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John Knight and Wei Wang

China's Macroeconomic Imbalances: Causes and Consequences

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China's Macroeconomic Imbalances: Causes and Consequences

Abstract

In recent years China has experienced two forms of extreme macroeconomic imbalance: an expenditure imbalance in the sense of very high investment and very low consumption, giving rise to rapid capital accumulation; and an imbalance between expenditure and production, producing external imbalance, i.e. a huge surplus on the current account of the balance of payments. Both imbalances imply a low rate of time discount by both government and society: consumption in the present is forgone in favour of consumption in the future. The paper examines how these imbalances came about, and goes on to consider whether they can be sustained and how they might be redressed. There is no evidence that the rapid capital accumulation has reduced the rate of profit on capital and thus the incentive to invest. However, persistent external imbalance poses a threat to investment if it generates excess liquidity and asset bubbles. The current account surplus rose remarkably in the years 2004-7. This was associated with exogenous increases in competiveness and in saving, both attributable to the economic reform policies. On current policies, the surplus is likely to rise again once the world economy recovers from its recession. This poses three sorts of problems, each of which is examined in turn: difficulties for macroeconomic stabilization policies; risk of capital loss on the foreign exchange holdings; and the threat of retaliation by China's trading partners. A combination of internal and external policies will be required to redress the imbalance.

Keywords: China; investment; consumption; current account; exchange rate; external imbalance; macroeconomic imbalance.
JEL Classification: E21; E22; E61; F32; F41; F51.

John Knight and Wei Wang

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Tiivistelmä

Viime vuosina Kiinan talouteen on syntynyt kahdenlaisia vakavia makrotaloudellisia epätasapainoja; korkeasta investointiasteesta ja alhaisesta kulutusasteesta johtuva menojen epätasapaino, mikä on johtanut kiinteän pääoman nopeaan kasvuun sekä kulutuksen ja kotimaisen tuotannon epätasapaino, mikä taas on johtanut ulkoiseen epätasapainoon eli vaihtotaseen huomattavaan ylijäämään. Näiden molempien epätasapainojen syntyminen viittaa sekä valtion että koko yhteiskunnan preferoivan tulevaa kulutusta nykyhetken kulutuksen kustannuksella. Paperissa tarkastellaan näiden epätasapainojen syntymistä ja arvioidaan niiden kestävyyttä sekä mahdollisuuksia niiden supistamiseksi.

Pääomakannan nopea kasvu ei vaikuta laskeneen sijoitetun pääoman tuottoa eikä näin ollen laskeneen kannustimia investoida. Jatkuva ulkoinen epätasapaino voi kuitenkin uhata investointeja, mikäli se johtaa likviditeetin kasvuun ja varallisuuserien hintakupliin. Vaihtotaseen ylijäämä nousi merkittävästi vuosina 2004-2007, mikä liittyy maan kilpailukyvyn ja säästämisen kasvuun. Nykypolitiikan jatkuessa ylijäämä kasvanee uudelleen kun maailmantalous toipuu kriisistä. Tästä aiheutuu ongelmia makrotalouden vakaudelle ja ulkomaanvaluuttamääräisten varojen arvolle, minkä lisäksi riski Kiinan kauppakumppanien kauppapoliittisten toimenpiteiden käytölle kasvaa. Näiden epätasapainojen supistamiseen tarvitaan sekä sisä- että ulkopoliittisia toimenpiteitä.

Asiasanat: Kiina, investoinnit, kulutus, vaihtotase, valuuttakurssi, ulkoinen epätasapaino, makrotalouden epätasapaino
JEL: E21,E22, E61, F32, F41, F51

China's Macroeconomic Imbalances: Causes and Consequences

John Knight and Wei Wang[1]

1. INTRODUCTION

The Chinese economy is remarkable in at least two respects: its rate of growth and its macroeconomic imbalances. Over the last two decades the economy has grown on average by about 10 per cent per annum. It has also developed two forms of severe macroeconomic imbalance: an 'expenditure imbalance', by which we mean very high investment and very low consumption, giving rise to rapid capital accumulation; and an imbalance between expenditure and production, implying 'external imbalance', i.e. a huge surplus in the current account of the balance of payments. How did these two forms of imbalance come about? What are their consequences? Can the imbalances be sustained or will they unwind of their own accord? How might they be redressed through policy? These are among the most important issues facing the Chinese macro-economy.

In Section 2 we describe the nature of China's macroeconomic imbalances and their interrelationships. Section 3 explores in more detail how the current account

[1] JOHN KNIGHT (corresponding author) and WEI WANG , China Growth Centre, St Edmund Hall, University of Oxford, Oxford, OX1 4AR. Emails: john.knight@economics.ox.ac.uk; stellawang3@googlemail.com. We are grateful to the Oppenheimer Fund of the Department of International Development, University of Oxford, and to the Leverhulme Trust for financial support, and for comments from participants at the workshop on China's monetary and exchange rate policy, held in the Bank of Finland in May.

surplus arose. Section 4 provides a summary explanation of the external imbalance within a theoretical framework. In Section 5 we examine the disposal of the external surplus and the problems to which it gives rise. In Section 6 we discuss policies to deal with the imbalances. Section 7 considers whether the imbalances are sustainable, and Section 8 concludes.

2. CHINA'S MACROECONOMIC IMBALANCES

Consumption, investment and net exports are the three components of expenditure on the GDP. Table 1 provides data on these components for China and other important or comparable economies over the latest six years for which comparable data are available, 2004-9. In the other countries, consumption generally comprises two-thirds or more and investment one-third or less of GDP. By contrast, we see that in China consumption is close to 50 per cent and investment is over 40 per cent of GDP. China's net export ratio (almost 9 per cent of GDP) is exceeded only by

TABLE 1
The Components of GDP in Selected Economies, 2004-9, Percentage of GDP

	Consumption	*Investment*	*Net exports*	*Saving*
China	50.3	41.2	8.6	49.7
Brazil	80.5	16.9	2.6	19.5
Germany	76.7	18.1	5.2	23.3
India	68.6	31.5	-0.1	31.4
Japan	75.9	22.7	1.4	24.1
Korea	68.6	29.0	2.4	31.4
Russia	67.6	19.9	12.5	32.4
United Kingdom	86.2	16.6	-2.8	13.8
United States	86.6	18.3	-4.8	13.4

Source: World Bank, *World Development Indicators.*

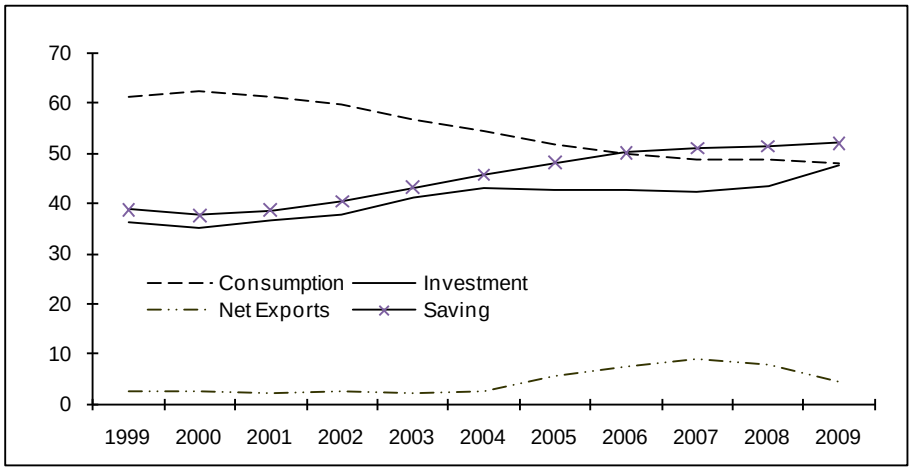
Note: The period percentages are calculated by averaging annual percentages. Saving is derived as GDP - consumption. Investment - saving is by definition equal to net exports but with opposite sign.

that of Russia. China is indeed an international outlier in the composition of its

expenditure: its consumption is lower and investment higher than in the other economies, and net exports are large and positive.

China's macroeconomic imbalances grew remarkably over the years 1999-2009, and particularly after 2004 (Figure 1). Consumption fell monotonically after 2000, from 62 per cent of GDP in that year to 48 per cent in 2009, a fall of 14 percentage points. There was a sharp rise in investment between 2002 and 2004, from 38 per cent to 43 per cent of GDP, and thereafter the share remained at a high level and reached a 30-year high of 48 per cent in 2009. The export surplus was stable from 1999 to 2004, at between 2 per cent and 3 per cent of GDP. As the share of consumption continued to fall, net exports rose sharply, from less than 3 per cent of GDP in 2004 to a peak of 9.9 per cent in 2007, and then declined on account of the global economic recession.

FIGURE 1
The Components of GDP in China, 1999-2009, Annual, Percentage of GDP



Source: NBS (2010).

Notes: Consumption is household consumption + government consumption, investment is gross fixed capital formation + change in inventories, and net exports are obtained as a residual. By definition, saving equals GDP - consumption; and investment - saving equals net exports but with opposite sign.

It is a national income accounting identity that $(X\text{-}M) + (I\text{-}S) + (G\text{-}R) = 0$ where X is exports, M is imports, I is investment, S is saving, G is government expenditure and

R is government revenue. As (G-R) = (I_g-S_g), the government balance can be subsumed into (I-S), Thus, the imbalance between investment and saving (I-S), i.e. net investment, is necessarily equal to the external balance (X-M), i.e. net exports, but with opposite sign. Equivalently, (S-I) = (X-M), i.e. net capital outflow equals the external balance. It is clear from the figure, therefore, that (I-S) was consistently negative throughout the period 1999-2009, and in size became an international outlier after 2004. Despite the high investment rate, the saving rate was even higher.

