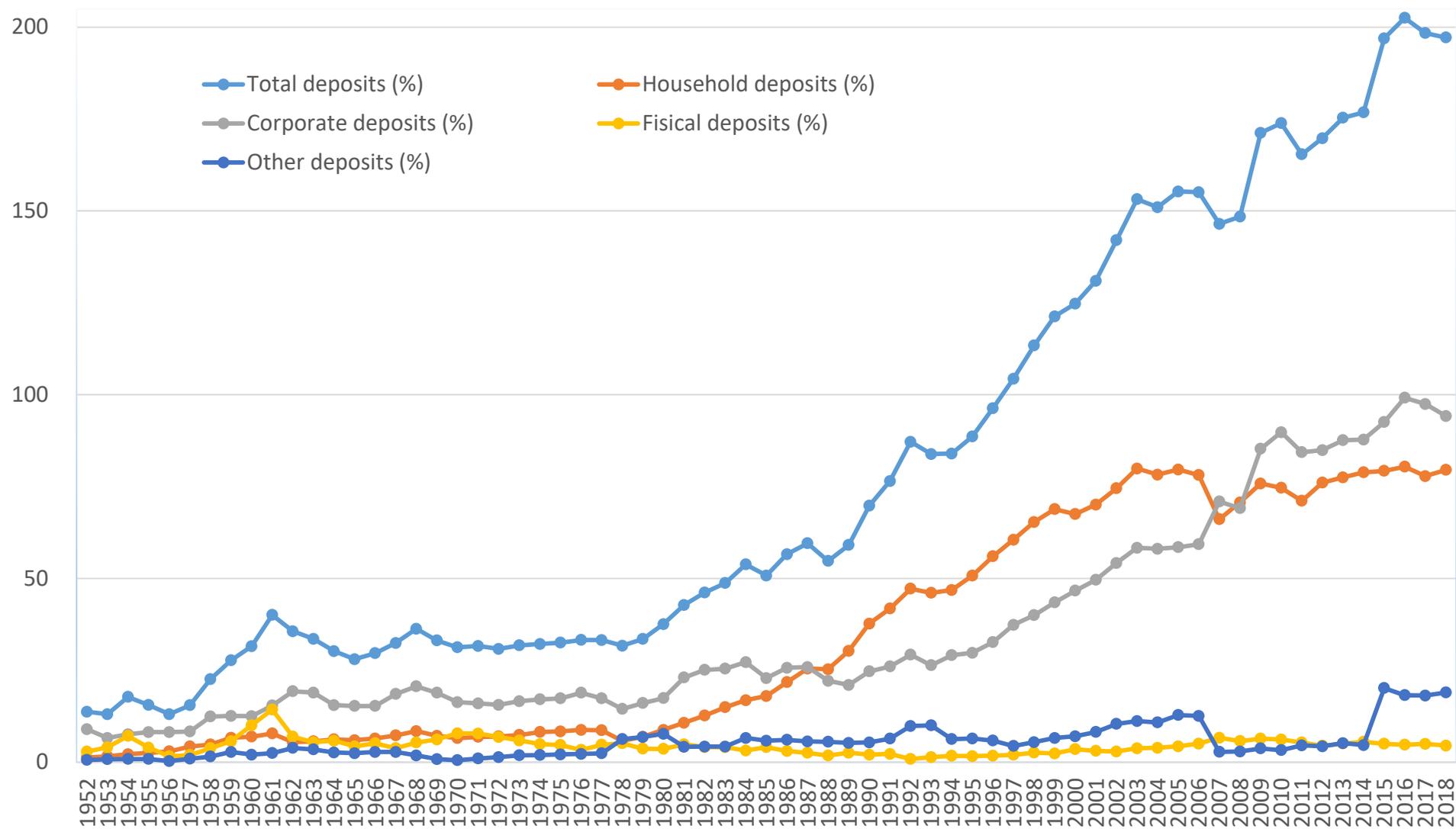
*** p<0.01, ** p<0.05, * p<0.1

Figure 1 : Savings and investment rates, and GDP per capita in China, 1952-2018, vs. average saving rates worldwide, 1977-2018



