

China's high saving rate: myth and reality

Guonan Ma and Wang Yi¹

Version: 2 June 2010

Abstract

The saving rate of China is high from many perspectives – historical experience, international standards and the predictions of economic models. Furthermore, the average saving rate has been rising over time, with much of the increase taking place in the 2000s, so that the aggregate marginal propensity to save exceeds 50%. What really sets China apart from the rest of the world is that the rising aggregate saving has reflected high savings rates in all three sectors – corporate, household and government. Moreover, adjusting for inflation alters interpretations of the time path of the propensity to save in the three sectors. Our evidence casts doubt on the proposition that distortions and subsidies account for China's rising corporate profits and high saving rate. Instead, we argue that tough corporate restructuring (including pension and home ownership reforms), a marked Lewis-model transformation process (where the average wage exceeds the marginal product of labour in the subsistence sector) and rapid ageing process have all played more important roles. While such structural factors suggest that the Chinese saving rate will peak in the medium term, policies for job creation and a stronger social safety net would assist the transition to more balanced domestic demand.

JEL classification: E20; E21; O11; O16; O53

Keywords: Saving; corporate, household and government saving; Chinese economy

¹ Guonan Ma is from the Bank for International Settlements (BIS) and Wang Yi from the People's Bank of China (PBC). The views expressed here are those of the authors only and do not necessarily reflect those of the BIS or the PBC. The paper has benefitted from comments by participants at the BIS seminar in February 2010 and the Hong Kong Institute of Monetary Research seminar in May 2010, especially those by Claudio Borio, Vincent Chan, Ben Cohen, Andrew Filardo, Robert McCauley, Madhusudan Mohanty, Ramon Moreno, Thomas Rawski, Philip Turner and Zhang Ming. We also wish to thank Nathalie Carcenac, Jimmy Shek and Shi Chunhua for their able assistance. Errors are ours.

1. Introduction

The high saving rate of China has attracted much attention. The nation saves half of its GDP and its marginal propensity to save (MPS) approached 60% during the 2000s (Zhou, 2009; ADB, 2009; IMF, 2009). Such a saving rate has important implications both for China's own internal balance and for the external balance.

Saving is fundamentally the outcome of intertemporal optimisation. Yet there are many different schools of thought about the role of saving in economics. Some stress saving as a core driver of economic development (Lewis, 1954). Others focus on links with cycles of aggregate demand. Others see excess saving as a key source of global imbalances and even a major cause for the international financial crisis (Bernanke, 2005 and Wolf, 2008). Nor is the statistical measurement of saving very precise. Saving is a residual concept defined as the difference between income and consumption. Small errors in the measurement of either large aggregate can lead to significant mismeasurement of savings. The causality between saving and other economic variables can run in both directions. And possible determinants of saving can be cyclical or secular.

This paper has three aims: to highlight the stylised facts of Chinese saving; to review the debate over factors shaping the saving dynamics; and to explore its medium-term outlook and policy implications. Our review combines an international comparison of gross national saving and a breakdown of this aggregate by the components of household, corporate and government saving. Building on a growing body of work on this subject, we hope to take stock of the progress in understanding Chinese saving behaviour, put the debate in perspective and shed new light on the trends in, and forces behind, high Chinese saving.

The main findings of the paper are as follows:

- First, China's saving rate is high by historical experience, international standards and model predictions and also has been rising (especially in the 2000s).
- Second, saving by each of the three sectors is also high but not exceptional. What really sets China apart from the rest of the world is that it ranks near the top globally across all three components.
- Third, adjusting for the effect of inflation alters the time path sectoral saving rates. Our inflation-adjusted numbers suggest that most of the increase in corporate saving took place in the 2000s – and not in the 1990s as appears from the raw data.
- Fourth, we question some of the received wisdom about the principal drivers of high Chinese saving. In particular, the evidence does not support the proposition that distortions and subsidies have been the principal causes of China's rising corporate profits or high saving rate.
- Fifth, we argue that three major microeconomic factors have been key: (a) major institutional reforms including very tough corporate restructuring, pension reform and the spread of private home ownership; (b) a marked Lewis-model transformation process as labour left the subsistence sector where its marginal product was less than its average wage; and (c) a rapid ageing process.

While structural factors point to a peaking in the Chinese saving rate in the medium term, policy measures promoting job creation and a stronger social safety net would contribute to the transition to more balanced domestic demand.

The paper is organised as follows. The next section discusses the data issues and highlights China's gross national saving in an international perspective. Section 3 provides a broader backdrop to the Chinese saving trend. Section 4 examines saving of the corporate, household and government sectors and reviews some of the explanations advanced in the

literature. Section 5 briefly outlines some of the structural factors shaping the medium-term outlook for the Chinese saving rate and explores two policy initiatives, before Section 6 concludes.

2. Measurements and stylised facts of Chinese saving

This section summarises the main data issues in measuring the Chinese saving rate and highlights some of its most salient stylised facts.

2.1 Data and measurement issues

To lay a sound basis for discussion, we first clarify some of the confusions associated with the measurements of the Chinese saving rate. There are two principal approaches to measuring China's gross national saving (GNS), both following the SNA93 definition of GNS as gross national disposable income (GNDI) less final consumption expenditure.

The first approach uses expenditure-based GDP in estimating GNDI and produces an estimated GNS series that is equivalent to the sum of gross capital formation and current account balance. The second takes production-based GDP and yields a GNS series consistent with the measure based on the flow-of-fund statistics, which allows for breakdowns of both disposable income and saving by sector.²

The differences of these approaches mainly lie in the statistical discrepancies between the Chinese expenditure-based and production-based GDP statistics. Although these two estimated saving series broadly track each other over time, the series based on expenditure-side GDP is higher than the measure based on production-side GDP, and their difference in some years can be as large as five percentage points of GDP (Graph 1).

The accuracy of both of these estimates could also be complicated by three measurement and data issues, which all point to possible upward biases of China's gross national saving rate. First, Heston and Sicular (2008) observe a pattern of positive inventory accumulation of at least 1-2% of GDP every year. This may suggest possible overestimation of the Chinese saving rate, as in a mature economy, restocking and destocking would rotate over the business cycles. Yet as discussed below, China's industrial sales expanded much faster than GDP over time, thus justifying persistently positive inventory changes.

The second upward bias of the Chinese saving rate is a potential understatement of imputed housing rent. The Chinese rural household surveys suggest that imputed rent is implausibly low, at merely five US dollars a person per annum.³ Since the imputed rent is both income and consumption for households, it does not affect the amount of their saving but the proportion they save from their income. As a result, China's gross national saving could be overstated, but probably by no more than 1%-2% of GDP.

The third potential bias is the understatement of retained earnings at foreign firms operating in China, which may lead foreign saving to be reported as part of national gross saving, thus overstating both the current account surplus and national saving. According to Zhang (2009), the under-recorded profits at foreign firms in China may be as large as 2% of GDP. In sum, China's gross national saving rate could be overstated by a likely range of 2%-4% of GDP.

² The Chinese time series on gross national saving at the aggregate level starts with 1982, but the official flow of fund statistics begins from 1992.

³ By definition, imputed rent is non-cash consumption expenditure. The Chinese rural household surveys report both total and cash housing expenditure, which include rent, gas and electricity. The difference between the two is a reasonable proxy of imputed rental, amounting to RMB34 per capita in 2007 or less than five US dollars. This appears low, given that China's rural home ownership averages something like 90%.

2.2 Stylised facts

Notwithstanding the above data issues and measurement complications, there is little doubt that the Chinese national saving rate is high by international standards. It exceeded 53% of GDP in 2008, far above all the OECD economies and overtaking Singapore which has traditionally been among the highest savers globally (Table 1).

Moreover, the reported Chinese saving rate is high relative to predictions by structural models based on macroeconomic fundamentals such as income level and growth, demographics, fiscal policy, terms of trade, financial development, and uncertainties. Cross-country empirical panel regression studies have often identified China as a clear outlier with a saving rate one quarter higher than what might have been predicted (Kuijs, 2006; Ferrucci, 2007; and Park and Shin, 2009). In other words, China's saving/GDP ratio of 53% in 2008 could be 10-13 percentage points above what might be inferred from the empirical studies.

The Chinese saving has been rising. Starting from an already high level of more than 30% of GDP in the early 1980s, China's national saving rate rose to above 50% lately (Graph 1). Therefore, the marginal propensity to save reached 54% over the period of 1982-2008.

China has seen three distinct phases in its saving rate – a steady increase from 30%-35% of GDP to 40%-45% between 1982 and 1994 followed by a decline to around 37% by 2000 and a resurgence thereafter to reach over 50%. During this last phase, China's saving rate on average went up two percentage points of GDP per year, implying a marginal propensity to save of 60%.

Such a rapid rise in the national saving rate is rare but by no means unique to China. Fast-growing Asian economies in their transition phases also experienced large and sustained rises in their saving rates (Graph 2). Japan's aggregate saving/GDP ratio rose by 15 percentage points during 1955-70, and Korea's saving rate increased from 16% to 40% between 1983 and 2000. Over the past decade, India's saving rate registered a rise of 10 percentage points of GDP, reaching 38% in 2008. A rising saving rate may have interacted with a high investment rate. During 1998-2008, China's investment surged from 37% of GDP to 45%, while that of India went up from 24% to 40%. What sets China apart from the experiences of Japan, Korea and India, though, is its large current account surplus during this transition, as the Chinese saving far outpaced its already high investment. This has been a principal factor behind China's swing from a net debtor position of 10% of GDP to a net creditor position of 37% within one decade (Ma and Zhou, 2009).

A key feature of the Chinese saving rate is that the household, corporate and government sectors each have contributed to the rise in gross national saving. In terms of each component, China's saving is not exceptional. As a share of GDP, China's corporate saving at best rivals Japan's, its household saving is below India's, and its government saving is less than Korea's (Graph 3). However, what really distinguishes China from other countries is that its three saving components have all ranked near their global tops. This, in turn, suggests the need to better understand each sector's saving dynamics and their interactions; attempts to identify any one single explanation for China's exceptionally high aggregate saving rate will almost surely be less than convincing.

Such a high and rising saving rate will inevitably have implications for China's growth model and its profile of internal and external balances. First, a high saving has financed strong economic growth, with low inflation and manageable exposures to adverse external shocks. Over the past decade, China's GDP growth registered 10% plus per annum, while its CPI inflation averaged less than 2%. Second, it helped shape China's internal and external balances to an important extent. In particular, a rising saving rate implies a falling consumption share in GDP and hence a high investment-intensive demand structure. Over

the past 10 years, China's private consumption declined from 47% of GDP to 36%, the lowest among the world's major economies.⁴

3. A backdrop to the Chinese saving behaviour

Before we get into the detailed breakdowns of gross national saving, it is useful to first sketch some of the bigger forces influencing the whole Chinese economy. These forces may have been an important but often neglected part of the explanation for the high Chinese saving rate and fall into two broad categories: (1) major secular economic and demographic trends; and (2) key institutional changes.

3.1 Secular forces

At least three secular forces could have important bearing on China's high saving rate. First, China has experienced rapid structural changes, as its agriculture share in GDP fell from 30% to 10% during 1980-2008 (Table 2). Second, underpinning this transformation has been the large-scale rural-urban labour migration and urbanisation – the agriculture share of the total employment shrank from 70% to 40% (to 25%, according to Brandt et al (2008)), while the urban population share rose from 20% to 45%. Third, China's demographic transition has been very compressed, in part owing to the one-child policy. China's dependence dropped from 68% to 38% within a generation, resulting in a surge of the working-age share of the population from 60% to 74%. As a consequence, China's labour supply growth has been strong but is expected to slow sharply in 10 years from now.