Any realistic macroeconomic model makes these balances a function of many variables, some of which are themselves endogenous: a complicated simultaneous equation model is required. It is sufficient for our purposes, however, to consider the likely causal effects of certain key variables on the external imbalance in the short run. To do this, we distinguish between national accounting identities and equilibrium conditions in which there are no involuntary changes in inventories. At a very simple level, and given a fixed exchange rate, an exogenous investment boom is likely to raise demand and thus a combination of output and prices. As saving is unlikely to increase as much as investment, the investment boom increases (I-S). The increased demand is likely to raise imports and so lower (X-M); output and prices adjust to ensure that in equilibrium the imbalance between expenditure and income arising from the decisions of economic agents is equal but opposite to the external imbalance also arising from their decisions. Consider the short run consequences of an exogenous export boom. This is liable to generate an increase in (X-M): although it also produces higher output and prices, the ensuing increase in imports is unlikely to

be as great as the initial increase in exports. The increase in output is likely to raise saving and so lower (*I*-*S*). Output and prices adjust so that in equilibrium the increase in net exports (*X*-*M*) desired by economic agents is equal to the desired decrease in net investment (*I*-*S*).

Applying this analysis to China, the rising value of (*X*-*M*) and falling (*I*-*S*) of the last decade would be consistent with rapid growth in both exports and saving. It appears that China's investment boom, with its capacity to raise the internal imbalance, was more than offset by its export boom and by saving growing even more rapidly than investment. We explore the reasons for this outcome below.

a. Investment

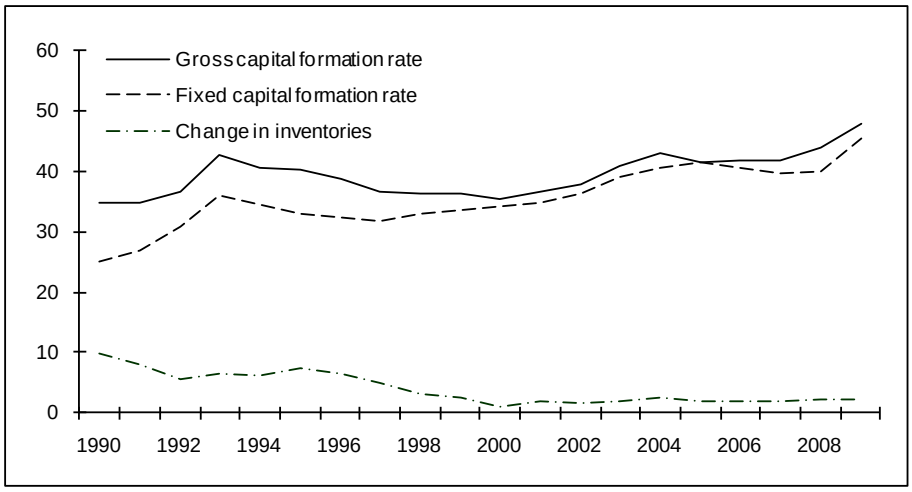
There is considerable evidence, based on differing methodologies, that gross fixed capital formation is an important proximate determinant of economic growth in China (Ding and Knight, 2009, 2011; Kuijs and Wang, 2005; Shane and Gale, 2004; etc.). For instance, Ding and Knight (2009, 2011) estimate cross-province and cross-country growth regressions by means of system-GMM analysis and reach this conclusion.

The impact of investment has two components. One is China's remarkably high ratio of investment to GDP, as shown in Figure 2 for the period since 1990. Gross fixed capital formation as a proportion of GDP rose above 30 per cent after 1991 and above 40 per cent after 2003. This investment ratio far exceeds that of the industrialized countries and exceeds even that of Japan (32 per cent in the period 1960-1985) and Korea (30 per cent in the period 1970-1995) during their growth

hay-days.

The other component is the high coefficient on investment in the cross-province growth equations. This is partly because of the embodiment of technological progress in capital goods and the complementarities of physical capital with human capital and with abundant unskilled labour (Ding and Knight, 2011) and partly because investment made possible various structural changes in the economy towards more productive activities and sectors (Ding and Knight, 2008).

FIGURE 2
China's Investment as Percentage of GDP, 1990-2009, Annual



Source: NBS (2010).

The predominant source of China's high investment ratio was the enterprise sector. Household investment rose slightly after 2002, possibly because of the emergence of urban residential investment, but was only 8.7 per cent of GDP in 2008. Government investment (excluding capital transfers to enterprises) was even lower, being under 5 per cent in 2008. By contrast, enterprise investment was consistently above 27 per cent of GDP after 1992 and was responsible for most of the annual fluctuation in the investment rate. The household and government investment rates are

roughly in line with those in other countries: it is the enterprise investment rate that is the international outlier (Kuijs, 2005).

The underlying reasons for China's high investment must in turn be examined (Knight and Ding, 2010). Research on profits in China shows that the rate of profit on capital has remained high despite the remarkable increase in the capital-labour ratio (Bai et al., 2006; Lu et al., 2008; Knight and Ding, 2010). Using corporate accounting data, Lu et al. (2008) examined various indicators of profitability. They all showed a trend fall in the profit rate up to 1998 and a subsequent rise, especially from 2002 onwards. For instance, the ratio of pre-tax profits to net fixed assets was 25 per cent in 1978, 3 per cent in 1998, and 16 per cent in 2006. The same pattern was found in both state-owned enterprises (SOEs) and private firms, although SOE profits were lower and more heterogeneous.

Movements in the profitability of SOEs can be explained by the growing competition facing the inefficient and increasingly unprofitable SOE sector, which then forced SOE reform, beginning in the late 1990s. The ensuing greater managerial autonomy and incentives, including permission to retrench surplus labour, retention of profits, and the scrapping or disposal of some loss-makers, raised the profitability of the SOE sector. In the early part of the period, SOE managers, facing soft budgets, and local government owners were more concerned with growth than with profits. In more recent years, as profitability became a more important concern, the high and rising profit rate helped to maintain high investment.

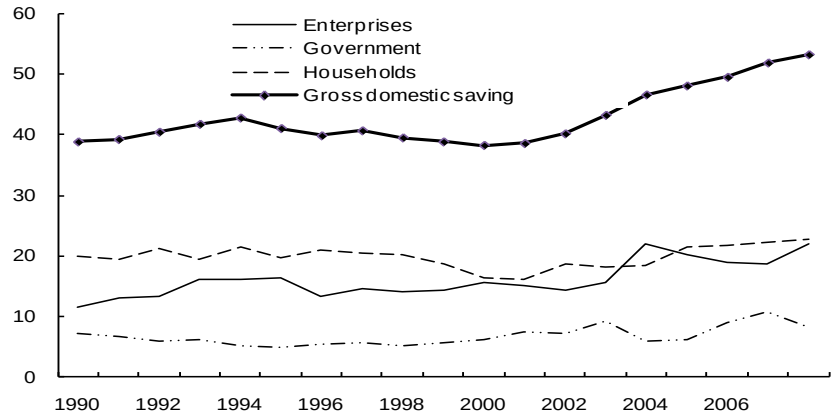
The underlying political economy is conducive to investment. The incentive and

patronage system facing government officials has rewarded economic growth, and their predictable behaviour has provided investment security. The 'development state' ensures that entrepreneurial expectations of rapid growth are created and, through subsequent economic growth, are maintained (Knight and Ding, 2010).

b. Saving

We see in Table 1 that China's saving rate is considerably higher than that in the other economies listed, and in Figure 1 that China's saving rate increased from an already high value of 39 per cent in 1999 to 53 per cent in 2009, a rise of no less than 14 percentage points. In the latter year saving actually exceeded consumption: a remarkable statistic for such a poor country.

FIGURE 3
Saving by Different Sectors as Percentage of GDP, 1990-2008, Annual



Source: 1992-2008: NBS (various years), flow-of-funds tables; 1990-1: Kuijs (2005).
Notes: GDP is the total value added in the corresponding flow-of-funds table.

How are the high saving rate and its rise in recent years to be explained? Consider the three components of saving: household, government, and enterprise saving. Figure 3 shows saving as a proportion of GDP in these three sectors over the years 1990-2008. The 1990s and 2000s are different: the three components of saving

individually remained fairly constant as a proportion of GDP until about 2000, soon after which each of them began to rise. Their combined saving rate increased by 15 percentage points between 2000 and 2008.

