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Is the Chinese Investment- and Export-Led Growth Model Sustainable? Some Rising Concerns

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DEPARTMENT OF ECONOMICS

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ABSTRACT

China's rapid growth and success in poverty reduction over the last three decades has inspired world-wide admiration. This paper uses a simple framework with a Kaleckian flavor to analyze structural developments in the Chinese economy, and to understand some of the distributional consequences. Some of the possible sources of these distributional developments are then further analyzed using a trade-theoretic approach. Other aspects of China's investment- and export-led growth strategy are discussed along with the problems that the focused pursuit of such a strategy has raised. We conclude that China's growth model may now have outlived its utility, both on economic and socio-political grounds.

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ABSTRACT

China's rapid growth and success in poverty reduction over the last three decades has inspired world-wide admiration. This paper uses a simple framework with a Kaleckian flavor to analyze structural developments in the Chinese economy, and to understand some of the distributional consequences. Some of the possible sources of these distributional developments are then further analyzed using a trade-theoretic approach. Other aspects of China's investment- and export-led growth strategy are discussed along with the problems that the focused pursuit of such a strategy has raised. We conclude that China's growth model may now have outlived its utility, both on economic and socio-political grounds.

1.   Introduction and Background

The fact that over the last three decades China has grown at an average annual rate exceeding nine percent is widely known and admired. Moreover, growth has been accompanied by a sharp reduction in country-wide poverty numbers.[i] What is less frequently recognized, however, is that the trajectory of China's breakneck growth has created social, political and economic problems that, if not corrected soon, are likely to impede or even undermine the underpinnings of Chinese growth in the coming years. This paper discusses some of the constraints on Chinese growth that are beginning to assume ominous proportions. Our focus mainly is on growing (internal and

external) constraints and the role that the current investment- and export-led growth model plays in exacerbating them.

In the years following the Tiananmen Square events in 1989, the Chinese regime carried out an extensive review of its social and economic policies.[ii] One of the major changes that the regime sought to implement as part of a major round of reforms over the period 1992-97 was to attempt to quicken the pace of economic growth, capital accumulation, and employment creation. A major policy objective since then has been to rapidly create jobs for the millions of workers of potential migrants from the rural areas. Perhaps calculating that its internal market was not large enough to rely on, the Chinese government made well-coordinated efforts to attract export-oriented foreign direct investment (FDI). Figure 1 shows the dramatic increase in FDI in the early nineties. The figure also shows the evolution of the various components of demand as a proportion of GDP. Investment and exports have grown dramatically, displacing household consumption in the process. Government spending, on the other hand, has remained more or less stable. The contribution of investment to Chinese growth is obvious. However, the contribution of exports is less so, since total income or GDP is a function of *net* exports. Not surprisingly, especially given the vertically integrated nature of Chinese exports (see more on this below), Chinese imports have also grown rapidly since the beginning of economic reforms. A better measure of the *direct* contribution of exports -- a measure that ignores the *indirect* contribution of exports via investment) of exports – is, therefore, the trade balance. Figure 2 demonstrates that the contribution of net external spending has grown significantly in recent years, after a decline in the mid-nineties.[iii]

Export-oriented policies require shifting relative prices towards tradables, and within tradables towards exportables. In pursuit of the former objective, China's growth strategy has involved maintaining a ``low'' real and nominal exchange rate through keeping the renminbi loosely pegged to the US dollar.[iv] The second objective, that is shifting production towards exportables,

has also been pursued methodically. The government has subsidized and favored export-oriented investment, especially at the local level, partly through the incentives created by the system that guides promotion of local officials and the tax system, including the production-based value added tax (Kuijs and Wang, 2005). Beginning in 1992, the government reduced tariffs in a series of adjustments (see Branstetter and Lardy, 2006). This was followed by the merging of the official and trading market exchange rates under a regime of managed floating after a big one-step devaluation in 1994.