These three secular forces interacted to generate a sustained and large-scale labour migration from farms to factories. This dynamics can be best summarised as a dualism transformation process described by the Lewis model (Lewis, 1954). In this model, the modern sector with rising productivity draws surplus labour from the traditional sector at a relatively low wage rate. The Lewis model predicts a rising profit share in income, accelerated capital accumulation and faster economic growth during the transformation process, therefore a higher saving rate. This process, while not unique, could have been more accentuated in China's case because of its compressed demographic transition and thus may help explain its recent high saving and investment rates.

3.2 Institutional factors

A number of major institutional reforms since the 1990s could also have significantly influenced the Chinese saving trends. First, between 1995 and 2005, China went through its toughest corporate restructuring, leading to large-scale labour retrenchment. The employment at state companies was halved (Graph 4). Downsized employees received modest social welfare benefits, while many smaller money-losing state companies were shut down altogether. As a result, the enterprise-based cradle-to-grave social safety net shrank rapidly (Cai et al, 2008). Such corporate restructuring tends to directly boost corporate efficiency and reduce job security, lifting both corporate and household saving.

Second, the 1997 pension reform transformed the previous pay-as-you-go system to a partially funded three-pillar scheme. The new scheme reduced pension benefits, increased contributions and introduced pre-funded individual pension accounts and has expanded to

⁴ As a comparison, India's consumption share fell from 64% to 55% in the same period. But a falling consumption share should not be confused with anaemic consumer demand growth – China's private consumption has been growing at near double-digit paces in recent years.

cover more firms over time.⁵ This institutional change has interacted with the diminished role for family and increased concerns over rising pressure on public retirement schemes in anticipation of rapid population ageing and thus may have induced additional accumulation of capital through increased saving and investment, the so-called “second demographic dividend” (Wang and Mason, 2008). Therefore, reduced pension wealth and anticipated acceleration of population ageing could both help lift the current saving rate in China.

The third institutional reform relates to private home ownership. As part of the corporate restructuring, state firms no longer provide housing for their employees and in exchange have increased contributions to housing provident funds (Shen and Yan, 2009). The concomitant introduction of private home ownership and property market interacted with the “second demographic dividend” effect to provide additional incentives to build up pension assets, ushering in a housing boom. China’s home ownership may exceed 85% today (Gao, 2010). Even if one ignores the substantial quality improvement, China’s physical assets of residential housing per capita have at least more than doubled in the past twenty years (Graph 4). The implied housing investment has been enormous. Indeed, the fastest-growing sectors in the Chinese economy over the past three decades have been the construction and services, not the manufacturing sector (Table 2). Thus sharply increased demand for housing assets has been a key driver for both high economic growth and high saving in China over the past decade.

4. Composition of gross national saving

To better understand the sources of and factors behind the high Chinese saving, it is useful to examine the breakdown of China’s gross national saving by its components: corporate, household and government saving (Kuijs, 2006; Li and Yin, 2007; Wiemer, 2008; Jha et al, 2009). This approach allows us to trace the changing composition of the Chinese saving, taking advantage of the following simple framework.

$$S/Y = \sum S_i/Y = \sum (S_i/Y_i) (Y_i/Y), \quad S = \sum S_i, \quad \text{and} \quad Y = \sum Y_i, \quad \text{and } i = e, h \text{ or } g \quad (1)$$

where Y and S are gross national disposable income and gross national saving, respectively; and subscripts e , h and g denote the corporate (enterprise), household or government sector, respectively. Simply, the equation says that an economy’s aggregate saving rate is an income-weighted average of all sectors’ average propensities to save. In other words, the sector i ’s contribution to the aggregate saving rate, S_i/Y , depends on two factors: its income share in the economy (Y_i/Y) and its average propensity to save from its own income (S_i/Y_i).

Three observations of China’s saving composition are worth highlighting (Table 3). First, according to official flow-of-funds statistics, the household sector is the largest saver today, to be followed by the corporate sector. Second, the corporate and government sectors have been the principal drivers behind the rise in the aggregate saving rate over the past fifteen years, contributing more than four-fifths of the 17 percentage-point rise in China’s saving/GDP ratio. Third, the year 2000 appears to be a turning point when the aggregate Chinese saving rate started its relentless climb of 16 percentage points of GDP. Half of this hike so far in the 2000s has come from the government sector.

⁵ For more details of China’s pension system, see Feldstein, 1998; Salditt, et al, 2007; Song and Yang, 2010; and Li and Wu, 2010. Also see Moreno and Santos (2008) for a review of international evidence of the possible effects of pension regimes on saving and the current account balance.

4.1 Corporate saving

China's corporate saving doubled from 12% of GDP in 1992 to a peak of 24% in 2004, but has since trended down to 19% in 2008 when China's current account surplus surged (Table 3). Over the past fifteen years, it has been the most important contributor to the increase in the Chinese aggregate saving.⁶

By definition, the sector's average propensity to save is 100% (ie, $S_e = Y_e$). Corporate saving can be thought of consisting two parts: depreciation and retained earnings. Hence higher Chinese corporate saving could be attributed to a rise in either or both of these two sources.

Depreciation as a share of GDP has probably risen over time. Unfortunately, the official statistics do not provide estimates of consumption of fixed assets. Given that depreciation is positively linked to the higher capital stock and newer vintages of capital, then there is good reason to expect that depreciation rose during the period under study. With the rapid pace of industrialisation discussed earlier, the capital stock per worker in the industrial sector has at least doubled in the past decade. According to Bai et al (2006), China's capital stock as a ratio to GDP rose from 130% to 170% between the early 1990s and the mid-2000s.

More controversial have been the various hypotheses about the other element of corporate saving — retained earnings. Low dividend payments by Chinese firms could in part help explain the high net earning retained at firms. Two reasons are proposed to explain why most of the net earnings have been retained by firms in China: financial underdevelopment and poor corporate governance (Jha et al, 2009; ADB, 2009; and IMF, 2009).

First, it has been argued that limited access to external finance forces firms to hoard cash to hedge uncertainties or to use internal funds to finance expansion. While China's financial system remains underdeveloped, it may have advanced in recent years (Ma, 2007). Moreover, Chinese companies seem to have hoarded less, not more, cash at firm level, qualifying the importance of "precautionary corporate saving" (Graph 5). Even private firms seem to have improved their access to external finance (Hale and Long, 2010). At least, this factor does not explain well the markedly higher corporate saving in the past fifteen years

Second, it has been suggested that poor corporate governance results in low dividend payments. However, there is little evidence suggesting that the dividend behaviour of listed Chinese firms differs systematically from those in the rest of the world (Zhang, 2008; and Bayoumi et al, 2009). Based on a sample of 1,557 Chinese listed firms and 29,330 firms from 51 other countries during the period of 2002-07, Bayoumi et al (2009) find that the dividend payout ratio (common dividend over EBIT) averages 16% for Chinese listed firms compared to less than 13% for those from the rest of the world.

In our view, blaming poor corporate governance could risk barking up the wrong tree, since it was a government policy that state companies were not required to pay dividends to the government.⁷ This policy added to retained earnings, since the bulk of the dividend payouts by listed Chinese state companies might go to their non-listed parent holding companies (direct majority shareholders) instead of the government (the ultimate owner) and thus is still retained within the corporate sector (Zhou, 2005).

⁶ High and rising corporate saving has been a global and Asian phenomenon in the 2000s (IMF, 2006 and 2009; OECD, 2007). However, interpreting the detailed dynamics of the Chinese corporate saving warrants special caution, since the measured 2004 peak of corporate saving could in part be a result of one-off data adjustments owing to the economic census in the same year.

⁷ Two considerations were behind the policy of no dividend payments, which was introduced in 1994. First, the government aimed to provide incentives for state companies to arrest the large-scale financial losses at the time. Second, the government also encouraged the restructured state firms to provide displaced workers with some transitory social welfare supports and alternative employment opportunities before a functioning social safety net is in place. This no dividend policy has been unwound in phases since 2007.

An even more controversial question is about the possible sources of higher corporate profits (Graph 6). Many explanations have been advanced (Dollar and Wei, 2006; Bai, et al 2006; and Hofman and Kuijs, 2008). For exposition purpose, we group some of these arguments into two hypotheses.

One hypothesis argues that high Chinese corporate saving, and indeed fast economic growth, is mostly the consequence of government distortions designed to subsidise the corporate sector in order to promote growth and exports. Two particular arguments have been advanced under this hypothesis (Tyers and Lu, 2008; Jha et al, 2009; ADB, 2009). First, monopolies boost corporate profits of mostly state firms, owing to a lack of competition policy or its weak enforcement. Second, subsidies and factor price distortions (such as financial repression, restrictions on rural labour migration, subsidies for energy inputs and below-market prices of land) inflate corporate earnings, again mostly benefiting state firms. In short, China's rapid economic growth and high saving rate are principally a function of government distortions and subsidies.

An alternative hypothesis emphasises the broader forces discussed earlier as the more important factors leading to higher corporate saving. First, efficiency gains from corporate restructuring and an expanding indigenous private sector have intensified competition, raised productivity, and helped drive fast economic growth and lift corporate profits. Second, accentuated by a very compressed demographic transition and a large pool of surplus rural labour, the prolonged Chinese rural-urban labour migration has capped wage growth, thus boosting corporate profits in the transition process.⁸

These two sets of factors are not mutually exclusive and may well co-exist. While the truth likely lies somewhere in between, an interesting question is which set of forces matters more in shaping Chinese corporate saving. In particular, it would be useful to find out whether the identified distortions have become more significant over time so as to help explain the higher corporate saving rate and whether the available evidence broadly confirms the main predictions of these two hypotheses. After presenting the pros and cons of these two hypotheses, we highlight the controversial roles of exchange rates and interest rates.

A central prediction of the distortion/subsidy hypothesis is that as the principal beneficiary, state companies should be the major driver of the observed higher Chinese corporate profits, because they are more likely to enjoy greater market power, receive more government subsidies and gain from easier access to cheaper credit. Yet, it has been China's less advantaged and more efficient local non-state firms that have been gaining both market and profit shares (Graph 5, 6 and 7). The share of local private firms in China's industrial profits more than doubled from 20% to 43% during the 2000s, despite their facing more restricted access to external finance and higher funding cost. Similarly, their shares in both industrial sales and assets doubled in the 2000s. This questions the theory that the Chinese corporate earnings are mainly inflated by distortions and subsidies.⁹

The other evidence on the distortion/subsidy hypothesis is also inconclusive. First, although a case can be made for the presence of monopoly power in the Chinese banking industry,

⁸ Since 2006, there has been a lively debate over whether China has reached a so-called "Lewis turning point", whereby the pool of surplus labour starts drying up, as parts of its economy for the first time witnessed accelerated real wage growth and reported "labour shortage". For more details, see Garnuat, 2006; Cai, 2007; Meng and Bai, 2007; Islam and Yokota, 2008; and Athukorala et al, 2009.