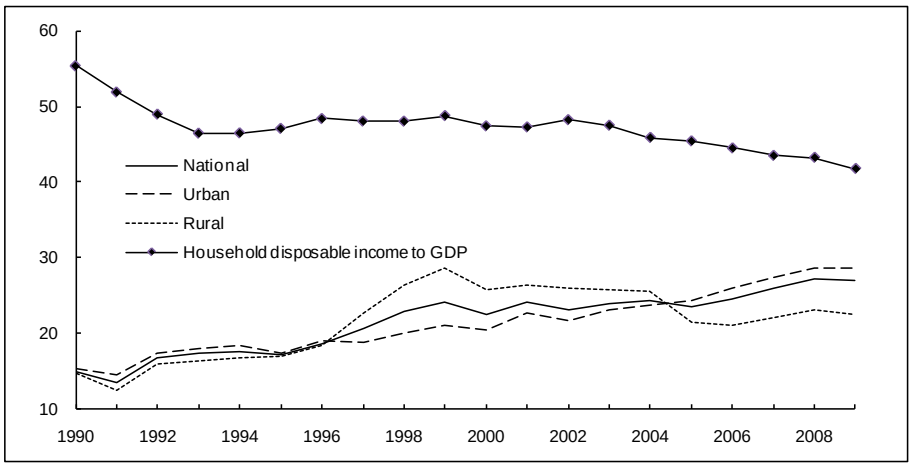
We examine each component in greater detail, starting with households. The household saving rate (by definition equal to *1 – the household consumption rate*) expressed as a proportion of household income over the period 1990-2008 is shown in Figure 4. The urban household saving rate trended upwards, from 15 per cent in 1990 to 29 per cent in 2009, a rise of 14 percentage points. The rise might reflect credit constraints and the greater incentive to save for business opportunities, house purchase, education, retirement and health care as the urban economy became marketized, the 'iron rice bowl' was removed and city life became less secure; also, rising income inequality among urban households. Similarly, the rural saving rate increased from 15 per cent to 23 per cent over the same period, an increase of 8 percentage points. All of this occurred in the 1990s: the rural saving rate actually fell slightly after 2000. The rise in the 1990s might reflect improving opportunities for various forms of investment and the monetisation of the rural economy. The combined urban and rural household saving rate had reached 27 per cent in 2009: a rate so high as to make Chinese households an international outlier - all the more remarkable in such a poor country.[2]

In explaining the high saving rate, different empirical researchers place emphasis on different variables. Modigliani and Cao (2004) attributed the rise in the early

[2] An alternative series of the household saving rate is derived from flow-of-funds tables (NBS, 1992-2010). These also show a rise in the national household saving rate, by 10 percentage points over the same period, but the rate is higher in each year. The reason for the discrepancy is not provided.

reform period to the high expected future growth of the economy raising target wealth and the fall in the dependency ratio resulting from the one-child family policy. Wei and Zhang (2009) found evidence to support the hypothesis that the rising boy-girl ratio increased marriage competition and so raised the household saving rate. Chamon and Prasad (2008) could explain much of the rise in the urban household saving rate in terms of increasing needs for younger households to invest in a house and education and for older households to insure against ill-health. Shi and Zhu (2004) incorporated uncertainty into the urban household consumption function for the period 1999-2003 and found that precautionary saving was important.

FIGURE 4
Household Saving Rates, and Household Income as a Percentage of GDP, 1990-2009, Annual

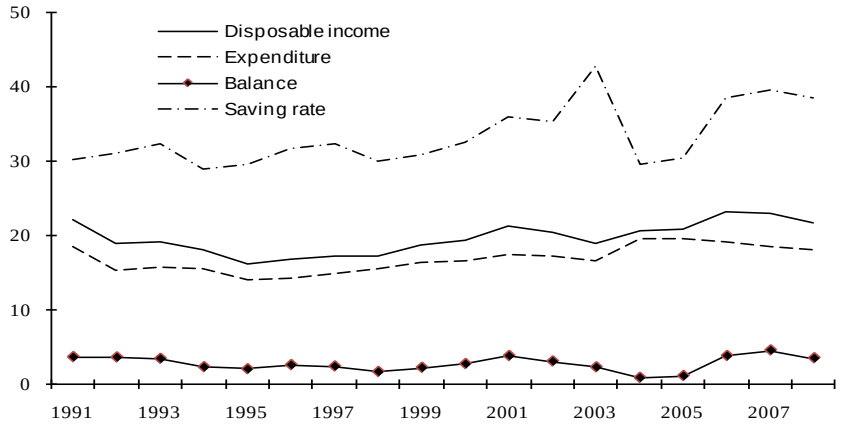


Source: NBS (various issues, 1991-2010), household survey tables.
Notes: Saving rate of urban households = (1 – per capita consumption expenditure) / per capita disposable income. Saving rate of rural households = (1 – per capita total consumption expenditure) / per capita net income.

Figure 4 also shows that household income as a proportion of GDP fell from 55 per cent in 1990 to 42 per cent in 2009. The 13 percentage point decline occurred

between 1990 and 1993 and again between 2003 and 2009.[3] This redistribution of income would raise the national saving rate if the propensity to save income of the non-household (enterprise plus government) sector exceeded that of the household sector, i.e. if s_{nh} (= S_{nh}/Y_{nh}) > s_h (= S_h/Y_h). This argument is used by Aziz and Cui (2007) and He and Cao (2007) to help explain the rise in China's saving rate.

FIGURE 5
Government Revenue (Disposable Income), Expenditure and Balance as Percentage of GDP, and Saving Rate (Per cent), 1990-2008, Annual



Source: 1992-2010: NBS, flow-of-funds tables; 1990-1: Kuijs (2005).
Notes: Government expenditure includes government consumption and government investment.

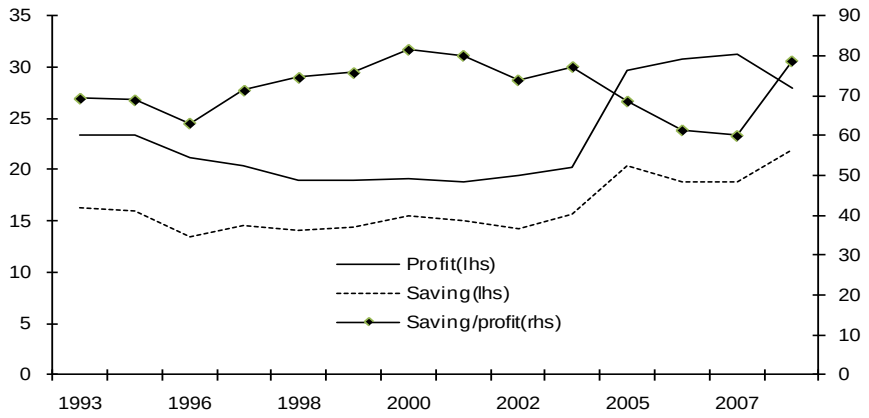
Consider government saving. Figure 5 presents government revenue (proxied by government disposable income), government expenditure and government balance (R-G) as a proportion of GDP, and government saving (S_g = R-C_g) as a proportion of government revenue, over the period 1990-2008. Government revenue consistently exceeded government non-investment expenditure, i.e. the government balance was positive; and indeed the balance rose after 2004. Government saving out of revenue exceeded 30 per cent throughout and was as high as 40 per cent in 2007.

Government saving over the reform period was generally high as a result of a

[3] The ratio based on flow–of-funds tables (NBS, various years) also shows a fall of 12 percentage points, but is higher in each year.

policy favouring government-financed investment over government consumption (Kuijs, 2005). The Chinese government was willing and able to take a long run view because it expected to remain in power for many years, it was not subject to democratic pressures for 'jam today rather than jam tomorrow', and the rapid growth of household incomes provided a shield against social discontent.

FIGURE 6
Enterprise Profit and Saving as Percentage of GDP, and Saving Rate as Percentage of Profit, 1993-2008, Annual



Source: NBS (1992-2010).

Notes: Enterprises profit is calculated using the income approach whereas saving is calculated using the expenditure approach. The GDP in profit/GDP is the value added using the by income approach and GDP in saving/GDP is taken from the expenditure approach.

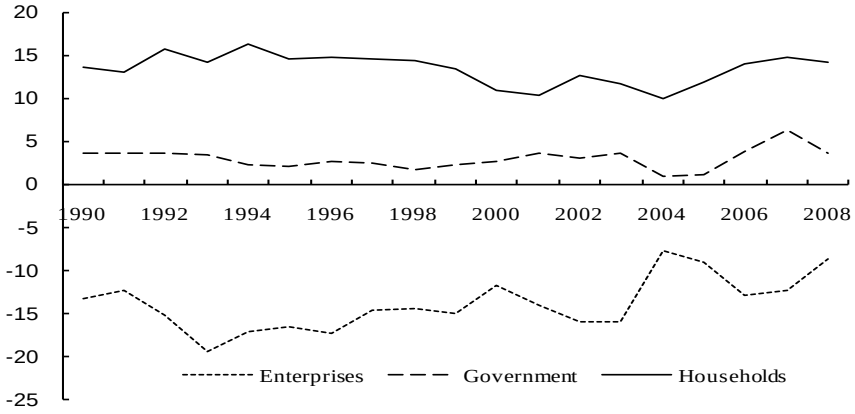
Of the three sources of saving, enterprise saving is the most remarkable for its high and rising level. This is seen in Figure 6 for the period 1993-2008. From 2001 to 2008 the share of profits, expressed as a proportion of GDP, was both high and rising. Enterprise saving as a proportion of GDP also rose, being lowest in 1996 and highest in 2008. The enterprise saving rate out of profits was consistently high, but varying between 60 and 80 per cent. There may be a macroeconomic explanation for the rising share of profits in GDP, i.e. it is possible that the rising investment rate may have pushed up prices in relation to wages until sufficient saving was generated (Knight

and Ding, 2010).