China's strategy is reminiscent in many ways of that pursued by the East Asian ``tigers'' during their long phases of accelerated growth. However, there are some important differences, both in the processes and outcomes. For example, South Korea and Taiwan were much less reliant on external sources of investment. Moreover, expansion of exports in these countries was much less contingent on the kinds of vertically integrated international production networks that China has relied on to create an industrialized export base. The restructuring of the expenditure composition of GDP was much less dramatic in these countries. As we seek to demonstrate, these features of the Chinese economy have contributed to entrenching patterns of ``uneven growth.'' Finally, China is much larger in an economic sense, which means that its current growth pattern could have potentially negative effects on the purchasing power of its citizens as well as those of competing developing countries in the coming years.

The remainder of this paper proceeds as follows. Section 2 develops a simple Kaleckian framework to analyze the role of savings in an investment- and export-led growth regime. Section 3 uses this framework to analyze a few key macroeconomic aspects of the Chinese growth pattern, focusing on how these combine with microeconomic, trade-related considerations to facilitate uneven growth in terms of income distribution. Sections 4 and 5 explain how policies associated with export-led growth can lead to misallocation of scarce resources. Section 6

extends the discussion to shed some light on ways in which China's growth trajectory has left it exposed to developments outside its borders. Section 7 concludes.
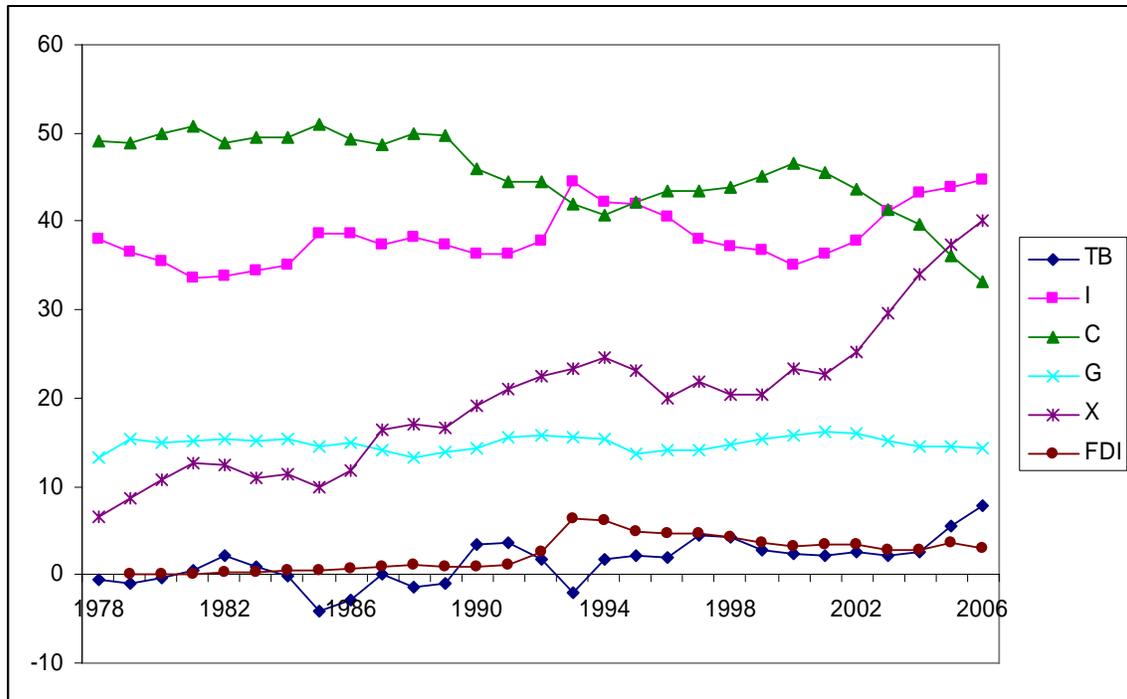

Figure 1: The evolution of expenditures and FDI. *C* denotes final consumption expenditure, *I* denotes gross capital formation, *G* denotes general government final consumption expenditure, *TB* denotes the external balance in goods and services, while *X* denotes exports. All variables expressed as percentages of GDP. Source: World Bank's *World Development Indicators*.

