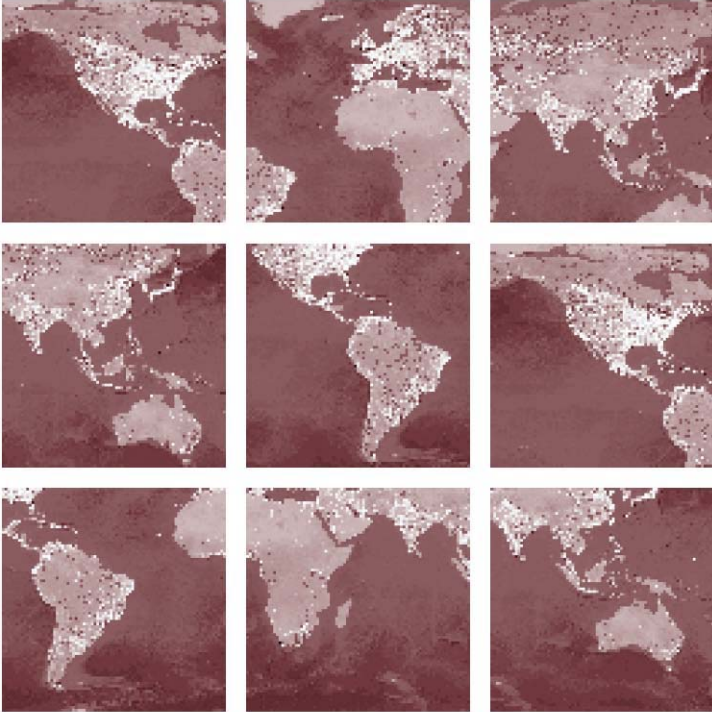


CHAPTER FOUR

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**CHINA'S INVESTMENT STRENGTH IS SUSTAINABLE**

October 2006





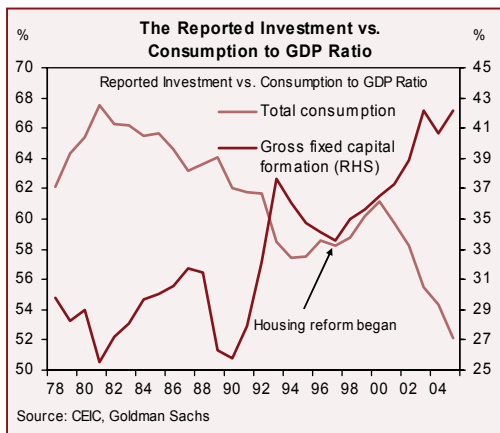
## CHINA'S INVESTMENT STRENGTH IS SUSTAINABLE

One of the most widely-held misconceptions about China is that the economy contains an over-investment time-bomb, which will soon result in a sharp correction in both investment and GDP growth, resulting in rising non-performing loans (NPLs) and in deflation. The reasoning behind this theory is that fixed asset investment (FAI) is growing at above 20% year on year, while the investment-to-GDP ratio is already above 45% (higher than the levels reached by Asian economies before the 1997 crisis). Furthermore, this investment boom is financed by misallocated bank credits and generates few returns.

Although this is a popular view, we believe it is wrong for two reasons. First, the conclusion is based on macro data that is deeply flawed, leading to a substantial overstatement of the investment-to-GDP ratio. Second, a high investment-to-GDP ratio is consistent with China's rapid growth. The fact that the return on capital is high and generally has been climbing over the past decade supports our thesis that China's investment strength is sustainable.

We think the 'over-investment' issue reflects data quality problems rather than a true underlying problem. The reported investment-to-GDP ratio looks alarming, but it is significantly overstated due to an over-estimation of investment, under-estimation of consumption and under-estimation of GDP. Data on corporate earnings suggests a very different picture of the health of investment, showing that retained earnings are a key source of investment financing and that the return on investment is not only high but has been rising since the start of the decade. This suggests that China can invest more before its investment returns start to decline. We attribute improved corporate profitability and rising profit share in national income primarily to the successful state-owned enterprise restructuring in 1997-1999, and the accelerated integration of China's abundant labour into the global economy.

There have undoubtedly been inefficiencies in resource allocation caused by inefficient state-owned enterprises (SOEs) and the banking sector. In our view, however, such inefficiencies appear to have been more than offset by efficiency gains at the corporate level and in the economy as a whole. Moreover, the prospect of accelerated reforms and the opening-up of the financial sector suggest that these efficiency gains could continue for a long time.