In the case of the non-state sector, the high enterprise saving out of profits is to be explained in terms of the imperfect credit market. The 'repressed financial system' channelled funds to the state sector and starved private firms of finance for investment so that they were heavily reliant on ploughing back profits for investment. In the case of SOEs, the facts that firm growth was an important managerial objective, that lenders' interest rates were fixed at low levels, and that for many years government did not require SOEs to pay dividends encouraged them to save and reinvest their profits; even in 2010 the proportion of profits paid in dividends was 10 per cent or less. In the 2000s, retained profits represented 60 per cent of investment funds in the case of SOEs but no less than 96 per cent in the case of private firms (Knight and Ding, 2010: 101). Guariglia et al. (2009) found for the period 2000-07 that private firms were constrained by their cash flows whereas SOEs were not.

c. Net saving rates

FIGURE 7
S-I as Percentage of GDP by Sector, 1990-2008, Annual



Source: 1992-2010: NBS (various years), flow-of-funds tables; 1990-1: Kuijs (2005).
Notes: GDP is the total value added in the corresponding flow-of-funds table.

Figure 7 reports the net saving rates (*S*-*I*) of households, government and enterprises. On a minor scale, government was consistently a net saver. On a major scale, households were consistently net lenders and enterprises consistently net borrowers. The 'repressed financial system' garnered savings from households, offering low depositor interest rates, and the state-owned banks made the funds available to the SOE sector, and more recently to the corporate sector - much of which remained state-controlled.

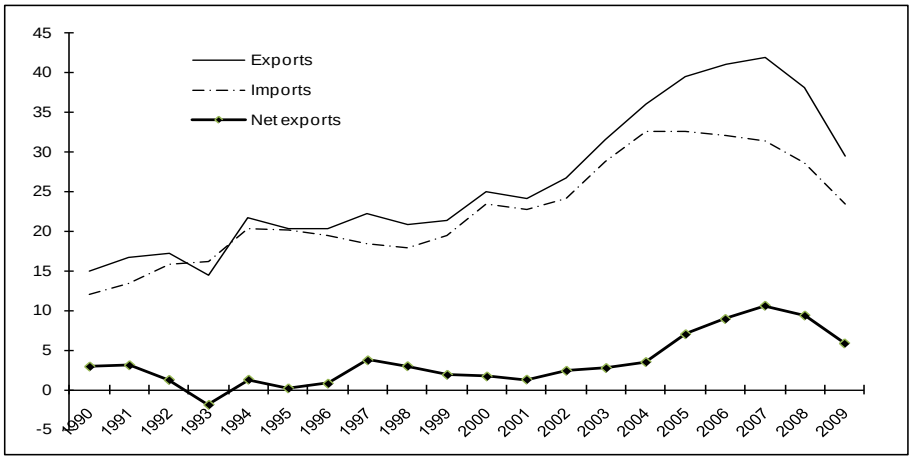
3. CHINA'S EXTERNAL IMBALANCE

Research on the relationship between exports and economic growth in China has produced encouraging results. Yao (2006) found that exports have a strong positive effect on the growth rate of output. Ding and Knight (2008), using system-GMM estimation to establish causal effects, found that both export share and import share raised the growth rate in China over the period 1978-2006; and that the growth in export share and in import share had the same sized effect. Both the level of trade and its expansion are good for economic growth. However, the effect of a rise in the export surplus on growth has not been examined.

It is China's external surplus, with its implication of external deficit for its trading partners as a group, that is of particular concern to the world. How did it arise? Figure 8 reports the annual data on exports, imports, and net exports as a proportion of GDP over the period 1990-2009. We see that both exports and imports rose steadily, and that after 2001 net exports, here defined as the current account surplus of the balance of payments, began to trend upwards. The trend became an explosion after 2003: it

rose from $46bn in 2003 to a high point of $372bn in 2007. In that year the current account surplus amounted to 10.6 per cent of GDP. By contrast, the current account of Japan during its period of rapid growth (1960-85) did not exceed 4.3 per cent of GDP, and that of Korea (1976-95) was negligible (-0.86 per cent). After 2007 net exports fell as a proportion of GDP, reaching 5.9 per cent in 2009. This was the result of the global economic recession reducing exports, on the one hand, and the resultant domestic reflationary policies of the Chinese authorities raising investment, on the other hand.

FIGURE 8
Exports, Imports, and Net Exports as Percent of GDP, 1990-2009



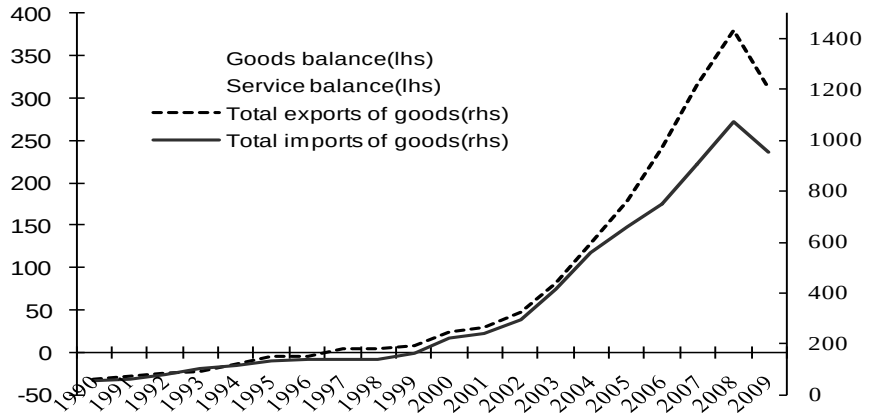
Source: NBS (various years), balance of payments tables.

The current account of the balance of payments is made up of trade in goods and services, income to and from abroad, and current transfers. The big increase in the current account surplus occurred between 2004 and 2008, rising from $67bn to $426bn (the surplus suffered a setback relative to GDP 2009 on account of the world economic recession). Some 85 per cent of the increase was contributed by trade in goods and services. In fact the trade in services was in slight surplus in 2004 and slight deficit in 2007. Why did the trade surplus in goods increase?

Figure 9 shows that exports and imports both grew rapidly in the period from 2001 to 2004 and that there was little change in the trade balance. However, the subsequent rapid growth of exports (29 per cent per annum between 2004 and 2007) exceeded that of imports (22 per cent per annum) and caused the balance of trade in goods to increase almost ten-fold, rising from $32bn to $315bn. Moreover, the growth in imports was partly due to the growth in exports because of the processing nature of much of China's exporting industries: only 50 per cent of export value represents domestic value added (Koopman et al., 2008). Why did exports of goods surge so remarkably after 2004?

FIGURE 9

Trade Surplus on Goods and Services (US$ billion), 1990-2009, Annual



Source: NBS (various years), balance of payments tables.

China joined the WTO at the end of 2001, so integrating the economy more closely with global markets. Tariffs had already been reduced in anticipation of WTO accession, and the subsequent effect in increasing imports was not large. The reduction in imports as a proportion of GDP after 2004 is to be explained by profitable import substitution.

The WTO agreement required that conditions imposed on foreign direct

investment in China be ended. Together with the assurance of 'most favoured nation' treatment and of China's inclusion in the 2005 termination of quotas on textiles and clothing exports, this improved the attractiveness of China's investment climate for export-oriented production (Rambaugh and Blancher, 2004; Athukorala, 2009). By 2008 'foreign-funded enterprises' accounted for no less than 55 per cent of China's exports. Probably the main effect of WTO entry on the current account came through the increased competitive impetus for domestic reform and thus faster productivity growth in the tradable goods sector.

The export surplus would not have grown so remarkably had China not enjoyed potential comparative advantage, and indeed absolute advantage, in the export industries. What was the basis of this advantage?

a. Labour cost

Manufactures accounted for more than 90 per cent of the growth of goods exports after 2001. Therefore, it is instructive to investigate the main types of manufactures. In the 1990s, conventional labour-intensive manufactures such as footwear, clothing, toys and sports goods accounted for almost half of manufacturing exports. Though labour-intensive exports continued to grow impressively (by 15 per cent per annum) in the decade after 1999, there was a structural shift in composition towards seemingly more sophisticated product lines, in particular machinery and transport equipment: their share of manufactured exports increased from 30 per cent to 49 per cent over the decade.

This suggests that technology and/or capital have played an increasingly

important role. However, Athukorala (2009) argues that China is merely the assembly centre for machinery and transport equipment, contributing the most labour-intensive operations of a production process spread over many countries: the share of components in total machinery imports increased from 33 per cent in 1992/3 to 63 per cent in 2004/5; by contrast, final goods continued to dominate China's export composition. It appears that China's main role in international specialization is to complete the labour-intensive final assembly stage. Sung (2007) finds that China's exports are dominated by low-value-added processing by foreign affiliates: exports involving processing with imported materials as a proportion of total exports rose to a peak of 44 per cent in 2004, and declined marginally thereafter. Since nearly half of China's manufactured exports are in the processing category, low labour cost remains important for China's trade competitiveness.

TABLE 2
Hourly Compensation Costs/Wages in Manufacturing (US$), 2002 and 2007

	China	*Brazil*	*Mexico*	*Philippines*	*Eastern Europe*	*India*	*Sri Lanka*	*Indonesia*	*Pakistan*
2002	0.6	2.6	2.5	0.7	3.6	0.5	0.5	0.9	1.5
2007	1.0	6.0	2.9	1.1	7.3	1.7*	0.6	1.8	-

Source: Department of Labor, United States (2009); China NBS (2008); and International Labour Organization (India, Indonesia and Pakistan).

Notes: For India, Indonesia and Pakistan, the compensation costs are wages and do not include the social welfare payments by employers and are therefore undervalued. The later Indian figure relates to 2006.