2.　A Key Element: The Decline in Consumption as a Proportion of GDP

The pursuit of investment and export-led growth based on high (domestic and imported) private savings often requires constraining the growth of domestic consumption expenditures. A frequently used identity illustrates this point. The expenditures approach defines gross national product (GNP) as:

$$Y \equiv C + I + G + TB + NFI \tag{1}$$

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where *Y, C, I, G, TB*, and *NFI* represent income, consumption, government spending, the trade balance, and net foreign factor income, respectively, all variables being expressed in *real* terms. Since the current account (CA) equals net exports of goods and services plus net foreign factor income,

$$Y \equiv C + I + G + CA \qquad (1A)$$

where $CA \equiv TB + NFI$. But (after-tax) disposable national income can either be saved or consumed. That is,

$$Y - T \equiv C + S \qquad (2)$$

The latter two identities taken together imply that:

$$CA = (T - G) + (S - I) \qquad (3)$$

Put in words, a trade surplus reflects an excess of national (public and private) savings over investment.[v] Intuitively, a country running a current account surplus must export savings to the rest of the world in order for the latter to pay for their CA deficit. Another way to re-arrange (1A) may provide further perspective:

$$Y \equiv E + CA \qquad (4)$$

where $E = C + I + G$ represents domestic absorption or expenditures. Or,

$$CA \equiv Y - E \qquad (4A)$$

In other words, a current account surplus reflects an excess of income over expenditures (the Chinese case in recent years). Conversely, a current account deficit reflects an excess of expenditures over income (the US case in recent decades).

In recent years, China has experienced savings and investment rates that are unprecedented even when compared against the standards set by the neighboring East Asian tigers (Taiwan, South Korea, Hong Kong, and Singapore). Interestingly, true as this is on the investment side, it is even

truer on the savings side, as reflected recently in growing current account surpluses. Figures 2 and 3 illustrate China's exceptionally high savings and investment rates. Figure 2 presents trends in gross fixed capital formation as a proportion of GDP for China and seven other countries or groups of countries (Hong Kong, India, Japan, Korea, Singapore, Low and Middle Income countries, and Middle Income countries). Japan is widely regarded as the first Asian ``tiger'' while Hong Kong, Korea (Republic of). Singapore and Taiwan are the four East Asian tigers.[vi] India is comparable in size and level of development to China, and has, like the latter, been growing rapidly over the last two decades. Low income countries are defined as countries with per capita gross national income (GNI) of less than $905, while middle income countries are defined as those with per capita GNI between $905 and $3,595. As seen in the figure, none of the other countries or country groups, with the exception of Singapore, has ever attained the levels experienced by China in the last few years. Figure 3 shows that the savings performance is, if anything, even more outstanding. Moreover, Chinese saving and investment rates began a steep upward incline in 2002 which continues to date.

Figure 4 illustrates the issue from a different angle. The trajectories of national investment and savings change and evolve over time, as does the path of output growth. It makes more sense, therefore, to compare different economies at comparable phases of their growth trajectories. We attempt to do this by identifying the fastest growing decades for the relevant countries in terms of per capita GDP growth. We then average the values of the variables of interest for the decade and plot them along with the average values of the same variables for China over the most recent decade. The fastest growing decades were identified as follows: Hong Kong, 1961-70; Japan, 1961-70; India, 1997-2006; Korea, 1982-1991, Singapore, 1965-1974.

Again, the figure clearly highlights the exceptionally skewed nature of the Chinese growth pattern in the most recent decade. Chinese household consumption has been a lower share of GDP then even the other East Asian tigers during their rapid growth and accumulation phases. For

example, Korea had an average consumption-to-GDP share during their most rapid growth phase that is 12 percentage points higher than the corresponding Chinese share over the recent decade. The closest comparison along this dimension is with Japan in its highest growth phase in the 1960s, but even in this case the difference is more than 9 percentage points. China also stands out in the investment share of GDP, with the closest comparison being with Japan (almost 37 percent for China versus almost 33 percent for Japan). Similarly, the Chinese savings rate has been exceptionally high, with the nearest competitor being Japan (with a 6 percentage point difference). Finally, these differences are also reflected in the trade balance in goods and services -- which has been positive and exceptionally high for China -- and in the relatively low Chinese national expenditure share of GDP. The latter statistic underlies the oft-repeated statement that China has kept its living standards lower than justified by its income level.