Policy prescriptions for China can differ fundamentally depending on the diagnosis for the economy. If the problem is indeed over-investment with a falling rate of return, then policy should aim to restrain investment growth while promoting consumption and export growth. However, if the real imbalance is insufficient domestic demand amid rising trade surpluses and robust corporate returns, then the right policy should involve a real appreciation of the currency to smooth the demand rotation away from exports. Other important domestic-demand-friendly policies would seek to alleviate the financial constraints on consumers and enterprises.

## China's Investment Strength Is Sustainable

We believe a successful rebalancing of the Chinese economy away from exports towards more domestic-demand-driven growth must involve a smooth transition of more investment into the domestic economy. Therefore, the key challenges facing China in the next few years are twofold. First, whether and when to allow further Renminbi (CNY) appreciation, in order to curtail domestic inflationary pressures and to help international demand adjust smoothly. Second, fixing the financial system to improve the allocation of credit.

Since these issues are at the heart of the China debate, this paper analyses our thinking on:

- Where the consensus analysis goes wrong;
- Where the data goes wrong; and
- What data we should be using to assess China's investment health.

### Two Simple Math Inquiries, One Conclusion

Much of the controversy over China's 'excessive' investment can be blamed on the poor quality of Chinese statistics. Two simple mathematical cross-checks on the investment and national account data cast serious doubts on their quality.

#### Incompatible GDP growth vs. investment growth

Mathematically, the degree to which investment growth contributes to GDP growth can be calculated by:

$$\text{Investment contribution to growth} = \frac{\text{Investment}}{\text{GDP}} \times \text{Investment growth rate} \quad (1)$$

If investment has grown at 20%-30%/yoy, and if the ratio of investment to GDP is around 45% (the officially reported share), then real GDP growth from investment alone would be 9-13.5 percentage points (20% x 45% = 9%, or 30% x 45% = 13.5%). That is, even without any growth in consumption and net exports, real GDP growth would have been 9%-13.5%.

Both consumption and net exports have recorded positive growth in the last few years, and reportedly contributed at least 5ppt-6ppt to real GDP growth. Adding together the contribution to growth from investment, consumption and net exports, real GDP must be growing in the mid-to-high teens. Alternatively, the reported investment-to-GDP ratio could be too high because real GDP growth has been estimated at only 10%!

#### Incompatible investment vs. saving rate

A nation's savings must equal its investment ex post. An accounting identity is expressed as follows:

$$\begin{aligned} \text{National saving} &= \text{Investment}_{\text{domestic}} + \text{Investment}_{\text{abroad}} \\ &= \text{Investment}_{\text{domestic}} + \text{Current account surplus} \end{aligned} \quad (2)$$

That is, total national savings equals total investment undertaken domestically plus capital

exported abroad. Dividing both sides of Equation (2) by nominal GDP, we arrive at the national savings rate, which equals the investment-to-GDP ratio plus the current account surplus as a percentage of GDP:

$$\text{National saving rate} = \frac{\text{Investment}}{\text{GDP}} + \frac{\text{Current account surplus}}{\text{GDP}} \quad (3)$$

The officially reported current account surplus at year-end 2005 was 7.1% of GDP. Adding a 45% investment-to-GDP ratio would imply that the national savings rate is above 50%. But most studies find the national savings rate to be at most about 40%. Arguably, international trade data are the most reliable macro data points for China, which casts serious doubts on the assertion that the domestic investment-to-GDP ratio exceeds 40%.

These two simple examples show that the macro data does not add up, and should be used with caution. However, given the importance of the underlying issue for our judgment on the cyclical strength and medium-term sustainability of China's growth, we need to explore two issues further: where the data bias exists and what other data can be used to assess the health of the investment cycle.

### Where Does the Data Go Wrong?

We have long held the view that headline FAI data overstates the true investment growth rates while consumption data understates the strength of consumer demand. The rapid growth of private housing demand in recent years is one of the major factors behind this data bias.

#### Investment data: too inflated and too noisy

Both the level and growth rates of real fixed asset investment are probably overstated, mainly because of two data quality issues:

- **Over-estimation of investment expansion due to under-estimation of land costs.** Because land purchases do not constitute incremental new capacity added to the capital stock, under-adjustment of this cost in investment spending leads to overstatement of capacity expansion. We believe booming real estate development and rising land prices in recent years have exacerbated this problem, and therefore led to an overstatement of both the level and growth rates in investment.
- **Over-estimation of real investment spending due to under-estimation of inflation.** All official investment series are in nominal terms, and we believe an under-estimation of the FAI deflator has resulted in a significant overstatement of real investment spending. For example, the official FAI inflation rate was less than 1% in the first half of 2006 despite surging commodity and land prices.