Table 2 reports the hourly compensation per worker in manufacturing for China, both absolutely and relative to its trading competitors and the United States in 2002 and 2007. The cost of a Chinese worker was only US$1.0 in 2007, about 3 percent of that of a U.S. worker. Even by comparison with its export competitors, China's labour

cost is still low, being 'bettered' only by Sri Lanka. This labour cost advantage comes from China's huge labour supply and abundance of rural-urban migrants.

b. Excess capacity

Despite the high and rising rate of return on capital in China's corporate sector, documented above, there is evidence to suggest that China developed excess capacity in certain industries in the early 2000s. The industries that have been singled out - shown in Table 3 - tend to be heavy industries dominated by SOEs. Table 3 shows that the capacity utilization rate of these industries was 75 per cent or below. Take the steel industry for example: in 2005 China's steel output was 350m tons but its excess capacity (120m tons) actually exceeded the output of the world's second-largest steel producer, Japan (113m tons); and 70m tons were 'in building'.

TABLE 3
Excess Capacity in Different Industries, 2005 (million tons)

	Output capacity	*Output*	*Excess capacity*	*In building*	*Capacity utilization (per cent)*
Steel	470	350	120	70	75
Aluminium	10.3	7.0	3.3	-	68
Ferroalloy	22.1	12.0	10.1	2.8	54
Calcium carbide	10.4	6.0	4.4	12.0	58
Containers	4.5	2.4	2.1	1.3	53

Source: 'China's overcapacity in thirteen industries', *China Economic Weekly Journal*, May 19, 2006 (in Chinese).

Note: Container output is measured in twenty-foot equivalent units.

Excess capacity in various industries had implications for China's surge in net exports after 2004. First, it provided China with enough capacity to satisfy the external demand. Without spare productive capacity, exports would not have been able to meet the international demand. According to Anderson (2007), the rising trade

surplus came largely from heavy industrial products (aluminium, machine tools, cement, key chemical products, and steel and steel products) - a list which corresponds well with the industries listed in Table 3. Second, the existence of spare capacity meant that additional production would drive firms down their short run average cost curves, thus enabling them to lower their prices and so increase relative demand. For instance, in 2006 when China's exports of steel surged and the international steel price kept rising, the domestic price was 10 per cent lower than in 2005[4]. Third, the increase in net exports was no less about import substitution as about exports. The underutilization of capacity in heavy industry enabled firms to switch from foreign sources of intermediate products for export production to cheaper and more reliable domestic sources.

c. The exchange rate

Irrespective of the exchange rate, we would expect China to have adapted further to its comparative advantage in trade after its preparation for and entry to the WTO reduced trade uncertainties and restrictions. However, the low and relatively stable value of the Renminbi (RMB) provided an additional impetus to exports. Makin (2007) argues that China's exchange rate management, by reducing exchange rate uncertainty for the export sector, encouraged exports. Goldstein and Lardy (2006) used the "underlying balance" approach to estimate the equilibrium exchange rate. The approach is to estimate the real effective (trade-weighted) exchange rate that would produce an equilibrium in which the 'underlying' current account is

[4] Price Inspecting Center, National Development and Reform Commission, 'Analysis of steel price of 2006 and forecast for 2007', February 16, 2007 (in Chinese).

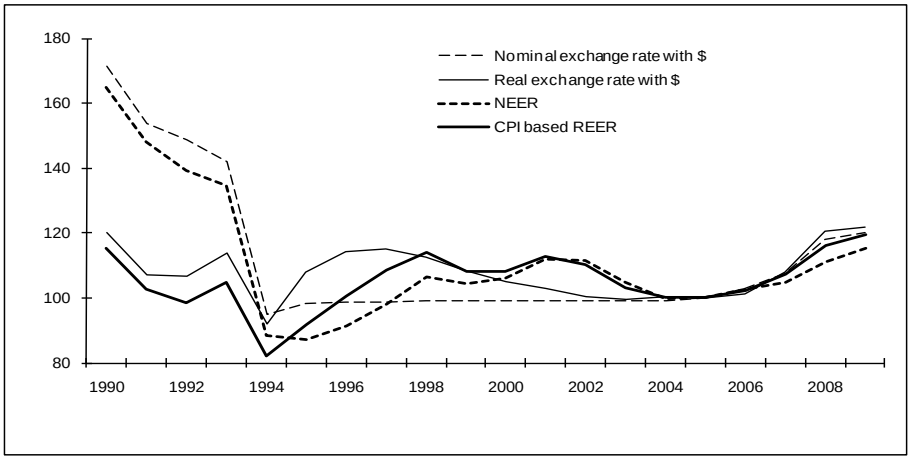
approximately equal, and opposite in sign, to 'normal' net capital flow. They took the average capital account surplus as a proportion of GDP in the period 1999-2002 (when there was no expectation of RMB appreciation) as the normal net capital flow and found that to return to that balance in 2005, the RMB should be appreciated by 20-40 per cent. Cline and Williamson (2008) provide a comprehensive survey of 18 studies that estimated China's equilibrium exchange rate in the 2000s. The studies varied considerably in data, methodology, and conclusions. However, the simple average of the estimates of the RMB appreciation that would be required to produce equilibrium in the real effective exchange rate was 19 per cent. The estimates implied that the RMB had become more undervalued over time: the studies based on the period 2000-4 required an average appreciation of 17 per cent, and those based on 2005-7 an average of 26 per cent.

The rapid growth of foreign exchange reserves in the 2000s (to be discussed in Section 5) indicates that the Chinese government intervened to maintain the undervaluation of the RMB. In 2005 the People's Bank of China (PBOC) carried out a reform of the exchange rate regime. However, this minor RMB appreciation did not alleviate expectations of further appreciation. To prevent the currency appreciating sharply, the PBOC had, on the one hand, to purchase a great amount of foreign currency and, on the other hand, to sterilize much of the reserve accumulation through open market operations and by increasing commercial bank reserve requirements. The PBOC began to require commercial banks to hold U.S. dollar reserves in 2005, and it increased the reserve requirement ratio (RRR) three times in 2006 and eight times in

2007. The continued strengthening of the current account balance implied that the RMB was becoming further undervalued. This was exacerbated by the response in capital markets. Not only did the one-way bet on the currency attract hot money inflows but also it inhibited private capital outflows.

Figure 10 shows the nominal and real exchange rate of the RMB with the dollar and a trade-weighted basket of currencies over the period 1990-2009, where 2005=100. A rise indicates that the RMB appreciated. Although the exchange rate with the dollar is politically more sensitive, it is the real trade-weighted exchange rate that is the best indicator of changing competitiveness. Between 2002 and 2007, the nominal (NEER) and real (REER) effective exchange rates both stayed relatively low.

Figure 10
RMB Exchange Rate Index (2005=100), 1990-2009



Source: NEER and CPI-based REER indices are from IMF, *International Financial Statistics*; nominal exchange rate and real exchange rate indices with US$ are estimated by the authors.

4. REVIEWING THE EXPORT SURPLUS

The explanation for China's rising external imbalance requires the identification of the exogenous changes in a simultaneous equation system. These can arise either in (*S*-*I*) or in (*X*-*M*). The (*S*-*I*) approach is the appropriate framework for

applying the 'saving glut' theory of Bernanke (2005). Bernanke argued that global imbalances had grown as a result of a rise in saving relative to investment in various countries, including China.

It is very likely that two sets of forces were at work to increase China's export surplus, in turn responding endogenously to each other. On the one hand, there was an exogenous increase in *S* relative to *I*, for the reasons that we have outlined in Section 2. On the other hand, there was an exogenous increase in *X* relative to *M*, again for the reasons set out above, in Section 3.

Following Corden's (2009) application to China of the familiar Swan diagram depicting the requirements for both external and internal balance, and assuming initial equilibrium, the export surplus can be interpreted as follows. The increase in export surplus was due partly to a rise in competitiveness - itself the result of economic reform and new export opportunities (both in part associated with WTO accession), together with a fairly fixed exchange rate. It was also due partly to a fall in expenditure relative to output - the rise in saving, linked to rising profitability (itself associated with economic reform). Without the rise in saving, pressure of domestic demand would have created both higher demand for tradable goods and domestic inflation, so reducing the export surplus both directly and indirectly through the resulting real appreciation of the nominally fixed currency. Thus, both (*X*-*M*) and (*S*-*I*) rose exogenously, in addition to their endogenous interaction; both contributed to the external imbalance.

5. THE EXTERNAL SURPLUS AND FOREIGN EXCHANGE RESERVES

We examine the disposal of the external surplus and the problems, actual and potential, to which it gives rise. We do so under four headings: exchange rate policy, excess liquidity and sterilization, the accumulation of foreign assets, and the effect on international trade relations. This analysis enables us then to pose the question: is the external imbalance sustainable?