The question of what is causing the growing current account surpluses is related to the question of what facilitates a growth pattern consisting of exceptionally low consumption, high investment, and even higher savings. This is the question that we turn to next.
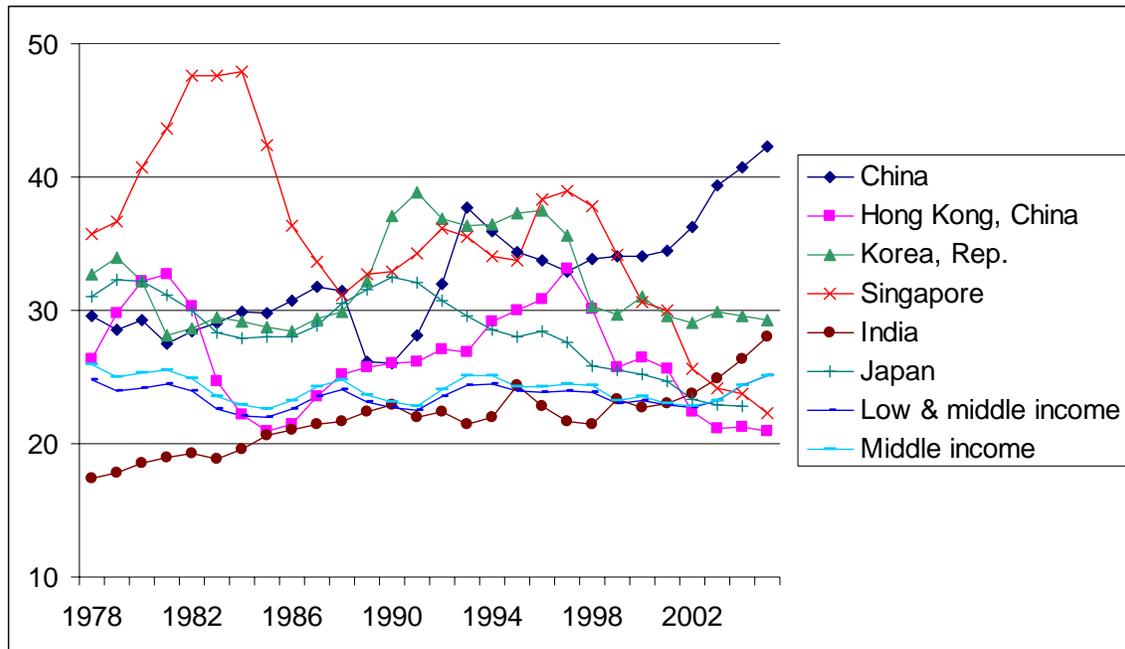