#### Consumption data: under-reported but over-smoothed

The flip-side of overstated investment is understated consumption. We think the official data series have understated the true strength of consumption and over-smoothed the volatility of the high-frequency data. Two factors contribute to these data problems:

- **The rapid shifts in consumer spending patterns.** One important contributing factor is the emergence of housing demand since the late 1990s. Private housing purchases are classified as investment spending, following the conventional international practice. However, housing spending started from a nil base in 1998-1999 and has since grown much more rapidly than GDP. Such a rapid structural change in household outlays has led to misperceptions of a declining consumption-to-GDP ratio and therefore weak consumer demand in recent years.
- **Inadequate statistical coverage of service consumption.** The under-estimation of consumption due to inadequate statistical coverage of service consumption is probably much more severe than the over-estimation of investment spending, resulting in an overall under-estimation of the GDP level and growth. The latest upward revision of the GDP level in 2004 by almost 17% exemplifies the point starkly. Most of the upward revision came from upward revisions of the service sector, which boosted the share of consumption in GDP.

### **How High Should the Investment-to-GDP Ratio Be?**

Beyond the clear data inadequacies, we would argue that the real investment-to-GDP ratio may need to be around 40% in order to support China's 9+% annual growth. The intuition is simple: with rapid growth, more investment is needed not only to produce more output but also to replace depreciated capital equipment.

This premise points to another often-forgotten dimension in the over-investment debate: the level of investment to GDP is intricately linked to an economy's stage of development. It tends to rise for countries during their period of fastest growth, as their total capital-stock-to-output and capital-stock-to-labour ratios trend up from relatively low levels. To some extent, a rising investment-to-GDP ratio itself could simply be a manifestation of the normal capital accumulation process.

### **China has a long way to go to accumulate more capital**

Despite 27 years of fast growth and a formidable economy in aggregate size, China remains a low-income country on a per capita basis, with many of the country's 1.3bn people under-employed in rural areas. Therefore, it is not surprising to find that China's capital-to-labour ratio is still a fraction of that in the US and Japan, while the capital-to-output ratio is in line with the US, but significantly below Japan.

Further capital deepening will be a crucial part of the development process. Our BRICs research projects that, by 2035, the size of the Chinese economy may be 17 times what it was in 2004 in nominal US Dollar terms (or six times in real CNY terms), and may surpass the US to become the world's largest economy. Assuming the capital-stock-to-output ratio stays constant until then, China would need to expand its total capital stock by 11 times in US Dollar terms. Moreover, if the capital-stock-to-GDP ratio needs to rise further in the medium term, the investment-to-GDP ratio would need to be even higher.

China still has a big deficit in urbanisation-related investment. Notwithstanding fast industrialisation, the degree of urbanisation is low, with nearly 60% of the population still living in rural areas. Industrialisation without urbanisation is a unique Chinese phenomenon, the legacy of decades of government policies that segregated urban and rural labour markets. Reforms since 1978 have gradually set the course for urbanisation, and its pace has accelerated in the last few years, alongside waves of powerful demand for FAI.

Looking forward, we believe that ‘pent-up’ demand for urbanisation will not only sustain investment demand for longer, but will also be one of the most important factors affecting the global economy in the next few decades, not least through its impact on industrial and soft commodities. This process will likely involve substantial investment in infrastructure and housing-related projects, such as electricity, water and waste treatment systems, as well as residential property. Most of the FAI in recent years has gone to the non-tradable sectors. This type of investment facilitates urbanisation and further increases in consumption as incomes rise. We see substantial scope for this to continue, despite some likely bumps along the road. Total domestic demand appears to be far from overheated, and can expand further without running into supply constraints.

Therefore, the key macro policy challenge has remained the same since early 2003: will China slow excessive growth in its trade surplus, preferably through a currency appreciation, so as to allow its own domestic demand to strengthen further without inflationary pressures?