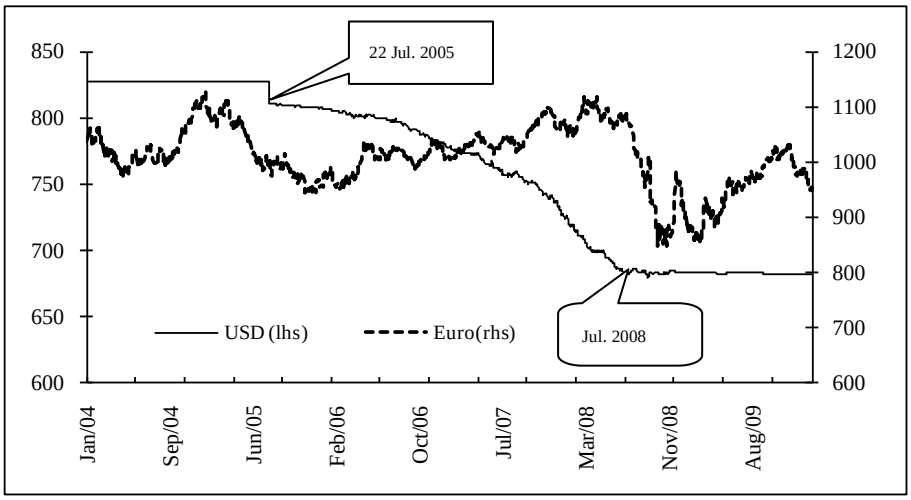
a. Exchange rate policy

In July 2005 the Chinese government appreciated the RMB by 2.1 per cent. The government announced that the external value of the currency would be set with reference to a basket of currencies rather than being pegged to the dollar, allowing a movement of up to +/- 0.3 per cent in bilateral exchange rates within any given day, and that it would be determined more on the basis of market supply and demand than in the past. It was natural for the markets to expect further appreciation. However, in order to maintain the growth of output and employment in the export sectors and to protect China's immature and fragile financial system, the PBOC intervened in the market to control the pace of appreciation. In theory the new regime would permit an upward trend of 6.6 per cent per month but at the start of each day's trading the exchange rate was set at the mid-point of its range. By September 2010 the RMB had appreciated at an annual average rate of 4 per cent against the dollar.

Nor did it appear that the rate was being set by reference to a basket of currencies. Frankel and Wei (2007) regressed changes in the value of the RMB against those of the dollar, euro, yen, and other currencies that should be in the basket, and found that the RMB was still largely linked to the dollar over the years 2005-7. We see in

Figure 11 that between July 2005 and July 2008 the RMB gradually appreciated against the dollar but, because the dollar depreciated sharply against other major currencies, the RMB depreciated against the euro. We also see that after July 2008 the RMB was pegged to the dollar while it fluctuated against the euro. Rather than preventing the growth of the export surplus, the new exchange rate policy brought several problems.

FIGURE 11
US$/RMB and €/RMB Exchange Rates, 2004-2010



Source: www.finance.yahoo.com

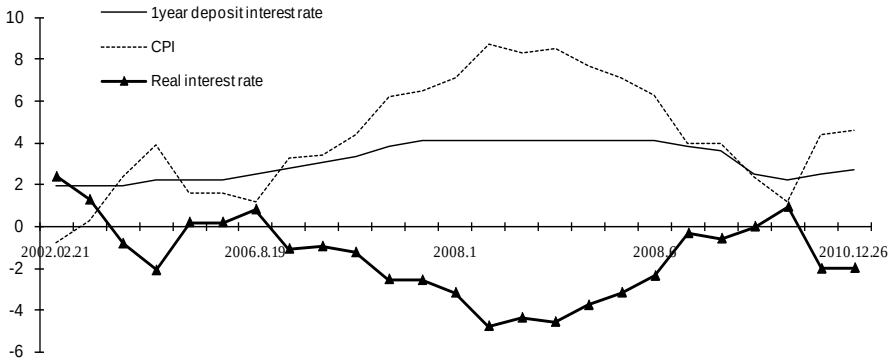
b. Excess liquidity and sterilization

While the RMB was expected to float upwards, the private sector was reluctant to accumulate dollar assets. Thus the PBOC had to purchase dollars if it wished to prevent large upward movement in the RMB. This rapid accumulation of foreign exchange was accompanied by the release of domestic currency, which caused a rapid increase in the domestic money supply. In 2007 the year-on-year growth rate of M1 reached 21 per cent, the highest rate since 1998. Wang (2010) concluded from his analysis of monthly data since 2000 that the increase in the foreign exchange reserves

had not been fully sterilized.

The sharp increase in liquidity generated serious asset bubbles. The real estate market boomed: between 2004 and 2009 average house prices (including new houses built in suburbs) in China's 35 main cities tripled. Take Beijing for example: the average price of newly-built flats rose from 4747 in 2004 to 13799 yuan/sq.m in 2009. Stock markets boomed astonishingly: the Shanghai comprehensive stock index started from 998 in July 2005 and reached 6212 in October 2007. Then the impact of excess liquidity shifted from financial assets to the real economy. The excess liquidity now came from the decrease in money demand owing to the rise in asset prices (Yu, 2008).

FIGURE 12
Nominal Interest Rate on One Year Deposits, CPI and Real Interest Rate (Per cent per annum)



Source: NBS (various years) and PBOC data.

From the start of 2006 the inflation rate accelerated despite price controls on petrol and electricity. As Figure 12 shows, the CPI peaked at 8.7 per cent in February 2008. The real interest rate (taken to be the nominal rate minus the current inflation rate) became negative in March 2007, although the central bank increased interest rates five times over the next thirteen months and decreased the interest tax rate from

20 per cent to 5 per cent. The negative real interest rate in turn stimulated investment and added to inflation.

In its attempt to maintain price stability and to prevent asset bubbles, the PBOC carried out a large-scale sterilization operation to mop up excess liquidity. This involved selling within three years all the government bonds that it had accumulated since 1998, and increasing the bank cash reserve requirement ratio eleven times in 2006-7. Commercial banks were also required to hold some U.S. dollars as deposit reserves. The central bank used directives to control commercial banks' release of credit.

The PBOC wished also to issue central bank bills. Since the large-scale issue of such bills would push up market interest rates, the danger was that this would attract capital inflows, so increasing the pressure for RMB appreciation. Because the PBOC had to keep interest rates down to a relatively low level, there was only a limited demand for the bills. The only solution was to force the commercial banks to buy bills.

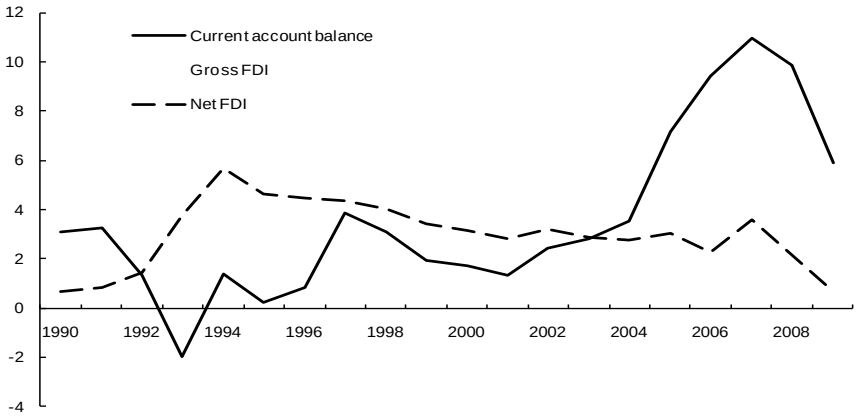
The large scale sterilization through involuntary purchases of central bank bills and the other credit control methods produced at least three serious deleterious consequences for the commercial banks (Yu, 2008). Their profitability was reduced by the fact that low-yield assets accounted for a high proportion of their total assets. The attempt to maintain profit margins led commercial banks to increase lending to riskier borrowers willing to pay higher interest rates. Moreover, the forced purchase of central bank bills compromised the process of financial reform.

Figure 12 shows that in the course of 2010 the inflation rate was rising and that our proxy for the real interest rate became negative. The PBOC had to raise the banks' reserve requirement ratio to 19 per cent, its highest-ever level. China's exchange rate policy continues to restrict the scope for monetary and stabilization policy.

c. Foreign assets

We see in Figure 13 that the current account, consistently positive over almost the entire period 1990-2009, increased sharply after 2004. Gross FDI inflows were also positive throughout, peaking in 1994 at 7 per cent of GDP after Deng Xiaoping's southern tour which gave the green light to FDI, and running at about 3.5 per cent of GDP in the period 2004-2008; net FDI was only very slightly lower. The current account and net FDI combined indicate the rate at which foreign financial assets were accumulating: at its peak in 2007 this represented no less than 14 per cent of GDP.

FIGURE 13
Different Surpluses as Percentage of GDP, 1990-2009, Annual



Source: NBS (various years), balance of payments tables.

China's foreign exchange reserves were mainly held in the form of dollar-denominated US government bonds, earning a low rate of interest. Assume that one-year bonds are the main asset in the portfolio. From July 2005 until December

2008 the average annual return on one-year bonds was 3.0 per cent, whereas the dollar depreciated against the RMB by an average annual rate of 6.1 per cent.

The huge increase in PBOC purchases after 2004 was sufficiently important to help keep US interest rates low. Indeed, some have argued that this contributed to the US housing bubble which precipitated the banking crisis that in turn created the world economic recession.

There is a great irony to an arrangement in which one of the poor countries of the world (China's GDP per capita PPP was $6,778 in 2009) lends to one of the rich countries (US GDP per capita PPP, $45,934). The arrangement required China to live within its means and permitted the United States to live beyond its means. It implied a low rate of time preference in China and a high rate in the US: China was postponing consumption and the US was bringing it forward.

Despite the security that US government bonds possess if held until maturity, China's reserve portfolio strategy was extremely risky. This took the form of foreign exchange risk. Consider a simple illustration. Foreign exchange reserves stood at $1800bn at the end of May 2008, equivalent to 42 per cent of GDP. Over the course of June the dollar depreciated by 1.08 per cent against the RMB. Assuming that 80 per cent of the reserves are held in dollars, the Chinese government lost $15.5bn, i.e. 107bn RMB or about 0.36 per cent of annual GDP in one month. Using monthly data for the 2000s, Leightner (2010) estimated the marginal effect on the exchange rate of a reduction in China's foreign reserves. The estimates implied that the US dollar would fall 0.44 per cent if China were to sell 1 per cent of its dollar holdings.