⁹ Using an asymmetric credit friction model, Song et al (2009) suggest that the high-productivity and credit-constrained firms finance investment by internal saving and thus tend to generate high corporate saving while maintaining high return to capital by attracting more resources to themselves. This interesting insight differs importantly from the proposition that high corporate profit and saving come mostly from state-sponsored subsidies and distortions.

the market share of the big state-controlled banks has fallen over time. Second, the effect of any residual energy subsidies on China's overall corporate profitability is ambiguous. Indeed, given China as a growing net energy importer, energy subsidies tend to increase energy consumption and imports, which may weaken corporate profitability and the country's current account balance. Finally, with the 2001 WTO accession, China became more deeply involved in global competition. Thus, any oligopolistic rents may have waned on balance. In sum, while distortions and subsidies may inflate earnings at the state companies, they are not a primary factor behind China's higher overall corporate saving.

Other policy and institutional factors do boost China's corporate saving, but their effects vary. First, low royalties may under-price natural resources, inflating profits in such industries. Yet, little is known about the likely effect of higher natural resources taxes on the corporate and aggregate saving. Second, limited access to credit by small enterprises may weaken demand for labour, giving rise to additional downward pressure on wages and thus boosting the profit share in income (Aziz and Cui, 2007). But this factor too should not be overstated, as financing problems facing small firms in China may be no better or worse relative to other economies with high or low corporate saving. Third, entry barriers could indeed disadvantage the labour-intensive service sector, resulting in excessive expansion of more capital-intensive industries in the manufacturing sector and hence a higher income share of profits at the expense of labour (Guo and N'Diaye, 2010).

Finally, there is also controversy about the role of the exchange rate and interest rate in shaping corporate saving. Regarding the exchange rate, one view is that an undervalued exchange rate boosts relative competitiveness and thus corporate profits in the manufacturing sector, which often results in current account surpluses (Turner, 1988; Eichengreen, 2006; and Goldstein and Lardy, 2009). Similar opinions also hold that a weak renminbi may depress the real purchasing power of Chinese household income, resulting in excess or even forced saving. Another view suggests a minor and uncertain role of the exchange rate in the Chinese saving and current account balance (Chinn and Wei, 2009; Cheung et al 2009; and Ma and Zhou, 2009), as China's real effective exchange rate has fluctuated considerably over time and strengthened vis-à-vis most major emerging market currencies (Graph 8).

Second, interest rates could play a role lifting corporate profits. Between 1992 and 2007, net interest payments by the corporate sector more than halved as a share of GDP, contributing to 30% of the rise in corporate saving (Graph 9). While one may attribute this to financial repression that depresses funding cost of and subsidises to Chinese (state) firms, we think that corporate deleveraging and inflation volatility could be greater forces behind the declining net corporate interest payments.

First, the net corporate debts – the difference between corporate loans and deposits – as a share of GDP more than halved between 1992 and 2008, reducing net corporate interest payments (Graph 9). Corporate deleveraging could reflect strong corporate cash flows. Second, as argued by Modigliani and Cohn (1979), in times of high inflation, a big part of the interest payments represents inflation premium compensating creditors for the reduction of their real debt claims and thus should be considered repayments of the loan principal. Hence corporate profits may be understated in high-inflation years, and vice versa in times of deflation. The Chinese economy swung from double-digit inflation in the early 1990s to outright deflation in the late 1990s, potentially giving rise to a gap between the economic profits and reported accounting profits. We estimate this gap by taking into account the gains to shareholders accruing from the depreciation of the real debt burden.¹⁰

¹⁰ Erosion in the real corporate debts arising from inflation may be approximated as the product of expected inflation and net corporate debt outstanding. Expected inflation is measured by the two-year moving average

Our preliminary estimation shows that corporate profits are understated in the high-inflation years of 1992-96 and overstated in the deflationary years of 1998-2000 (Table 3), with two interesting insights (Graph 10). First, the adjusted series indicates that the rise in corporate profits has been less pronounced than that suggested by the official flow-of-fund statistics. While the official data indicate much of the rise in corporate saving took place in the 1990s, our revised series shows that most of the increase occurred in the 2000s. Second, the corporate sector has supplanted the household sector as the largest saver in China today but has not been the biggest driver of the rise in the national saving rate over the past fifteen years. Both point to a need of caution in interpreting the dynamics of corporate saving.

4.2 Household saving

Household saving first fell from 20% of GDP in 1992 to a low of 16% in 2001 before staging a marked comeback to 23% by 2008, (Table 3 and Graph 3). Over the past 15 years, the household sector has contributed three percentage points to the 17 percentage-point rise in the aggregate saving rate.

This modest contribution to the high aggregate saving rate has been the consequence of two competing influences: a 10 percentage-point decline in the household income share and a 10 percentage-point rise in its average propensity to save from its disposable income (Table 4). Both have led to the marked decline in China's private consumption share in GDP over the past fifteen years (Aziz and Cui, 2007; Guo and N'Diaye, 2010; Baker and Orsmond, 2010).

The big drop in the household share in gross national disposal income over the past fifteen years (Graph 11) can be attributable to a fall in the labour share in national income, a low investment income and diminished net income transfers.

It is first and foremost the consequence of a declining labour share in the economy, given that wages constitute 80% of the Chinese household disposal income. The decline in the labour share accounts for some 60% of the observed decline in the household income share between 1992 and 2007. China's provincial data indicate a negative relationship between the labour share and the share of the capital-intensive industry in GDP (Graph 11). This may have been the combined consequence of a compressed demographic transition, a prolonged process of absorbing surplus rural labour, a lagging labour-intensive service sector and difficult financing conditions for small firms (Bai and Qin, 2009).

The household income share has also been dragged down by its shrinking net interest income.¹¹ As a share of GDP, the net interest income halved in the past fifteen years, accounting for a quarter of the decline in the household income share. As the household sector is a net creditor in the economy, this is not surprising, for the same reasons discussed in Modigliani and Cohn (1979). Much of the high net interest income in the mid-1990s is simply the inflation premium required to compensate the household depositors for the real depreciation of their bank deposits. Indeed, during 1993-96 when inflation reached double-digits, the Chinese government implemented a policy of fiscal subsidy to ensure a non-negative real interest rate on household deposits. Another reason for the falling net interest income is the rising household debt in the past decade, to be discussed below.

of the implicit GDP deflator. Net corporate debt is estimated as corporate loans less the sum of corporate deposits and half of the currency in circulation. Corporate loans are taken as the sum of short-, medium- and long-term loans minus loans to the households. The data on household loans before 2000 are unavailable and computed backward by the 2000 level outstanding and the flow-of-funds statistics.

¹¹ More generally, the household income share from other investment income sources has fallen as well. At least two causes can be suggested. First, the ownership of stock shares is not sufficiently broad-based. Second, imputed rent and income from owner-occupied homes could have been under-recorded.

A third factor behind a falling household income share is reduced net transfers. Income redistribution through taxes, contributions and transfers has so far been ineffective in stabilising the household share of income. This is mostly because of the increased contributions required to fund the large future pension benefits and other welfare obligations related to the expected population ageing. Social welfare contributions made by the household sector tripled between 1992 and 2007, from 1.4% of GDP to 4.2%. As discussed earlier, the 1997 pension reform introduced individual pension accounts funded by mandatory employee contributions, which are deductions to household disposable income.

Despite this drop in household income share, household saving still rose as a share of GDP, owing to the much higher personal saving propensity. The household average propensity to save from income rose by 10 percentage points, mostly during the 2000s (Table 4). The high and rising household saving propensity has been a subject of intense research by academics, market analysts and policymakers alike. Four interpretations of household saving behaviour have been highlighted in the literature.

First, as life-cycle, permanent-income and habit-formation hypotheses suggest, interactions among economic growth, income level and demographic changes may influence the personal saving rate. Record economic growth, a sharp decline in the Chinese youth dependency rate, the expected rapid ageing of the population and saving/consumption habit persistence all have contributed to a high personal saving propensity.¹² A related factor is the much flatter earning profile over the life cycle in recent years, which helps explain a high average household saving rate that displays a U-shaped pattern across cohorts (Song and Yang, 2010). Nevertheless, these forces by themselves can only explain part of the high household saving rate in the 2000s.

Second, precautionary saving motives also help explain the higher personal saving rate. The large-scale corporate restructuring and downsizing between 1995 and 2005 increased both income and expenditure uncertainties and weakened the enterprise-based social safety net, thus reinforcing the precautionary motives to save.¹³ The new social welfare system has been taking shape but did not expand fast enough (Graph 12). The coverage of the new system also remains limited and fragmented.

Third, liquidity or borrowing constraint is another often cited factor accounting for the high personal saving. But bank loans to the Chinese household sector have expanded substantially, reaching 15% of the total outstanding bank loans lately from less than 1% in the late 1990s (Graph 13). In other words, the availability of consumer credit does not appear to be a major binding constraint to consumption smoothing for the period under study and is unlikely an important cause behind the rising personal saving propensity in the past 10 years.¹⁴

Finally, institutional changes such as pension reforms and private home ownership have significantly influenced personal saving behaviour. The 1997 pension reform led to reduced

¹² While Kraay (2000) report no conclusive evidence on the role of growth and demographics, Modigliani and Cao (2004) confirm their effects. Horioka and Wan (2007) find mixed supports for these hypotheses but highlight the important role of habit persistence. Chamon and Prasad (2009) also cast doubt about the life cycle predictions. Wei and Zhang (2009) argue that China's rising sex ratios led to increased competition in the marriage market and thus drove wealth accumulation. Ma and Zhou (2009) suggest that a sharp fall in the youth dependence could raise saving across the household, corporate and government sectors.

¹³ See Meng, 2003; Blanchard and Giavazzi, 2005; and Chamon and Prasad, 2009. In addition, this paper has not covered other potentially important factors influencing personal saving propensity such as income inequality and consumption risk sharing across regions. These are promising areas of further research.

¹⁴ Certainly, there is room for further expanded access to consumer credit, as Chinese households remain lightly leveraged and their aggregate balance sheet seems strong.

pension wealth. This helped trim the large implicit pension debts but might have lifted the current household saving rate (Feng, et al 2009). Also, scandals associated with local pension funds might weaken confidence, thus limiting substitution between mandatory and voluntary personal saving. Another important institutional change is the introduction of private home ownership that has triggered significant demand for housing assets, thus boosting household saving.¹⁵

4.3 Government saving

The government has been the smallest saver in China but a major contributor to the rise in national saving. As a share of GDP, its saving more than doubled, from less than 5% in 1992 to 11% in 2008 (Table 3). During the 2000s so far, it has accounted for half of the 15 percentage-point rise in China's gross national saving rate.

The marked increase in government saving largely reflects higher government income. The government share in disposable income first declined from 20% to 16% in the first half of the 1990s, before recovering steadily to 24% by 2008. Meanwhile, the government consumption has averaged about 15% of GDP since the early 1990s. Thus rising government disposable income and steady government consumption together resulted in higher government saving and more government investment, especially in the 2000s. The Chinese government's marginal propensity to save exceeded 50% during the 2000s, compared to less than 20% in the 1990s.

The government disposable income has risen briskly since the mid 1990s. This has been the combined result of high economic growth, the 1994 tax reform (Wong and Bird, 2008), increased land sales and greater social welfare contributions from both the corporate and household sectors. Over the years, government disposable income tends to closely track government revenues (Graph 14).¹⁶ China's government revenues fluctuated around 40% of GDP in the late 1970s but dropped throughout the 1980s and early 1990s to only 15%. This decline was mainly due to a diminished government role in the economy, a reform strategy of decentralisation, and the need to cushion the economic transition. The 1994 tax reform under Premier Zhu Rongji aimed to lift the both the share of government revenues in GDP and share of the central government in the overall fiscal revenues. Both goals have apparently been met (Table 5).