### Investment Does Not Appear to Have Overshot the Rate of Return

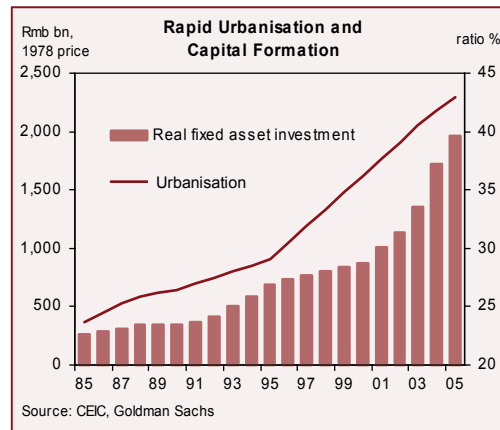
Data issues aside, theoretically, neither the speed of investment nor its ratio to GDP can tell investors much about the *sustainability* of investment. It is the efficiency of investment that ultimately holds the key to the sustainability question. We believe *actual* data on returns at the corporate level provides very useful information on whether China has invested too much inefficiently and without profit, particularly given the flaws in macro data.

Beyond financial data from Chinese companies listed overseas (including in Hong Kong, Singapore, New York and London), we also study in detail the industrial enterprise financial statistics compiled by the National Bureau of Statistics (NBS). This data covers about 200,000 listed and unlisted companies, and provides useful and reliable information on corporate

#### Further capital deepening ahead for China

(Capital stock in 2004, current price)	Capital Stock / GDP	Capital Stock per capita (USD)
US	2.9	152,367
Japan	4.4	158,161
China	2.6	3,842

Source: Nehru, Vikram and Shok Dhareshwar, 1993, A New Database on Physical Capital Stock; The World Bank, CEIC, Goldman Sachs



Source: CEIC, Goldman Sachs

More Investment Has Gone to Non-Tradeable Sectors

% of total fixed asset investment (FAI)	Manufacturing Mining		Real Estate	Infrastructure	Utilities	Services**	Construction	Primary Industry	Other***
	2004*	25.0%	3.7%	25.3%	19.9%	9.3%	5.5%	1.3%	1.1%
2005	27.1%	4.3%	24.0%	19.5%	9.6%	5.1%	1.1%	1.1%	8.2%
2006	28.2%	4.5%	23.7%	19.9%	8.8%	5.0%	1.1%	1.2%	7.7%

\* FAI by industry breakdown is only available since after 2004.  
 \*\* Services include telecom, wholesale & retail, banking & insurance, accommodation and catering.  
 \*\*\* Other includes scientific research, health care, public administration and entertainment.  
 Source: CEIC, Goldman Sachs

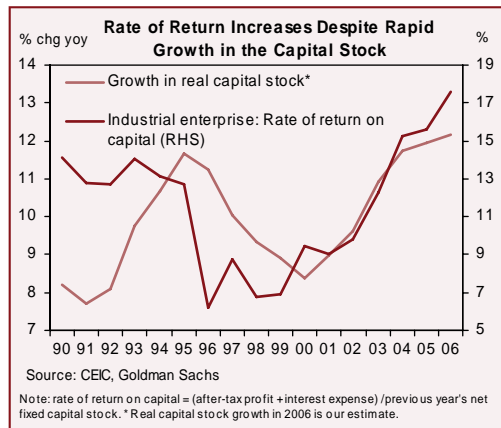
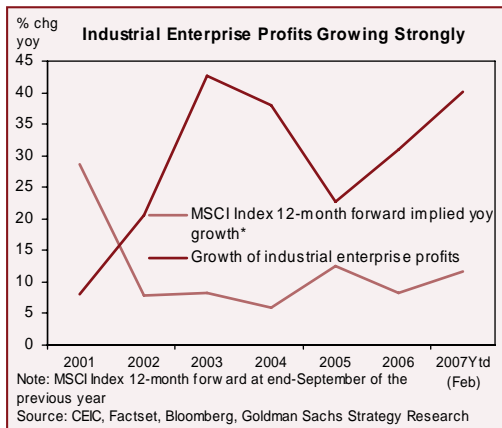
profitability. We believe the NBS-reported profit data is a good indicator of corporate profitability, even though some firms' results are not audited according to international accounting standards. Since companies pay taxes on their reported profits, the incentives to over-report should be limited.

Based on the NBS data and financial reports of overseas-listed companies, we find six stylised facts about recent corporate profitability.