Figure 2: Gross fixed capital formation as a proportion of GDP (1978-2005).
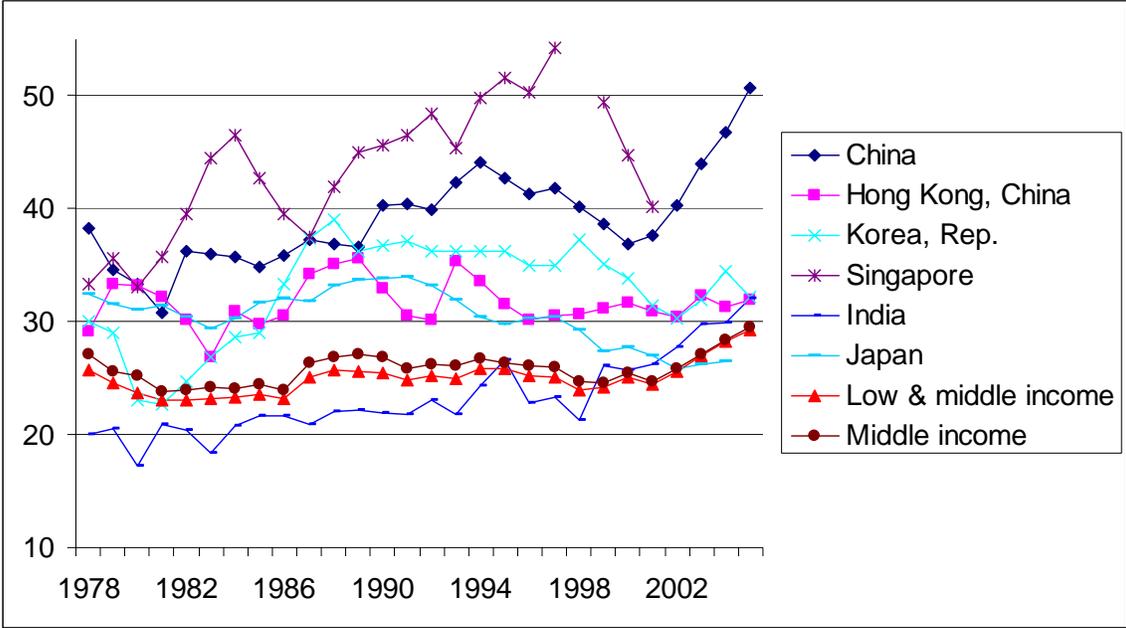
Figure 3: Gross savings as a proportion of GDP (1978-2005).
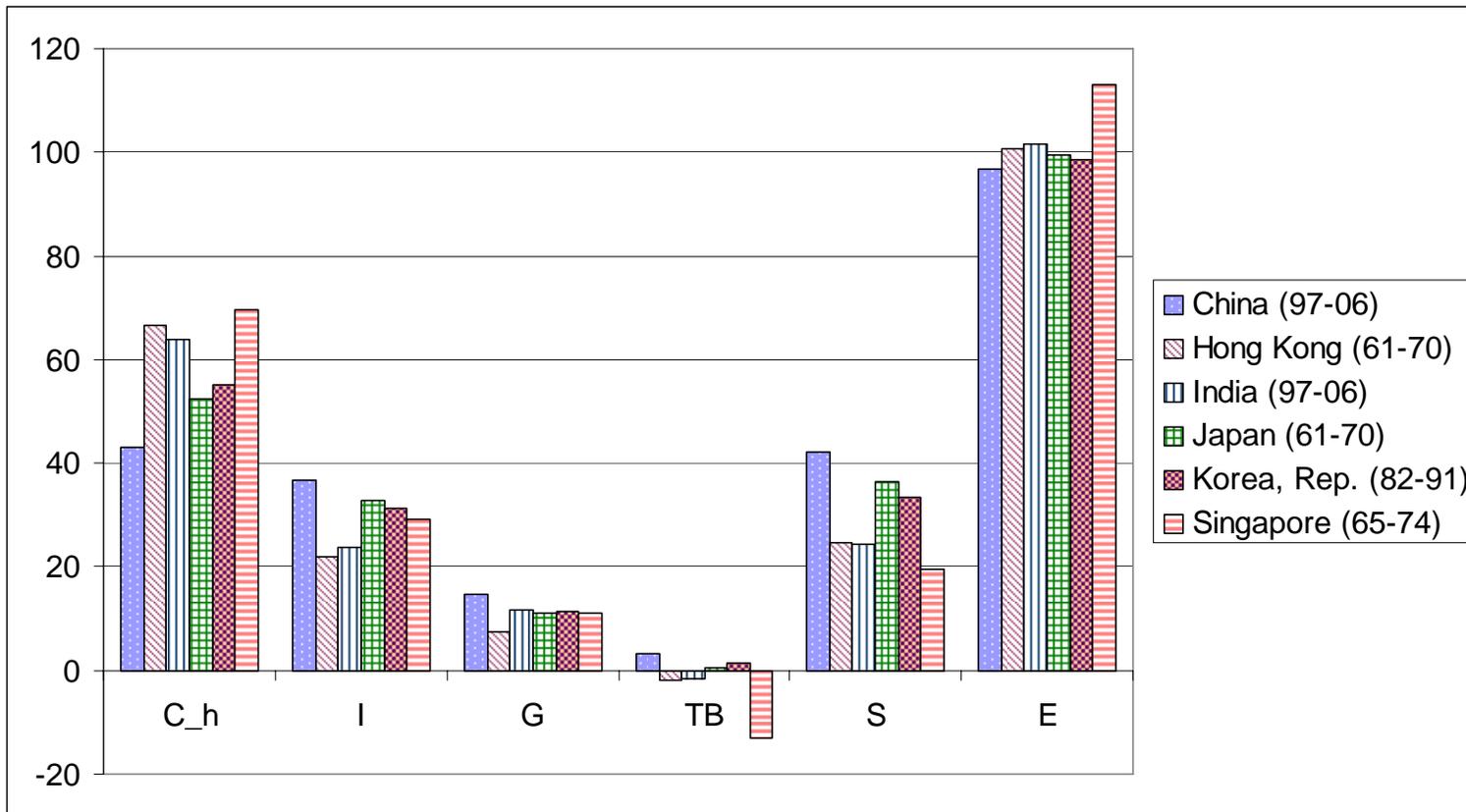
Figure 4: Averaged values of variables (expressed as percentages of GDP) over the fastest growing decade for each country. *C_h* denotes household final consumption expenditure, *I* denotes gross fixed capital formation, *G* denotes general government final consumption expenditure, *TB* denotes the external balance in goods and services, *S* denotes gross domestic savings, while *E* denotes gross national expenditure. Source: World Bank's *World Development Indicators*.