The government consumption and expenditure, however, diverged noticeably from each other, especially in the 2000s. The government consumption has been more stable over time, at some 15% of GDP; but total expenditure swung from 11%-12% of GDP in the 1990s to 18%-20% lately (Graph 14). One main difference between the two measures is investment spending undertaken by the government, which is part of government expenditure but not part of government consumption. Therefore, more of the government expenditure is investment rather than consumption. In other words, much of the government income gain has been invested rather than consumed in the 2000s.

¹⁵ State firms have stopped providing housing but in return increased itemised cash contributions to housing provident funds. This effectively translates into an observed higher household saving rate because of required mortgage down payments. Nevertheless, such a shift in saving activity from the corporate to the household sector, on its own, should not be interpreted as an increase in national aggregate saving rate.

¹⁶ Government revenue and expenditure, based on the fiscal and budgetary statistics, are conceptually distinct from government disposable income and consumption based on the flow-of-funds statistics. For instance, contributions by the corporate and household sectors to various pension funds administered by the government are part of the government disposable income but not revenue. Similarly, current transfers from the government are part of its expenditure but not consumption. Finally, a government can run a fiscal/budget deficit while yielding a positive saving, owing to its investment spending.

Questions arise as to whether government consumption is too low. By international standard, China's government consumption of 15% of GDP is not excessively low: it is above the historical average of the emerging market economies of 13% but below the mean of 20% for the advanced economies. It indeed ranks among the highest in emerging Asia (Graph 15). Nevertheless, China seems to have further room to provide more public services such as education, healthcare and environmental protection.

Why does the Chinese government save and invest but not consume most of its rising income? Three different but related explanations can be advanced. It appears that all of these forces have been at work at the same time in China, contributing to higher government saving in the 2000s.

First, the anticipation of rapid population ageing and the 1997 pension reform prompted increased pension contributions by the corporate and household sectors. These contributions are intended to partially prefund future pension benefits and treated as a source to the government disposable income, as they are parked under various pension funds administered by the government. These funds have been invested, directly or indirectly, in financial and physical assets at home or abroad. The net asset balance of China's centrally managed National Social Security Fund tripled as a ratio to GDP between 2001 and 2009 (Graph 15). Meanwhile, the accumulated balance of the country's various social welfare funds also tripled. Both suggest that the rise in government saving could in part relate to the build-up of pension assets.

Second, local Chinese government officials have incentives to start new investment projects, as promotions have been mainly determined by performance indicators such as economic growth in their jurisdictions. Hence there is an innate tendency to invest more rather than to provide additional public services for a given rise of government revenues, thus boosting government saving. However, once the fixed capital stock has built up sufficiently in the urban infrastructure and/or the promotion standards broaden to include provision for public services such as healthcare, education and supports for the needy, government consumption should eventually expand. Moreover, high current investment spending on public facilities and infrastructure by the Chinese government today will generate a greater stream of future government consumption.

Third, there is a so-called federal fiscal imbalance issue in China: while a rising share of fiscal revenue is appropriated by the central government, the lion's share of the social expenditure burden remains on the shoulder of the less well-funded local governments (Table 5 and Graph 16). Transfers through the central government are considered far from adequate in addressing the financing pressures facing local governments. This tends to put the local governments under funding pressure, which in turn depresses social spending and government consumption.

In sum, higher government saving has largely been attributable to both rising government income and steady government consumption. The resultant higher government saving propensity in the 2000s may relate to a combination of three factors: the need to accumulate pension assets in anticipation of rapid population ageing, the incentives for local governments to invest rather than providing public services, and a large burden of social spending on the local governments that have come under increased funding pressures.

5. Medium-term outlook and policy implications

5.1 Medium-term outlook

The medium-term outlook for China's saving rate matters not only for its future economic growth path but possibly also for rebalancing of the global economy. Despite private consumption expenditure growing 8%-10% per annum in recent years, China's saving rate remains considerably higher than its investment rate, resulting in a substantial current

account surplus. Going forward, given the outlook of a relatively weak global recovery and an already high domestic investment rate in China, private consumption is likely to play a critical role in sustaining a high rate of Chinese growth. One key challenge for Chinese policymakers is thus to maintain robust internal demand while rebalancing the economy more towards consumption. Both domestic structural factors and policy measures could influence such a transition.

Of the structural factors discussed earlier, three can be highlighted in view of their implications for the Chinese saving rate. First, it is reasonable to assume that the large-scale labour retrenchment observed during 1995-2008 has by and large been behind us. In this period, 73 million jobs in the urban state sector were shed, against a concomitant net urban job creation of 110 million (Graph 4). Going forward, such one-off efficiency gains for the corporate sector would likely be more limited, and the associated income and expenditure uncertainties of the Chinese households should become less pronounced. That in turn will dampen the incentives for private saving of both the household and corporate sectors.

Second, China is projected to enter a phase of accelerated population ageing within a decade, which may suggest two things. First, growth of labour force will decline, possibly along with a declining household saving rate and a slower pace of investment spending, likely resulting in lower potential output growth. Second, we may continue witnessing strong infrastructure investment for some years to come, to build up the physical capital stock and pension assets in preparation for the ageing of the population as well as to accommodate the ongoing urbanisation process.

Third, the rural-urban labour migration away from agriculture is likely to continue in the years ahead, as the urban share of the population is projected to rise from the current 45% to 60% in a decade. By contrast, there may be some early and tentative signs that China could get closer to the Lewis turning point, which predicts a rise in the labour share of income, lower corporate saving and a greater role of personal consumption in future.

Taken together, a key implication from these medium-term forces is that China's saving rate is likely to plateau before long and may ease off noticeably from the current 52% or even higher levels over the next 10 years. The marked U-shape experience of China's saving rate over the past 25 years also suggests that the prospective Chinese saving rate can fall meaningfully in the years ahead.

5.2 Policy options

During this process, policy can assist the transition to a more balanced growth model. Of many possible policy options widely debated, this paper touches on two broad and largely complementary sets of issues: measures to promote urban job creation and policies to enhance the social safety net. While strong investment is still needed to accommodate the urbanisation process, deregulations that facilitate labour mobility between the urban and rural areas, support small companies, and reduce entry barriers to the labour-intensive services sector may help job creation, ease downward pressure on wages and stabilise the labour income share. They would also support resource reallocation to non-tradable sectors while facilitating consumer demand growth. This is a promising area of policy initiatives.

A strengthened social safety net is another option, since the current public welfare system remains fragmented and its coverage is limited. This policy option will become even more valuable with the continued large inflows of rural labour migrants into the urban areas. The recent moves to transfer some of the listed state company shares to beef up pension assets and improve the portability of welfare benefits therefore go in the right direction. But there are

challenges and pitfalls to any state-welfare solution.¹⁷ One risk is that a rushed and poorly designed social insurance system could backfire. Another risk is the questionable sustainability of any social welfare scheme, especially in the context of the expected rapid population ageing and likely slower economic growth. Finally, reforms to social welfare systems could have unintended side-effects on current saving and consumption decisions. In any case, the priority should ideally be to aim for a more integrated and broader-based social safety net, with a focus on the low-income segments of the population and with an enhanced funding role by the central government.

6. Summary

This paper explores the stylised facts and explanations about the Chinese corporate, household and government saving. They have all added substantially to China's high and rising saving rate, especially during the 2000s. What really distinguishes China from the rest of the world is that the saving of each of these three sectors as a share of GDP has ranked near the top worldwide, making China's aggregate saving rate exceptionally high.

No single theory or model will likely provide a simple explanation to this pattern of the high Chinese saving. On the one hand, the evidence appears mixed for the proposition that China's fast economic growth and high saving rate are principally a function of subsidies and distortions. On the other hand, some of the structural forces may not have received sufficient attention. Such forces include those associated with rapid economic growth, structural transformation, a compressed demographic transition, large-scale corporate restructuring, and the household and government responses to institutional changes as well as to the expected acceleration of population ageing in one decade from now.

¹⁷ An enhanced social safety net should first and foremost serve the purposes of social equity and risk pooling under long-term fiscal sustainability and should not be taken as a makeshift tool to lift personal consumption growth beyond the recent 8%-10% pace.

References

- Asian Development Bank (2009): *Asian Development Outlook 2009: Rebalancing Asia's Growth*, Manila.
- Athukorala, P, Fukao and T Yuan (2009): "Labour market integration in China", in R Garnaut, L Song and W Woo edit *China's New Place in a World in Crisis: Economic, Geopolitical and Environmental Dimensions*, The Australian National University Press, pp 179-208.
- Aziz, J and L Cui (2007): "Explaining China's low consumption: the neglected role of household income", *IMF Working Paper*, No WP/07/181, Washington DC.
- Bai, C, C Hsieh and Y Qian (2006): "Return to capital in China", *NBER Working Papers* No 12755.
- Bai, C and Qian, Z (2009): "Factor income share in China: the story behind the statistics", *Economic Research*, 2009/03: pp 27-40.
- Baker, M and D Orsmond (2010): "Household consumption trends in China", *Reserve Bank of Australia Bulletin*, March, pp 13-18.
- Bayoumi, T, H Tong and S Wei (2009): "China's corporate savings is not a key driver for its current account surplus: a cross-country firm-level comparative perspective", draft paper presented at the HKMA conference "Financial reform, macro policy and currency internationalisation: the case of China", Hong Kong.
- Bernanke, B (2005): "The global saving glut and the US current account deficit", speech at the Homer Jones Lecture, St Louis, 14 April.
- Blanchard, O and F Giavazzi (2005): "Rebalancing growth in China: a three-handed approach", *MIT Department of Economics Working Paper* 05-32.
- Brandt, L, C Hsieh and X Zhu (2008): "Growth and structural transformation in China", in L Brandt and T Rawski edit *China's Great Economic Transformation*, Cambridge University Press, pp 569-632.
- Cai, F (2007): "The coming Lewis turning point and its policy implications", *Reports on China's Population and Labour*, No 8, Social Science Academic Press, Beijing.
- Cai, F, A Park and Z Yao (2008): "The Chinese labour market in the reform era", in L Brandt and T Rawski edit *China's Great Economic Transformation*, Cambridge University Press, pp 167-214.
- Chamon, C and E Prasad (2008): "Why are saving rates of urban households in China rising?", *IMF Working Paper*, No WP/08/145, Washington DC.
- Cheung, Y, Chinn, M and Fujii, E (2009): "China's current account and exchange rate", *China's Growing Role in World Trade*, pp. 231-271, edited by Robert Feenstra and Shing-Jin Wei, University of Chicago Press for NBER.
- Chinn, M and Wei, S (2009): "A faith-based initiative meets the evidence: does a flexible exchange rate regime really facilitate current account adjustments?", draft.
- Dollar, D and S Wei (2006): "Das (wasted) Kapital: firm ownership and investment efficiency in China", in *NBER China Workshop*, Cambridge, MA.
- Eichengreen, B (2006): "Global imbalance, demography and China", in M Balling, E Gnan and F Lierman (eds), *Money, finance and demography: the consequences of ageing*, a volume for the 26th SUERF Colloquium in Lisbon.
- Feng, J, L He and H Sato (2009): "Public pension and household saving: evidence from China", *Bank of Finland BOTIT Discussion Papers*, No 2009/02.