**1. Corporate profit growth has consistently surprised on the upside.** Despite persistent warnings or predictions of a collapse in corporate earnings by many analysts in the last few years, corporate China has delivered quite decent profit growth. Since mid-2002, the beginning of the current cycle, annual profit growth has been in the 20%-40% range, exceeding market consensus by a significant margin.

**2. Return on capital is solid, on an uptrend and substantially exceeds the official lending rates.** Since this issue is crucial to our view, we will examine it from several angles.

■ **Rate of return vs. growth of capital stock based on macro data.** An investment boom will eventually turn into a bust if actual rates of return fall short of firms' over-optimistic assumptions. Thus, a divergent path between the actual rate of return on capital and the growth rate of capital stock tends to be a good indicator of over-exuberance. NBS data indicates that the rate of return on invested capital has risen steadily since the late 1990s, exceeding historical high levels and showing no signs of divergence from the speed of real capital accumulation. Interestingly, based on the same methodology and database, a significant divergence did show up during the 1993-1995 investment boom-bust episode.



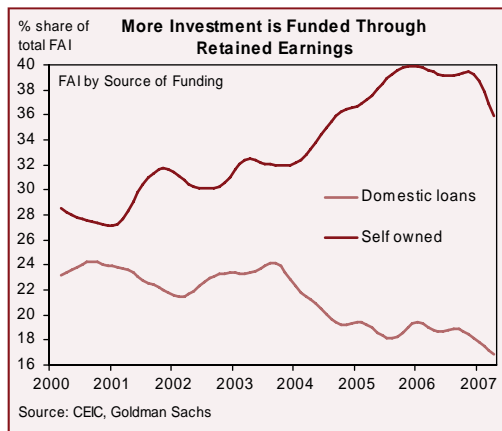
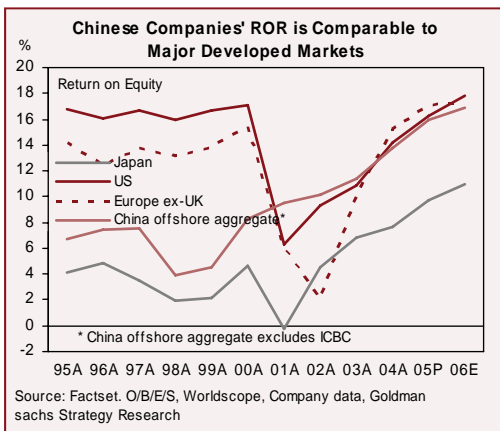


- Return on equity of listed companies.** The financial reports of overseas-listed Chinese companies (a total of about 300 companies in our sample) are audited according to international accounting standards. Here again, the popular perception that Chinese companies generally deliver mediocre shareholders' returns finds little support. Chinese corporates' return on equity (ROE) has been solid and has risen steadily in the last few years. And our China strategy team notes that aggregate market ROE for Chinese companies is comparable to other developed markets.
- Rate of return calculated by the OECD.** The OECD undertook a study on corporate profitability using detailed company financial data obtained from the NBS in 2005. It finds significant improvement in corporate profitability in recent years, which has primarily come through improvements in the allocation and use of capital. The improvement in return on capital from very low levels was most notable for state-controlled companies, although the returns at private companies are still higher.

**3. Corporate China is modestly levered and investment is funded mostly through retained earnings.** Bank financing only provides about 20%-25% of the funding source for China's FAI, and its share has been declining. The bulk of the investment spending has been funded through retained earnings. As a result, Chinese companies are able to gradually de-leverage and reduce their dependency on debt to finance their capital needs despite their rapid expansion.

The high credit-to-GDP ratio (114% as of June 2006) in China does not reflect high corporate leverage, because there is little corporate bond financing. For example, even though the credit-to-GDP ratio in the US is only 44%, the size of its corporate bond market is more than 100% of GDP, compared with about 4% in China. Therefore, the high credit-to-GDP ratio in China reflects more the limited development of non-bank financial markets rather than the high leverage of corporates.

**4. Share of capital returns in national income has been rising.** If profit growth continues to outpace the overall GDP growth, the share of national income that accrues to capital must be rising. This is indeed consistent with what the flow of funds data suggests. The share of capital income has been rising steadily since the late 1990s, while the share of labour income has been falling. This is in stark contrast to the early 1990s, when corporates had dismal earnings growth despite the macro boom.