Although the effect will depend on whether central banks stabilize or speculate, this potentially sensitive relationship is likely to serve as a deterrent both to substantial sales and to further accumulation of dollar reserves.

Should the reserves have been invested in more profitable assets such as shares, property and structured instruments? With the proportion currently less than 1 per cent, China has scope to increase the share of its foreign assets held in the form of equities. Several developing countries hold more than 10 per cent. However, this needs sophisticated expertise and experience and China's initial failures (for instance, the Blackstone fiasco) made it hold back. Because of the risks, most developing countries - including India, Brazil and Russia – have kept the ratio below 2 per cent. Nor does the holding of equities reduce foreign exchange risk.

d. International trade relations

Although it is the current fashion for the currencies of the major economies to be allowed to float, it is only a modern practice even for the major economies and it is still not the rule for developing countries, nor necessarily is it in their interests. To accuse China of 'currency manipulation', as some have done, is merely rhetoric. The serious issues are whether China on balance benefits from its policy of RMB undervaluation and whether other countries lose from it. Although consumers in the advanced economies have benefited from the flood of relatively low-priced imports from China, it is possible that some of their countrymen have suffered through the loss of jobs in manufacturing and the structural problems of switching labour and resources into other activities. As China's export surplus has grown, so the major

countries - in particular the US and the EU - have begun to put pressure on China to change its policies.

Trade disputes have broken out. From July 2000 to June 2007, there were 375 anti-dumping investigations of China's export products, equivalent to 25 per cent of the total. A WTO secretariat report in May 2009 showed that products exported from China were increasingly picked out, and they accounted for almost half of all measures in the latter half of 2008. Since 2006 the U.S. and the EU have imposed anti-dumping and anti-subsidy import restrictions on China in more than 100 cases. It is understandable that most of these occurred in 2009 when the major economies were in serious recession and China's currency peg with the dollar had been restored. The measures were concentrated on China's exports of shoes, clothing, steel, tungsten, tyres and machinery. In 2010 there was further political pressure from the US for RMB appreciation, and many other countries extended the terms of their antidumping tariffs. As the world economy recovers and China's export surplus begins to grow again - as it is likely to do given current Chinese policies - political pressures and trade restrictions against China are likely to grow.

6. POLICIES TO CORRECT THE IMBALANCE

Just as the explanation for the export surplus is two-pronged, so also the policy to address the problem can be two-pronged. External and internal policies to achieve external balance cannot be neatly separated. Basically, if a high value of (X-M) is to be reduced, this implies that the equally high value of (S-I) is also reduced. However, policies to reduce X or to raise M might affect both S and I. There is also a policy

choice between attempting to lower *S* or to raise *I*. Policies to lower *S* or to raise *I* can impinge also on *X* and *M*. Although recognizing the importance of these interrelationships, we analyze first external policies and then internal policies for correcting imbalance.

a. External policies

In the past China had in place a number of trade policies intended to encourage exports. After WTO entry the government reversed or lessened these policies. All forms of export subsidy inconsistent with WTO rules, including grants and tax rebates kinked to export performance, were eliminated (Rumbaugh and Blancher, 2004: 8). It had also been the practice for the state-owned banks to provide loans at favourable interest rates to some export-oriented SOEs; the policy was cancelled in 2007.

Having reduced the weighted average tariff rate from 38 per cent in 1993 to 9 per cent in 2001 (Rumbaugh and Blancher, 2004, Table 8), the Chinese government appeared reluctant to go much further, basically because several of the import-substitute industries, such as vehicles, were not ready to meet competition from abroad. In 2007 it relaxed the import rights for some products including vegetable oil, alumina and stainless steel, reduced the import tariffs for some high-technology and advanced manufactured products, and increased the annual personal foreign exchange purchasing limit. However, since these changes were minor in size and scope, their effect on imports was very limited.

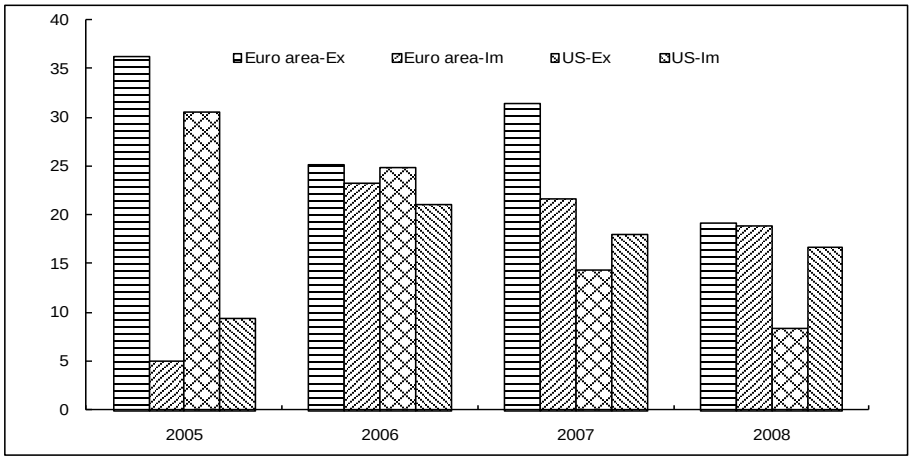
Net inward FDI to China later raises profit remittances from China and so decreases China's current account surplus, whereas net outward FDI increases the

surplus. The government became keener on outward FDI: enterprises were encouraged to invest abroad through merger or acquisition or by making strategic investments in natural resources - not only to raise the average return on overseas assets but also to acquire high technology, management expertise, and strategic reserves. Chinese direct investments abroad jumped from about US$16bn in 2006 to US$56bn in 2009. However, the policy of encouraging inward FDI was maintained, and expectations of RMB appreciation encouraged it. Under the 'qualified domestic institutional investor' (QDII) scheme, introduced in 2006, securities firms and mutual fund management companies are allowed to make overseas portfolio investments. The portfolio stock at the end of 2006 was merely US$229bn or 14 percent of China's foreign assets (Wang, 2007), and in 2008 US$252bn or 9 per cent of the total. The expectation of RMB appreciation, boom in the domestic asset markets, and the poor performance of the first group of QDIIs produced a damp squib.

The policies so far adopted to influence China's external surplus have failed to prevent its rapid growth. In 2008 and 2009 China's external surplus was reduced by the fall in demand that resulted from world recession. However, the external surplus was merely temporarily reduced, and it could be predicted to bounce back. Would more rapid appreciation of the RMB restore external balance? The appreciation of 2005-8 clearly failed to do so, partly because it was small. Some researchers have argued that appreciation would have rather limited effects on the current account. For example, Shu and Yip (2006), using data for the period 1995 Q1 to 2006 Q1, found that change in relative price has only a small effect on exports and trade balance,

which was attributed to China's role as a processor of intermediate products. However, China's processing trade has become less important, implying that the elasticities might be rising (Cui and Syed, 2007).

Figure 14
Growth rates of China's Foreign Trade with the US and Eurozone (Per cent, Annual)



Source: IMF direction of trade statistics.

A further pointer is the behaviour of exports to the US and to the EU in response to changes in the exchange rate between the dollar and the euro between start-2005 and end-2008. From July 2005 and June 2008 the RMB appreciated continuously against the dollar. By contrast, the RMB fell against the euro from January 2006 to March 2008 but rose otherwise. Figure 14 shows the growth rate of exports to and imports from the US and Eurozone: the growth of exports to the former fell continuously whereas that of imports did not; the growth of exports to the Eurozone increased when the RMB depreciated but otherwise decreased. This analysis, although simplistic, suggests that the trend rate of growth of exports is sensitive to the external value of the RMB: appreciation should help to reduce the external surplus.

Qiao (2007) argued that, as China owns huge stocks of US dollars, the negative wealth effect of appreciation against the dollar would reduce domestic expenditure

including the demand for imports. However, most foreign currencies are held by the PBOC and not private entities, so that the effect on imports depends on the response of government to a fall in its wealth.

McKinnon and Schnabl (2009) were concerned that RMB appreciation would not be effective because of the indirect effects of reducing the current surplus (*X*-*M*) on domestic *S* and *I*. In particular, they argued that investment would fall because appreciation would make China a more expensive production location, thus raising (*S*-*I*) *ceteris paribus* and so tending to offset the fall in (*X*-*M*). However, while it is true that FDI in particular may be footloose, FDI accounts for only a small part of gross capital formation: it averaged 8 per cent of total fixed capital formation over the years 2000-8. Moreover, another possible indirect effect is through the effect of appreciation on the distribution of factor income in China. Insofar as the appreciation redistributes income from enterprises in the tradable sector to households, this is likely to reduce the saving rate, thus reducing (*S*-*I*) *ceteris paribus* and so assisting external rebalancing. In any case, government has the power to raise government consumption expenditure or to encourage private consumption expenditure so as to counteract any rise in (*S*-*I*).