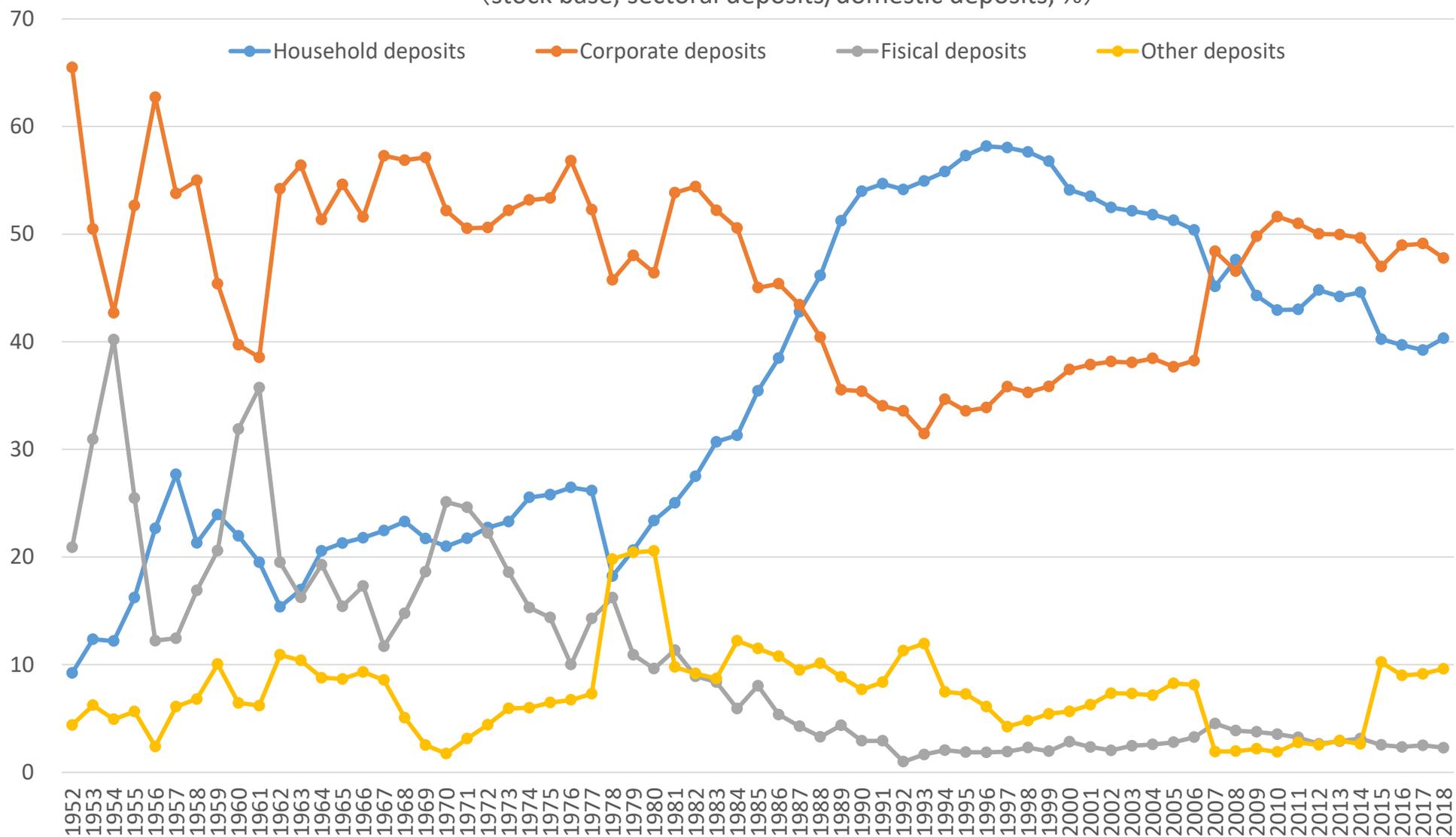
Source : Author's estimation based on China Statistical Yearbook 1981-2019, and data from World Bank

Figure 2: Bank deposits by sector in China, 1952-2018 (stock base, deposits/GDP, %)



Source: Author's estimation based on China Financial Yearbook 1986-2019 and People's Bank of China Statistics 2019

Figure 3: Domestic deposit and their structure in China, 1952-2018
(stock base, sectoral deposits/domestic deposits, %)



Source : Author's estimation based on China Financial Yearbook 1986-2019 and People's Bank of China Statistics 2019