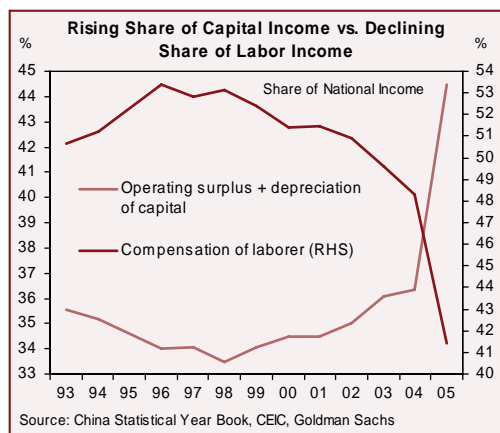
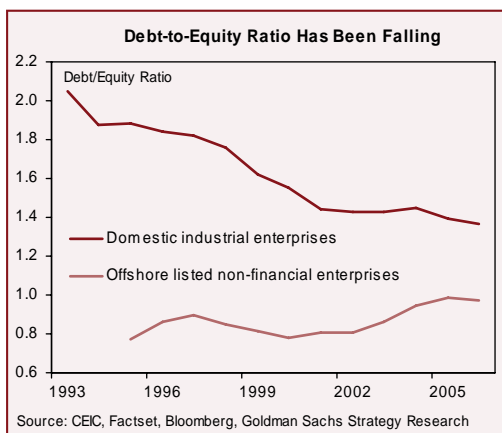
**5. Corporate China would have earned higher returns if commodity prices were lower.**

China is a net (and growing) importer of oil and most commodities. Therefore, high and rising commodity prices present a negative terms-of-trade shock, which should be damaging to its aggregate corporate profitability. In other words, strong earnings from oil and commodity producing companies in China must come from strong earning capabilities of domestic downstream industries. Hence, had commodity prices been lower because of better global supply, Chinese corporate earnings would have been higher.

**6. Profit margins are steady at improved levels, and the PPI-CPI inflation gap does not signal a profit squeeze.** Using the total-net-profit-to-sales ratio as a proxy, we find that average corporate profit margins began to rise in 2003 and have remained at cyclical high levels in the last few years, despite the significant cost increase in raw materials. The empirical correlation between corporate profitability vs. the PPI-CPI inflation gap is strongly positive, and this positive relationship also applies to downstream industries. If there is any empirical causality, the data seems to suggest it is the rise in PPI inflation that tends to indicate better profit growth.

**What does China's ICOR tell us?**

The incremental-capital-output ratio (ICOR) can also be used to measure investment efficiency. The ICOR estimates the marginal investment needed to generate an additional unit of output. A rising ICOR could indicate that investment is becoming less efficient, but the estimated ICOR also tends to rise as an economy becomes more capital intensive. Using the revised GDP data, we estimate China's current gross ICOR at 4.4 and net ICOR at 3.1. These are not high compared with other economies during similar stages of development. Contrary to many other countries' experiences, the underlying long-term trend of gross ICOR has declined from 5.0 to 4.4 since reforms started in 1978. Moreover, past experience of some more developed economies and other Asian economies suggests that it is only natural for China's ICOR to rise in the future as the economy undergoes further industrialisation.



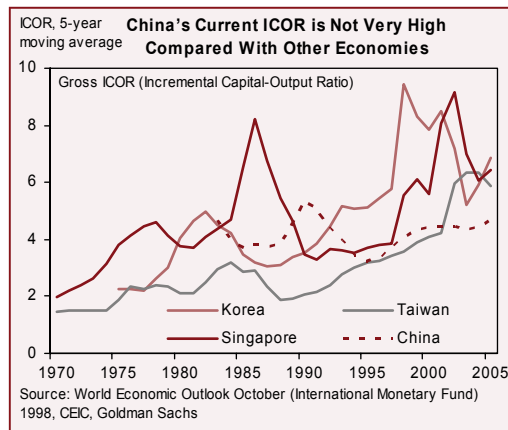
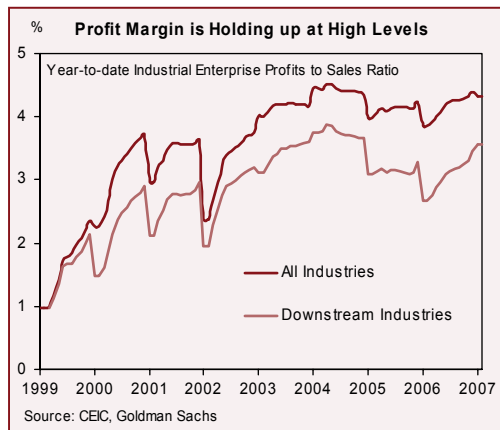
## Why Are Investment Returns So High?