If exports grow rapidly as the world economy recovers, a large appreciation might be feasible without causing exports to fall. The PBOC faces a dilemma on exchange rate policy: a large sharp appreciation might allay expectations of further appreciation but cause a collapse of producers reliant on exports, whereas a small gradual appreciation might not threaten exporters but cause a speculative inflow of

capital, so either forcing further appreciation or risking loss of control over the money supply. The danger of too great and too swift an appreciation and the likely response lags suggest the need for gradualism. The danger of speculative short term capital flows based on expectations of further appreciation, with consequent overshooting, suggests the need for a sharp, single and substantial appreciation. Much depends on the adequacy of short term capital controls. It is true that China has maintained controls on capital mobility and in principle has the means to prevent inflows of short term funds. Using monthly data for the 2000s, Wang (2010) examined their effectiveness. It was found that capital controls were not fully effective, and became less so over the decade, as the economy opened up. For instance, current account convertibility provided opportunities for illegal capital flows.

Unless currency speculation can be curbed sufficiently, the least bad exchange rate policy might be a significant one-off appreciation followed by a pegging of the RMB to a trade-weighted basket of currencies. The appreciation should have an immediate effect in reducing the external surplus and probably reducing income inequality, and the peg should help to reduce trading risks. Their combination should diminish expectations of a one-way bet on the currency and speculative flows of funds. This would permit a more independent monetary policy and a more effective stabilization policy, not fettered by the need to sterilize the inflow of foreign exchange and to keep down interest rates. The choice of peg, however, requires the weighing up of risks to China's trade against risks to China's wealth: a peg to the US dollar would help to reduce foreign reserves risks.

The Chinese government has so far been reluctant to appreciate the RMB significantly, for two main reasons. One is a concern that China's rapid economic growth is dependent on the continued even more rapid export growth. There are worries that social stability would be threatened by an economic slowdown and job losses in the export sector, if they are not compensated by job gains in the import-substitution sector. However, the government has some leeway given the remarkable growth of exports since 2004 and its likely continuation once the world economy recovers. Moreover, government might prefer RMB appreciation to the trade restrictions that might be imposed by trading partners if the external surplus continues to grow. The second reason for resisting a currency appreciation is the fall in the domestic value of China's foreign exchange holdings. Some fall in national wealth is inevitable but it can be alleviated to some extent by gradual realignment of the portfolio away from dollars.

b. Domestic policies

The great monetary expansion of 2008 and 2009 was intended to protect the Chinese economy against the consequences of the world recession. It had the effect of stimulating investment, particularly that of state-owned and state-controlled enterprises. However, the sheer size and speed of the expansion - M1 rose by 32 per cent between December 2008 and December 2009 - made it likely that the proportion of non-performing bank loans would rise. The short run policies to deal with world recession did nothing to help rebalance the economy.

The main policy tool for raising private consumption is likely to be through the

public finances. Government can effect an internal rebalancing by increasing government consumption and so reducing its net saving. One reason for the high saving rate of rural and urban households, and the rising urban saving rate, has been their lack of security. Greater public provision and funding of social services, including health care, education, welfare, and pensions would have the effect of reducing not only government saving but also household saving. We saw in Figure 5 above that government has the potential to increase its current expenditure without reducing its capital expenditure. However, Lardy (2007) has proposed that government should reduce its investment and capital transfers in order to increase government consumption - preferring this to the usual method of stimulating consumption through tax-cuts because in China direct taxes on households are low and the scope for cuts is limited. Reform of public provision and funding of health care, education, welfare and pensions is necessarily a complicated and long-drawn-out process. It requires dealing with interest groups and careful experimentation and planning, but there is a good case for policy to move in that direction.

Rebalancing might also require financial sector reform. A more competitive financial market should relax the borrowing constraints on private firms, so encouraging them to redistribute more profit as dividends and to save less. Against this, however, a more competitive financial market - without interest rate caps - might also reduce the margin between deposit rates and lending rates and encourage households to save. Requiring SOEs to pay dividends should reduce their saving and probably also their investment. Similarly, the encouragement of free entry and

product market competition in the sectors where SOEs continue to enjoy protection should reduce profit markups and redistribute income from profits to wages. An appreciation of the RMB might have the same redistributive effect in the tradable sectors.

7. ARE THE IMBALANCES SUSTAINABLE?

We are now in a position to address the question: are China's macroeconomic imbalances sustainable? Consider the remarkably high investment rate. There is a danger that the rapid accumulation of capital will carry the seeds of its own destruction. Competitive economic theory predicts that the rate of return on capital will fall as the capital/labour ratio rises. Although there is evidence for China that there has been serious excess capacity in some industries, there is also evidence that the rate of profit on physical capital in industry as a whole has risen over the last decade. This rise might be due to the rapid growth of human capital along with physical capital, and to both the technological progress and the structural shifts towards more productive activities that the high investment rate and economic reform policies brought about. There is some danger that the great expansion of credit in 2008-10 will generate more excess capacity. However, when excess capacity emerged in the mid-2000s it appears that it was then absorbed by the rapid expansion of net exports; this might happen again. There is no persuasive evidence that maintaining the current investment rate at the expense of consumption will bring China's rapid economic growth to an end.

Is the export surplus sustainable? Although it fell as a proportion of GDP in

2008 and 2009 – down to 4 per cent on account of the world recession - the export surplus can be expected to rise again as the world economy emerges from recession. This is liable to give rise to three problems. First, the PBOC will have difficulty in curbing the rise in liquidity as it purchases foreign exchange from net exporters. Failure in this regard may contribute to asset bubbles, which in turn can endanger the financial system and investor confidence. The experience of Japan in the late 1980s is a spectre to avoid. Just as the ensuing financial crash did in Japan, so a financial crash might break China's current virtuous circle of high confidence, high investment, high growth, high confidence, etc.

Secondly, the current policies imply that China's foreign exchange reserves will continue to grow, and that the rate of return on the reserves will be low and might even prove to be negative in real terms. If as much as two-thirds of the reserves are held in the form of US government debt, Chinese policy will become increasingly boxed in. According to the US Treasury, at the end of June 2009 China held $1473bn U.S. securities, out of which $915bn was long term and short term treasuries, $454bn was government agency debt and the rest were corporate bonds; in the meanwhile China’s foreign exchange reserves were $2.13 trillion. The reserves are now large enough - reaching $ 2400 billion at the end of 2009 - to mean that any substantial sale of US dollars by PBOC would depreciate the dollar, especially if it created expectations of further sales. That would in turn reduce the value of China's remaining dollar-denominated reserves.

Thirdly, China's current account surplus implies an export deficit for its trading

partners as a group. For instance, in 2007, when China's current account surplus represented 11 per cent of GDP, its surplus with the US represented 22 per cent of the US current account deficit. If China's current account surplus is maintained, and particularly if it begins to grow, it is likely that the major trading partners will take more drastic action against imports from China, in the form of additional trade restrictions. If China does not itself take measures to correct its external imbalance, other countries may do so instead. Given the risks of trade retaliation and political repercussion, these ways may be more harmful to all parties, including China.

8. CONCLUSION

The Chinese government has so far failed to reduce the rocketing external surplus, to reduce the foreign exchange reserves from a level which is now difficult to justify, to ease the increasingly tense relationship with its trade partners, or to rebalance the pattern of economic growth. This failure might indicate a lack of concern for these objectives. It might instead represent a deliberate weighing up of the benefits and costs of the current policies against alternatives. However, it might simply reflect the sheer speed with which the economy moved into external imbalance in the period 2004-7 - which would inevitably involve lags in policy-making - and the subsequent policy priority that was given to the effects of the world recession in 2008-10.

Macroeconomic imbalance has two aspects. One is expenditure imbalance, i.e. the allocation between investment and consumption. The other is external imbalance, i.e. the relation between production and expenditure and thus between exports and imports. In both cases the underlying issue is the inter-temporal distribution of

consumption. More investment relative to consumption in the present raises consumption in the future. An external surplus involves an increase in foreign assets, so making resources available for consumption in the future. China's macroeconomic imbalances imply that the society and its government have a low rate of time preference. How can this be explained?

Since the start of economic reform, the Chinese government has given the highest priority to promoting economic growth. The leadership considered rapid growth to be the best strategy for maintaining Communist Party rule: China became a 'development state'. The rapid growth in real household incomes that the growth of GDP brought about meant that rising consumption matched expectations and kept down social and political discontent, even though the share of consumption in GDP was so low and falling.

The growth strategy was behind the government's decision to join the WTO and to embrace globalization. In conjunction with the undervalued currency, this was partly responsible for the rising export surplus. It improved China's export prospects and induced domestic reforms that forced up productivity growth (Section 3). The other contribution came from the sharp rise in domestic saving relative to investment, implying that expenditure fell relative to output. The economic reform policies were important in explaining the rise in business and household saving (Section 2).

The leadership chose to keep the value of the RMB down in order to encourage the growth of exports. It was correct in recognizing that the growing proportion of exports and imports to GDP raised the growth rate (Ding and Knight, 2008b). The rate

of appreciation against the US dollar that was permitted after 2004 was insufficient to prevent the export surplus from rocketing. Despite the understandable concern to prevent exports from being strangled by a rising RMB, faster appreciation could have been accommodated.

The dangers to China of maintaining the policies that have resulted in a huge external imbalance were set out in Sections 5 and 7. Such imbalance can create problems for monetary and stabilization policy: there is a risk that asset bubbles will form, with subsequent crashes and loss of investor confidence. The further accumulation of foreign exchange reserves means that Chinese policies will become increasingly boxed in. A resurgence of external imbalance as the world economy emerges from economic recession will threaten international trade retaliation. A case can be made for a combination of internal policies to reduce saving and external policies to appreciate the currency.

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