- Ferrucci, G (2007): "Saving behaviour and global imbalances: the role of emerging market economies", *ECB Working Paper* No 842, December.
- Feldstein, M (1998): "Social security pension reform in China", *NBER Working Paper*, No 6794.
- Gao, L (2010): "Achievements and challenges: 30 years of housing reforms in the People's Republic of China", *ADB Economics Working Paper*, No 198, April.
- Garnaut, R (2006): "The turning point in China's economic development", in R Garnaut and L Song edit *The Turning Point in China's Economic Development*, Australian National University Press, pp 1-11.
- Goldstein, M and Lardy, N (2009): "The future of China's exchange rate policy", *Policy Analyses in International Economics*, No 87, Peterson Institute for International Economics.
- Guo, K and P N'Diaye (2010): "Determinants of China's private consumption: an international perspective", *IMF Working Paper*, No 10/93.
- Hale, G and C Long (2010): "What are the sources of financing of the Chinese firms?", draft.
- Heston, A and T Sicular (2008): "China and development economics", in L Brandt and T Rawski edit *China's Great Economic Transformation*, Cambridge University Press, pp 27-67.
- Hofman, B and L Kuijs (2008): "Balancing China's growth", in M Goldstein and N Lardy edit *Debate China's Exchange Rate Policy*, Peterson Institute for International Economics, Washington DC.
- Horioka, Y and J Wan (2008): "Why does China save so much?", in B Eichengreen, C Wyplosz and Y Park (eds), *China, Asia, and the new world economy*, Oxford University Press, pp 371-91.
- International Monetary Fund (2009): *Asia and Pacific Regional Economic Outlook: Building a Sustained Recovery*, October, Washington DC.
- International Monetary Fund (2006): *World Economic Outlook: Globalisation and Inflation*, April, Washington DC.
- Jha, S, E Prasad and A Terada-Hagiwra (2009): "Saving in Asia and issues for rebalancing growth", *ADB Economics Working Paper Series*, No 161, May, Manila.
- Islam, N and K Yokota (2008): "Lewis growth model and China's industrialisation", *Working Paper Series*, 2008-17, The East Asian Development, Kitakyushu.
- Kraay, A (2000): "Household saving in China", *The World Bank Economic Review*, Vol 14, No 3, pp 545-570, September.
- Kuijs, L, (2006): "How will China's saving-investment balance evolve?", *World Bank Policy Research Working Paper*, No 3958, July.
- Lewis, W (1954): "Economic development with unlimited supplies of labour", *The Manchester School*, Vol 22, No 2, pp 139-191.
- Li, Y and J Yin (2007): "An exploration of the high Chinese saving", *Economic Research*, No 2007/06, pp 1-18.
- Li, Z and M Wu (2010): "Who has financed the employer-provided pension in China?: a triple-track story", draft.
- Ma, G (2007): "Who pays China's bank restructuring bill?", *Asian Economic Papers*, No 6 (1), pp 46-71, Winter, MIT Press, Cambridge.
- Ma, G and H Zhou (2009): "China's evolving external wealth and rising creditor position", *BIS Working Papers* No 286, July, Basel.

- Meng, X (2003): "Unemployment, consumption smoothing and precautionary saving in urban China", *Journal of Comparative Economics*, No 31, pp 465-485.
- Meng, X (2007): "How much have the wages of unskilled workers in China increased?", R Garnaut and L Song edit *China: Linking Markets for Growth*, Australian National University Press, pp 151-196.
- Modigliani, F and L Cao (2004): "The Chinese saving puzzle and the life-cycle hypothesis", *Journal of Economic Literature*, Vol XLII, March 2004, pp 145-170.
- Modigliani, F and R Cohn (1979): "Inflation, rational valuation and the market", *Financial Analysts Journal*, Vol 35, No 2, pp 24-44.
- Moreno, R and M Santos (2009): "Pension systems in EME: implications for capital flows and financial markets", *BIS Papers*, No 44, pp 45-69.
- OECD (2007): *OECD Economic Outlook* No 82, Special Chapter: "Corporate saving and investment: Recent trends and prospects", December, Paris.
- Park, D and K Shin (2009): "Saving, investment and current account surplus in developing Asia", *ADB Economics Working Paper Series*, No 158, April, Manila.
- Salditt, F, P Whiteford and W Adema (2007): "Pension reform in China: progress and prospects", *OECD Social, Employment and Migration Working Papers*, No 53, Paris.
- Shen, B and Yan, L (2009): "Development of consumer credit in China", in *Household debt: implications for monetary policy and financial stability*, *BIS Papers* No 46, Basel.
- Song, Z, K Storesletten, and F Fzilibotti (2009): "Growing like China", draft mimeo.
- Song, Z and D Yang (2010): "Life cycle earnings and the Chinese household saving puzzle in a fast-growing economy", draft mimeo.
- Turner, P (1988): "Saving and investment, exchange rates and international imbalances: a comparison of the United States, Japan and Germany", *Journal of the Japanese and International Economies*, No 2, pp 259-285.
- Tyers, R and F Lu (2008): "Competition policy, corporate saving and China's current account surplus", *ANU Working Papers in Economics and Commerce*, Canberra.
- Wang, F and A Mason (2008): "The demographic factor in China's transition", in L Brandt and T Rawski edit *China's Great Economic Transformation*, Cambridge University Press, pp136-166.
- Wei, S and X Zhang (2009): "The competitive saving motive: evidence from rising sex ratios and saving rates in China", *NBER Working Paper*, No 15093, Cambridge.
- Wiemer, C (2008): "The saving story behind China's trade imbalance", *Lee Kuan Yew School of Public Policy Working Paper*, No 08/08, May, National University of Singapore.
- Wolf, M (2008): *Fixing global finance*. John Hopkins University Press.
- Wong C and R Bird (2008): "China's fiscal system: a work in progress", in L Brandt and T Rawski edit *China's Great Economic Transformation*, Cambridge University Press, pp 429-466.
- Zhang, H (2008): "Corporate governance and dividend policy: A comparison of Chinese firms listed in Hong Kong and in the Mainland", *China Economic Review*, pp 437-459.
- Zhang, Z (2009): "Dark matters in China's current account", manuscript.
- Zhou, X (2005): "Remarks about the return to capital of state-owned enterprises", Speech at the 2005 Annual Meeting of China Enterprise Leaders and the 20th Anniversary of *China Entrepreneurs Magazine*.

Zhou, X (2009): *Some Observations and Analyses on Savings Ratio*, speech at the High Level Conference Hosted by Bank Negara Malaysia on 10 February 2009, Kuala Lumpur.

Table 1: Gross national saving: an international perspective

As a percentage of GDP

	1990	1992	1995	2000	2005	2006	2007	2008
China ¹	39.2	38.8	42.1	36.8	51.2	54.1	54.1	54.3
China ²	35.6	36.4	38.1	37.3	48.2	49.5	51.8	53.2
India	23.0	21.4	24.5	23.8	34.3	35.8	37.6	33.6
Japan	33.2	33.2	29.3	27.5	26.8	26.9	27.0	...
Korea	37.7	36.9	36.2	33.6	32.7	31.2	30.6	31.9
Mexico	23.6	18.6	21.1	23.8	23.3	25.5
Singapore	43.6	45.8	49.3	46.9	48.7	49.9	51.7	48.3
Australia	18.6	18.0	18.7	19.7	21.6	21.8	22.5	...
Canada	17.3	13.4	18.3	23.6	23.8	24.4	23.7	...
France	20.8	19.6	19.1	21.6	18.5	19.3	19.9	18.9
Germany	25.3	22.3	21.0	20.2	22.2	23.9	25.9	26.0
Italy	20.8	19.1	22.0	20.6	19.5	19.6	20.0	18.2
Switzerland	33.1	28.6	29.6	34.7	36.9	35.5	31.2	...
United Kingdom	16.4	14.3	15.9	15.0	14.6	14.2	15.6	...
United States	15.3	14.2	15.5	17.7	14.6	15.8	14.0	12.1

Note: ¹ expenditure-based estimate of GNS. ² production-based estimate of GNS.

Sources: National accounts of OECD countries database; ADB; NSB; authors' own estimates.

Table 2: A backdrop: changes in the Chinese economies

	As a percentage of GDP					Total population = 100	
	Primary sector	Manufacturing	Construction	Services	Agricultural share in employment	Urban share in population	Working-age share in population
1980	30.2	43.9	4.3	21.6	68.7	19.4	59.7
1990	27.1	36.7	4.6	31.5	60.1	26.4	66.7
2000	15.1	40.4	5.6	39.0	50.0	36.2	68.4
2008	10.7	41.1	5.4	41.8	39.6	45.7	74.3

Sources: NSB and authors' own estimates.

Table 3: Composition of China's national gross saving, by sector

As a percentage of GDP

	Total	Corporate	Household	Government	Adj. corporate	Adj. household
1992	36.4	11.7	20.3	4.4	15.6	16.4
1993	38.0	15.7	18.2	4.1	21.4	12.5
1994	39.4	14.5	21.7	3.2	21.1	15.1
1995	38.1	16.0	19.6	2.5	21.0	14.6
1996	37.1	13.5	19.9	3.7	16.9	16.5
1997	38.4	13.0	21.4	4.0	14.8	19.6
1998	37.7	13.3	21.1	3.3	13.4	20.9
1999	37.1	14.6	19.9	2.6	14.1	20.4
2000	37.3	16.5	17.5	3.3	16.6	17.4
2001	38.2	17.4	16.6	4.2	18.1	15.9
2002	40.3	18.0	17.2	5.1	18.5	16.8
2003	43.6	18.3	18.3	7.0	18.9	17.7
2004	46.6	23.5	18.5	4.6	24.9	17.0
2005	48.2	20.4	21.5	6.4	21.7	20.2
2006	49.5	18.8	21.7	8.9	19.8	20.8
2007	51.8	18.8	22.2	10.8	20.0	21.0
2008	53.2	18.8	23.4	11.0	21.0	20.4
<i>Memo: percentage changes</i>						
1992-2008	16.8	7.1	3.1	6.6	5.9	4.3
1992-2000	0.9	4.7	-2.7	-1.1	1.1	1.0
2000-2008	15.9	2.3	5.9	7.7	4.4	3.0
MPS: 92-08	0.54	1.00	0.41	0.46	1.00	0.40

Note: The adjusted corporate and household saving is estimated by allowing for expected inflation and net corporate debt, and on the simplifying assumptions of that change in corporate disposable income is accommodated fully by household disposable income only. Expected inflation is estimated by 2-year moving average of GDP deflator, while net corporate debt is approximated by corporate loans outstanding less the sum of corporate deposits and half of the currency in circulation.

Sources: NSB and authors' own estimates.