In a classic development model by Lewis (1954), where there are numerous surplus labourers in the agricultural sector waiting to be absorbed into the industrial sector, the faster the capital accumulates, the more rapid the growth is, and the more the income distribution tips towards profits. This model still appears to be a reasonable approximation to China to date, since large migration of surplus rural labour to more productive sectors is far from complete. Therefore, theoretically, capital should enjoy a higher rate of return in China compared with economies with higher capital-to-labour ratios. Furthermore, the integration of Chinese labour into the global production chain has arguably been accelerated by China's entry into the World Trade Organisation (WTO) in late 2001, and has thereby contributed to a higher rate of return on capital and higher income distribution towards capital globally.

The significant improvements in reported corporate earnings in the past few years may well reflect two central strands of China's economic development. The first is the continuing oversupply of labour in the countryside. Although the country has already seen significant surplus rural labour migrate to more productive sectors, this process is far from complete. Theoretically, capital should enjoy a higher rate of return than in countries where the capital-to-labour ratio is higher.

The second strand is the significant productivity gains in the overall economy. We have found that total factor productivity (TFP) gains averaged 3.5% per annum during 1978-2004, and accounted for 38% of GDP growth, more than the contribution from capital accumulation.

We see these productivity gains as a form of 'reform dividend' stemming from policy efforts to transform China from a centrally-planned regime to a more market-driven system. Wide-ranging SOE restructuring in the late 1990s and WTO entry have fuelled another, ongoing, boom in efficiency gains. Critically, WTO membership has provided the government with the mandates to deregulate and open the remaining strongholds of state-owned industries, in particular in the service areas, where inefficiencies are most prevalent. SOEs' financial performance has improved markedly, thanks to the aggressive introduction of competition, tightened budget constraints and corporate restructuring. More importantly, the share of SOEs in total industrial output is now around 20% compared with above 80% in 1978. In the meantime, investments undertaken by private enterprises have grown faster than those by the



## China's Investment Strength Is Sustainable

### Productivity gains contributed the most to China's economic growth

Contribution to growth adjusted for census results (K0 =1411 Rmb bn, $\alpha=0.4$ )	Average Growth (1979-2005) (% chg yoy)	Contribution (percentage point)	Contribution (% share)
<b>GDP (% yoy)</b>	9.7		
<b>Capital Stock (<math>\alpha=0.4</math>)</b>	8.8	3.5	36.5
<b>Labour</b>	1.9	1.2	12.4
<b>Educational Attainment</b>	2.1	1.3	13.7
<b>Total Factor Productivity (TFP)</b>	3.5	3.6	37.3

\* Based on revised GDP data

SOEs, resulting in a declining SOE share in total investment. With TFP growing twice as fast as the state-controlled companies, the rise of private industrial enterprises has accompanied an extraordinary improvement in overall economic efficiency, and thereby corporate profitability.

### Why Has the Financial Sector's Performance Been So Poor?

In general, the performance of the financial sector should reflect the performance of the underlying real economy. Therefore, the poor performance of China's financial sector, both in terms of the large NPLs at the banking system and the disappointing performance of the domestic equity market, has often been cited as evidence of the unsustainability of China's growth model.

We attribute the discrepancy between strong economic growth and poor financial sector performance to the fact that the state-owned financial sector has mostly served the inefficient SOEs but provided little service—if any—to the most vibrant part of the economy: non-state-owned enterprises. Therefore, the performance of the financial sector does not reflect the performance of the overall real economy. A quick review of the domestic banking system and equity market underscore this point:

- **The banking system.** Despite the substantial growth of the non-state sector in the real economy, the banking system remains predominately state-owned. The high degree of state ownership of financial institutions has been accompanied by a disproportionate concentration of bank lending to the SOEs. Non-state enterprises receive a much lower share of credit allocation than warranted by their importance in the overall economy. The high level of accumulated NPLs (which are a clear manifestation of the inefficiency in credit allocation) has primarily resulted from the government's heavy intervention in lending in the past, along with weak internal risk management. In recent years, NPL ratios have fallen due to the faster growth of the better-performing non-state-owned companies, the improving performance of the surviving SOEs, and the introduction and rapid takeoff of home finance and consumer credit.
- **Domestic equity market.** Despite the poor performance of the onshore (A share) equity market, the equity performance of overseas-listed Chinese companies has more closely reflected the performance of the real economy. For example, the H-share market (consisting of Hong-Kong-listed mainland companies) has generated a total return of about 30% each year since 2002. The disconnect with the real economy is only striking when one looks at the performance of the domestic A-share market, which fell steadily from its peak in 2000 until early 2006. As with the banking sector, we see this divergence