Table 4: disposable income and saving property: before and after adjustment

As a percentage of GDP

	Disposable income share					Average propensity to save		
	Corporate	Household	Government	Adjusted corporate	Adjusted household	Household	Adjusted household	Government
1992	11.7	68.3	20.0	15.5	64.5	29.5	25.4	22.0
1993	15.7	64.6	19.7	21.4	59.0	28.1	21.2	21.0
1994	14.5	67.0	18.5	21.1	60.4	32.4	25.0	17.1
1995	16.2	67.2	16.5	21.3	62.1	29.6	23.8	15.5
1996	13.7	68.4	17.9	17.1	65.0	29.4	25.7	20.7
1997	13.1	68.6	18.3	14.9	66.8	31.4	29.6	21.9
1998	13.5	68.4	18.1	13.6	68.3	31.2	31.1	18.3
1999	14.7	67.2	18.1	14.2	67.7	29.8	30.3	14.7
2000	16.6	64.2	19.2	16.7	64.1	27.5	27.3	17.2
2001	17.5	62.0	20.5	18.3	61.2	27.0	26.1	20.8
2002	18.0	61.0	21.0	18.5	60.5	28.3	27.7	24.2
2003	18.2	59.8	22.0	18.8	59.2	30.4	29.8	31.4
2004	23.3	57.8	18.9	24.7	56.4	31.6	29.9	24.0
2005	20.0	59.4	20.5	21.3	58.1	35.6	34.2	30.4
2006	18.5	58.7	22.8	19.5	57.8	36.4	35.4	38.6
2007	18.4	57.5	24.1	19.7	56.3	37.9	36.6	44.2
2008	18.5	57.6	23.9	20.6	55.5	39.9	36.1	45.3

Sources: NSB and authors' own estimates.

Table 5 : Revenues and expenditures, by central and local government

As a percentage of GDP

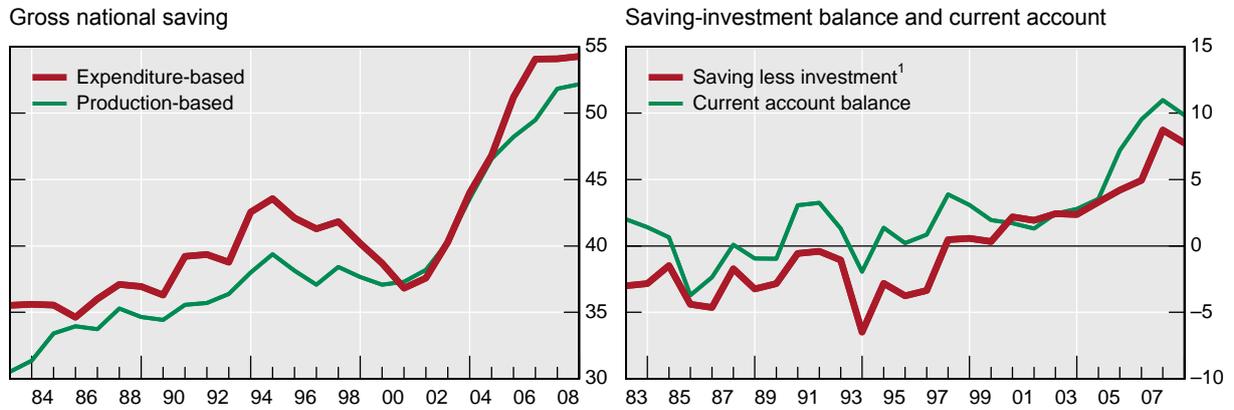
	Revenues			Expenditures			Balance		
	Total	Central	Local	Total	Central	Local	Total	Central	Local
5-year averages									
1982 – 1986	38.6	14.4	24.3	37.7	16.4	21.3	0.9	-2.0	2.9
1987 – 1991	31.5	11.4	20.1	31.4	11.4	20.0	0.1	-0.0	0.1
1992 – 1996	17.7	6.5	11.2	18.3	5.4	12.9	-0.6	1.1	-1.7
1997 – 2001	16.5	6.7	9.8	18.0	4.7	13.3	-1.4	2.1	-3.5
Annual data									
2002	19.4	9.0	10.4	21.5	5.8	15.7	-2.1	3.2	-5.2
2003	19.4	9.0	10.3	21.2	5.7	15.5	-1.9	3.3	-5.2
2004	19.4	9.3	10.2	20.5	5.2	15.4	-1.1	4.1	-5.2
2005	20.3	9.3	11.0	21.4	5.0	16.3	-1.1	4.2	-5.3
2006	21.3	9.9	11.4	21.8	4.9	16.9	-0.5	5.0	-5.5
2007	22.6	11.0	11.6	21.7	4.6	17.1	0.9	6.4	-5.5
2008	20.8	11.1	9.7	23.0	4.6	18.4	-2.2	6.4	-8.6

Note: government revenues and expenditures include both budgetary and extra-budgetary revenues and expenditures.

Sources: NSB; authors' own estimates.

Graph 1

China's gross national saving
As a percentage of GDP

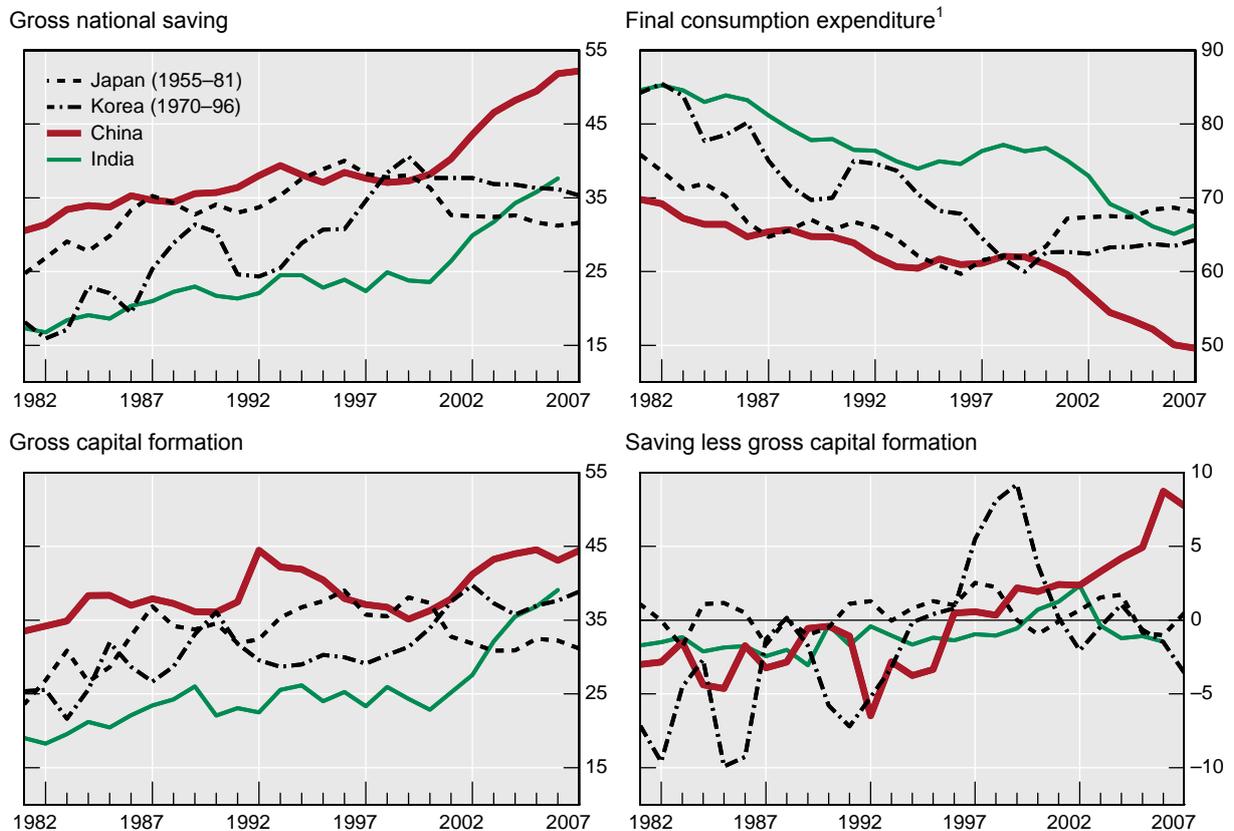


¹ Production-based.

Sources: NBS; and authors' own estimates.

Graph 2

Saving and investment—international comparison
As a percentage of GDP



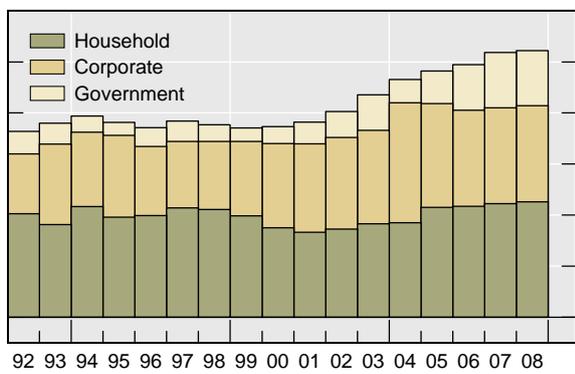
¹ Including both private and government final consumption expenditure.

Sources: National data; authors' own estimates.

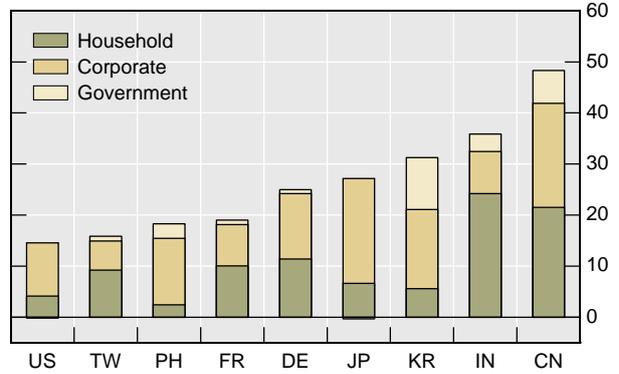
Graph 3

Gross national saving, by institutional sector
As a percentage of GDP

China's gross national saving



2005–07 average, by market



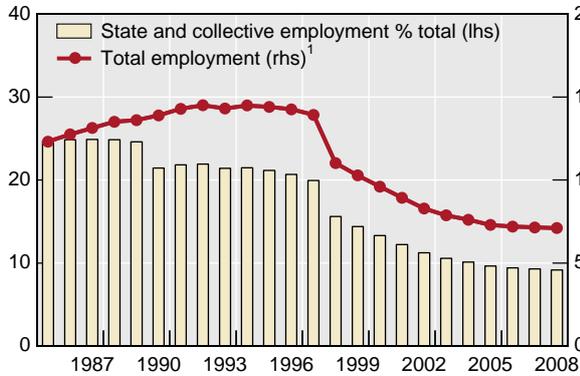
CN = China; DE = Germany; FR = France; IN = India, JP = Japan; KR = Korea; PH = Philippines; TW = Chinese Taipei; US = United States.

Sources: ADB; OECD; national data; authors' own estimates.