from the performance of the real economy as a result of government control and a focus on SOEs, the worsening sector of the economy. Since 2006, the domestic equity market has staged a strong rebound, meaning that it may track the performance of the real economy more closely in the future.

### Private-sector funding points to high returns

With little access to the formal financial sector, private companies are funded by retained earnings generated by high returns, and by the informal financial markets. The People's Bank of China estimates that the informal financial sector was worth roughly \$100bn at the end of 2003. In the least developed provinces, 60%-70% of financing for small and medium-sized enterprises comes from informal sources, while the corresponding share is 30% in coastal areas.

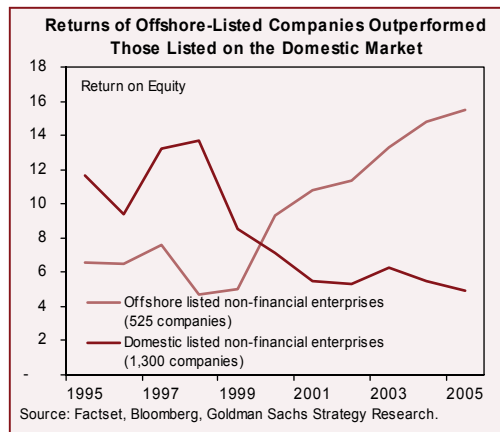
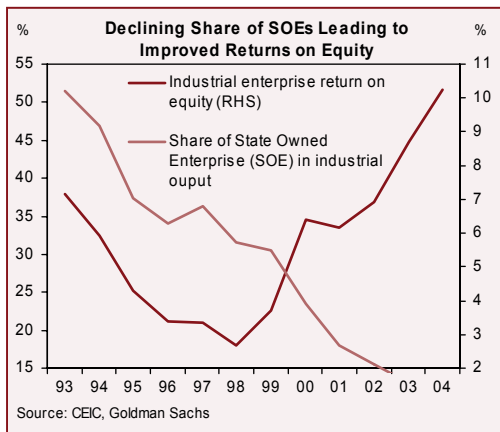
The interest rates charged by informal financial institutions are significantly above the lending rates charged by the state-owned banks. Yet private companies have flourished despite such high rates, indicating their return on investment must be much higher. According to the OECD (2005), about a quarter of private companies earned a rate of return of over 25% in 2003 and almost 30% of companies had no net debt.

A surge in private equity investment funds' interests in China in recent years is an indirect testimony of the strength of corporate earnings, in particular those of the private companies, as well as of the high returns from providing better financial services.

### Conclusions

Undoubtedly, better investment can be attained through better cyclical management and more forceful financial-sector reforms. We believe the main challenge facing China in the next two to three years will be whether it can switch its 6%-7% current account surplus towards domestic demand without creating either a cyclical boom-bust or medium-term risks to its financial system.

On the cyclical front, we believe nominal currency appreciation is the most efficient policy tool for curtailing domestic inflationary pressures in the process of investing more



## **China's Investment Strength Is Sustainable**

domestically and helping international demand adjust smoothly. The currency regime shift and the modest appreciation since July 2005 are unambiguously positive for the economy. However, bolder actions are needed before China can truly reduce its reliance on its external demand and develop monetary policy independence.

The challenges of financial-sector reform are more difficult and complex. There is clear room for further improvement in the allocation and use of capital. No doubt quite a few SOEs are still loss-making, some bank loans continue to go sour, and China's capital markets remain significantly underdeveloped.

Even here, however, recent developments have been mostly positive: financial-sector reforms have apparently accelerated, as has currency reform. In addition, the government seems to have realised the importance of domestic demand and the risks associated with a rising trade surplus.

As in many other policy areas in China, much more needs to be done. If China continues to reform, open up, deregulate and become more efficient in the next few years, as it has done in the past 27 years, it should deserve the benefit of the doubt and there is a fair chance that the rebalancing process can be managed reasonably well.

**Hong Liang**  
**October 3, 2006**