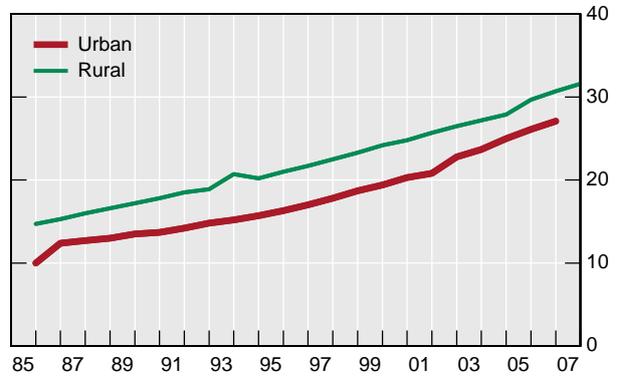
Graph 4

State employment and residential floor space

Urban state and collective employment



Per capita residential floor space²

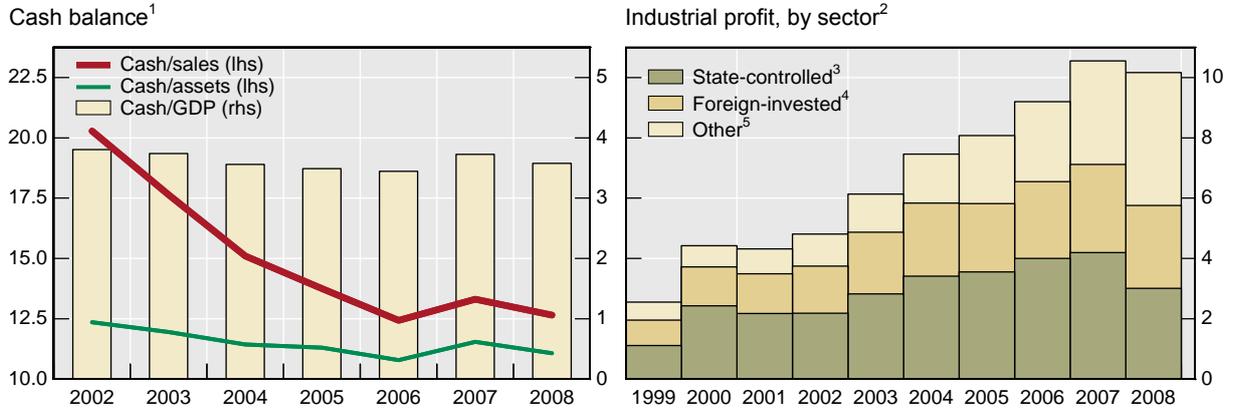


¹ In millions of persons. ² In square meters.

Sources: NBS; authors' own estimates.

Graph 5

Cash balance of China's corporate sector and China's industrial profit



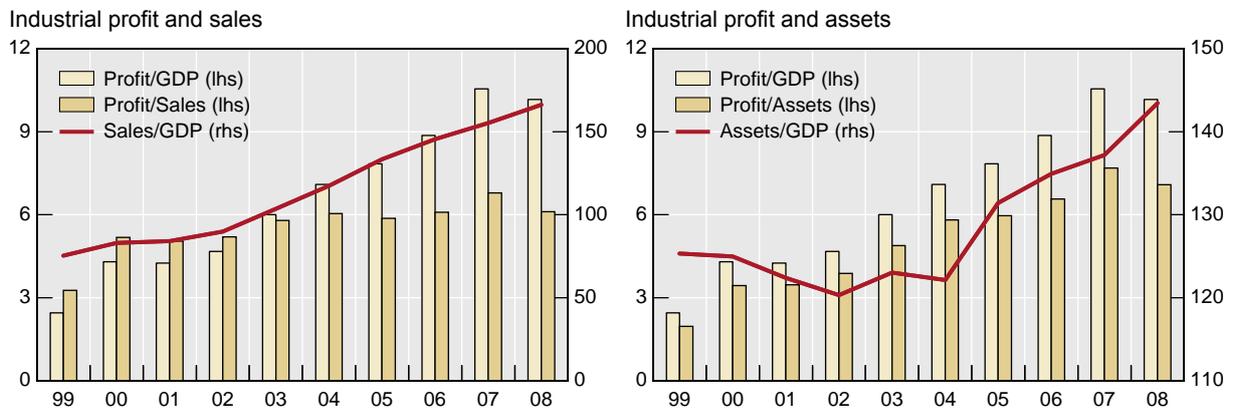
¹ Based on a sample of 1333 Chinese companies listed in China and Hong Kong SAR; in per cent. ² As a percentage of GDP. ³ State-controlled enterprises. ⁴ Foreign, Chinese Taipei or Hong Kong SAR invested and controlled enterprises operating in China. ⁵ All the rest, including non-state controlled joint shareholding companies, collectives, private companies and other joint ventures.

Sources: NBS; Credit Suisse; authors' own estimates.

Graph 6

Profits, sales and assets of the Chinese industrial sector¹

In per cent

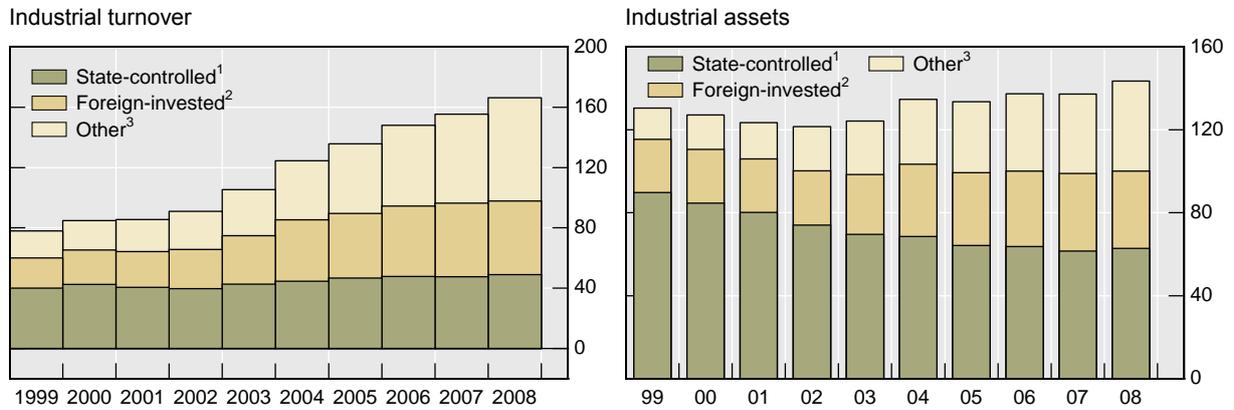


¹ Industrial enterprises with annual sales of above RMB5 million from the principal business.

Sources: NBS; authors' own estimates.

Graph 7

China's industrial market share and capital deepening
As a percentage of GDP

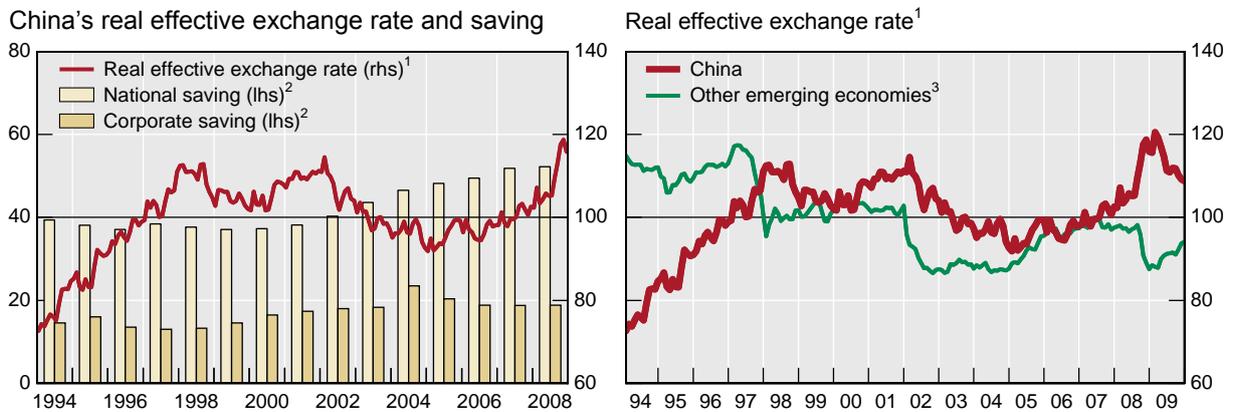


¹ State-controlled enterprises. ² Foreign, Chinese Taipei or Hong Kong SAR invested and controlled enterprises operating in China. ³ All the rest, including non-state controlled joint shareholding companies, collectives, private companies and other joint ventures.

Sources: NBS; authors' estimates.

Graph 8

Real effective exchange rate and saving

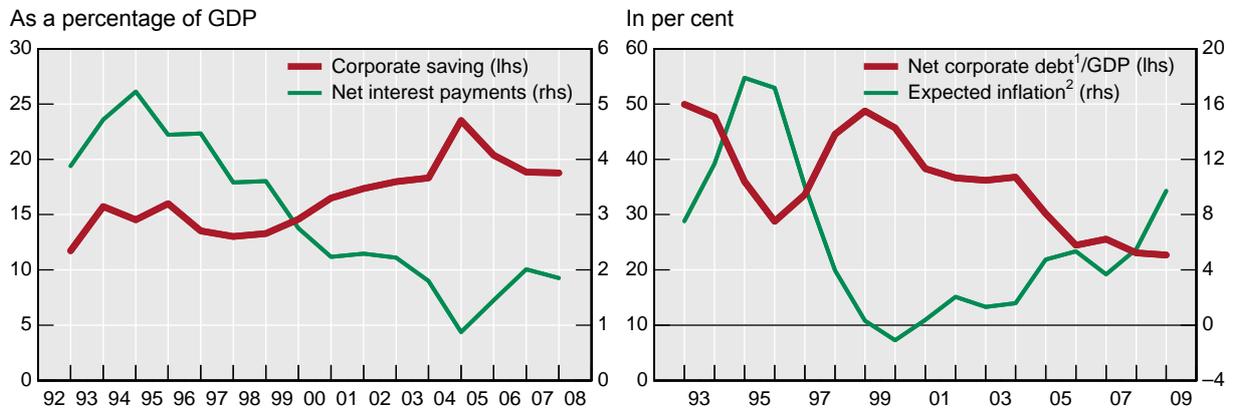


¹ 1994–2008 = 100. ² As a percentage of GDP. ³ Simple average of the real effective exchange rates of 10 major emerging economies (Argentina, Brazil, Chile, India, Indonesia, Korea, Malaysia, Mexico, Thailand and Turkey).

Sources: NBS; BIS; authors' own estimates.

Graph 9

Inflation, interest payment and corporate saving



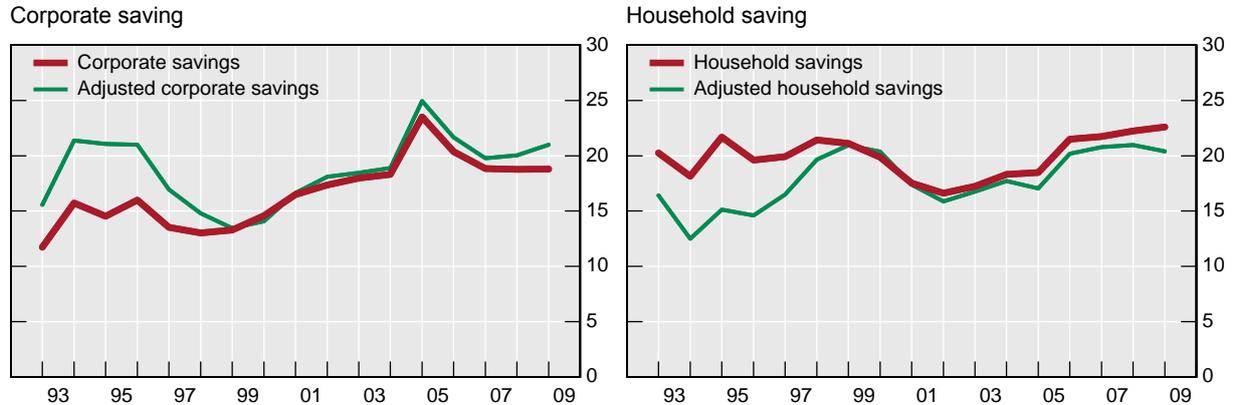
¹ The difference between corporate loans on the one hand and corporate deposit and cash held by the corporate sector on the other. ² Two-year moving average of GDP deflator.

Sources: NBS; PBC; authors' own estimates.

Graph 10

Corporate and household saving: before and after adjustment

As a percentage of GDP



Note: The adjusted corporate saving is the sum of the original corporate saving and the product of net corporate debt and expected inflation. The adjusted household saving is the difference between the original household saving and the product of net corporate debt and expected inflation, on the assumption that the household sector alone will accommodate all the change in corporate saving.

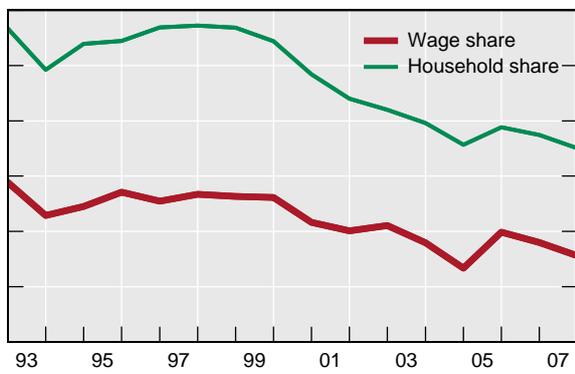
Sources: NBS; PBC; authors' own estimates.

Graph 11

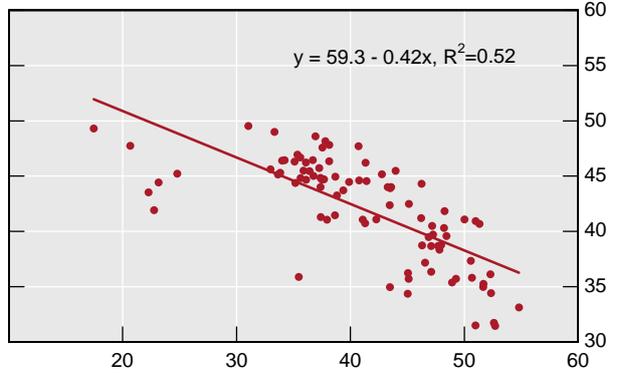
Labour and household income share in China

In per cent

As a percentage of gross national disposable income



Industrial share versus labour share¹



¹ Horizontal axis: industrial share as a percentage GDP; vertical axis: labour share as a percentage of GDP. The data sample is a panel of 30 provinces and a three-year period of 2005-2007.

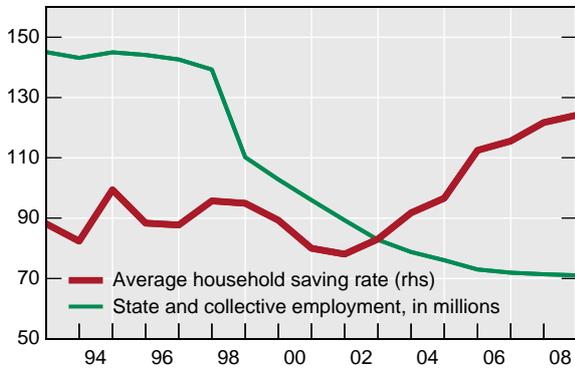
Source: NBS.

Graph 12

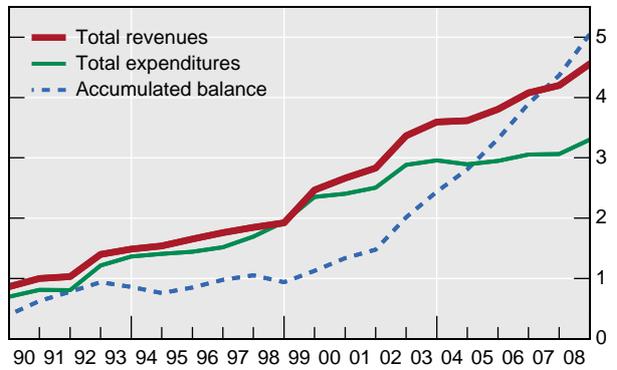
Labour downsizing and social security in China

In per cent except as noted

Employment



Social security, as a percentage of GDP

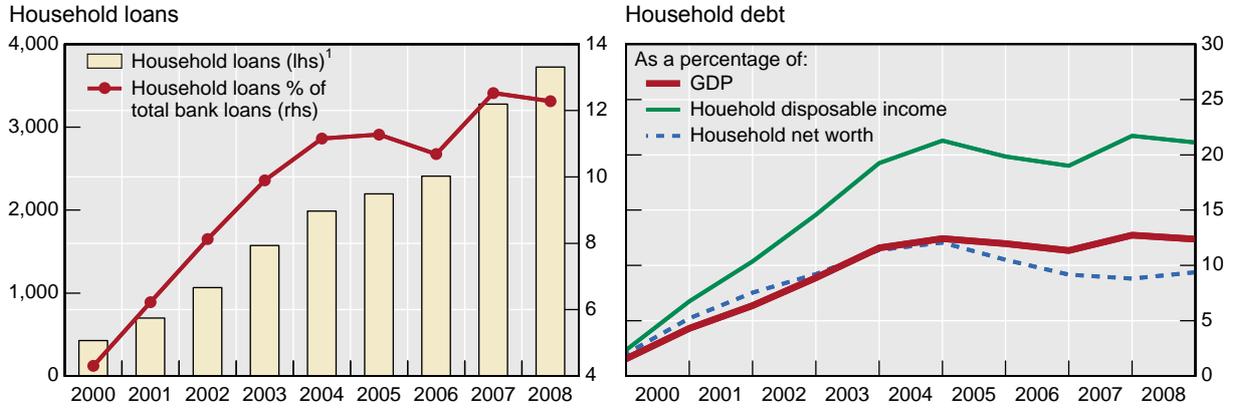


Sources: NBS; World Bank; authors' own estimates.

Graph 13

Household loans in China

In per cent



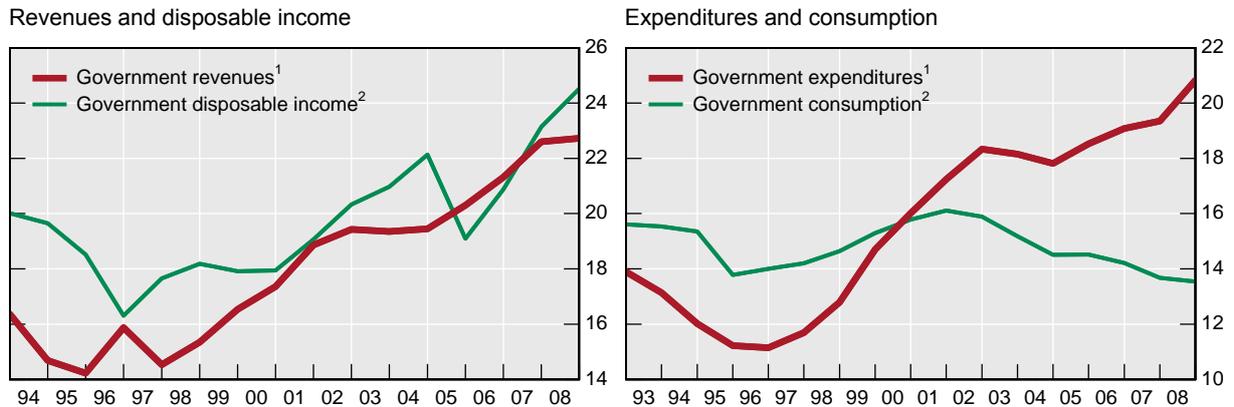
¹ In billions of renminbi.

Sources: NBS; PBC; Credit Suisse; authors' own estimates.

Graph 14

Government revenue/income and expenditure/consumption in China

As a percentage of GDP



¹ Based on the fiscal and budgetary statistics, including both budgetary and extra-budgetary revenues and expenditure. ² Based on the flow-of-fund statistics.

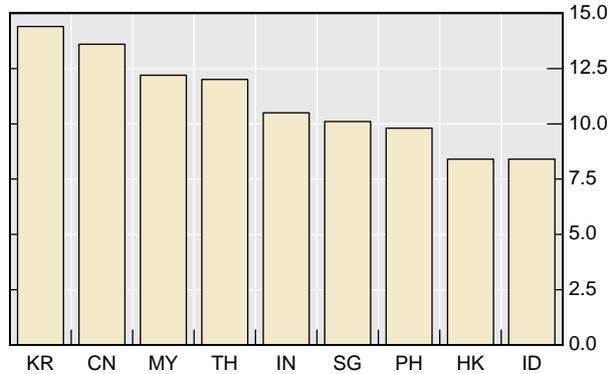
Sources: NBS; authors' own estimates.

Graph 15

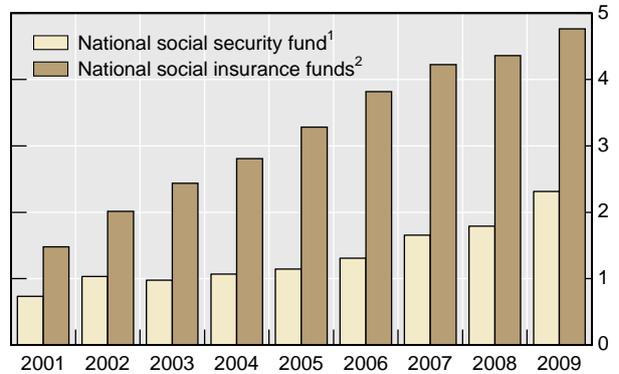
Government consumption and social welfare funds

As a percentage of GDP

Government consumption in Asia (average 2005–07)



Balances of welfare funds in China



¹ It covers only the net assets directly managed by the central government. ² They are balances pooled and managed at both the national and provincial levels in China.

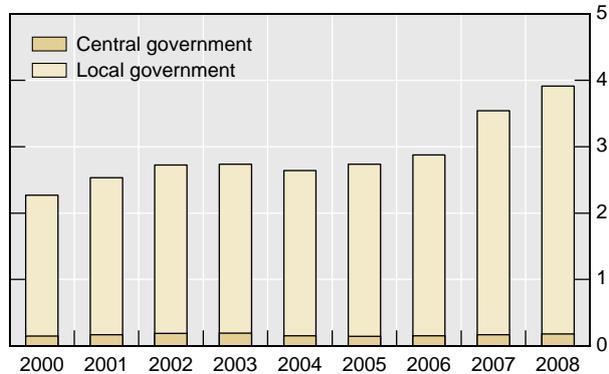
Sources: IMF; NBS; the National Social Welfare fund of China.

Graph 16

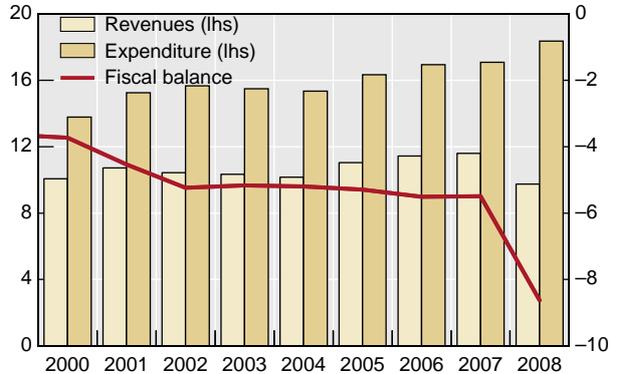
Social expenditures, central and local governments

As a percentage of GDP

Education and healthcare expenditures



Local government finance



Sources: NBS; authors' estimates.