The high Chinese saving rate is frequently attributed to cultural factors, unique to East Asia in general and China in particular, that are reflected in the higher propensity of households in these countries to save. While this may undoubtedly be true to some extent, recent research has rendered this explanation increasingly questionable. Firstly, while the Chinese household saving rate is high, it is not radically different from that of other developing countries in Asia. For example, India has had a higher household saving rate in recent years (Kuijs, 2006). Secondly, Kuijs (2005a) finds that the factor separating China from other high saving developing countries is the high rate of savings by the government and enterprises.[vii] Since these enterprises are not legally obligated or expected to pay out part of their profits in the form of dividends, these are able to channel retained earnings into fixed investments at high rates. Moreover, Kuijs (2005a) and Aziz (2007) find that profit margins have expanded in recent years (perhaps partly reflecting China's move into sectors that produce more technologically sophisticated products), providing even more room for the high retained earnings - high investment nexus to come into play. Finally Kuijs reports that another major reason for high enterprise savings has been the high share of capital intensive industry in GDP.

This discussion can be linked to broader political economy considerations through Kaleckian channels. National income can be expressed in yet another way as follows:

$$Y \equiv W + R + T \tag{5}$$

where W and R denote total (after-tax) national wages and profits. Decomposing domestic consumption into workers' and capitalists' consumption, C_W and C_R, respectively, allows us to re-write equation 1(A) as:

$$Y \equiv C_W + C_R + I + G + CA \tag{6}$$

Or,

$$CA = (W - C_W) + (R - C_R) - I + (T - G) \tag{6A}$$

Kalecki assumed that workers do not save.[viii] Further assuming, for simplicity, a balanced budget yields:

$$CA = s_R R - I \tag{7}$$

where s_R denotes the rate of savings out of profit income. It may be more convenient to express this relationship in terms of GNP. Dividing both sides by Y, defining the share of profit as π, and using lower case letters to indicate that the current account and investment variables are being expressed as proportions of GNP yields:[ix]

$$ca = s_R \pi - i \tag{8}$$

Equation (8) tells us that the higher the share of profits in national income, the higher the magnitude of national savings and the higher the rate of investment that can be sustained while maintaining a balanced current account. Alternatively, the higher the share of profits in national income, the higher the national savings and the higher the current account surplus that can be sustained at a given proportion of investment.

One of the widely recognized facts about recent Chinese economic history is the shift of income from wages to profits, as reflected in the national income shares of each group. According to World Bank (2007), for example, the share of wages in GDP declined from 53 percent in 1998 to 41.4 percent in 2005. The lower wages have corresponded with a declining trend in the consumption share of GDP (see Figure 5). In light of equation (8), this feature of the Chinese growth model has enabled China to rely on external demand and investment to generate high growth rates while maintaining low consumption and current account surpluses. Noting that Chinese investment in recent years has been driven mainly by manufactures, real estate, and infrastructure, Barnett and Brooks (2006) find that manufacturing investment is significantly correlated with retained earnings. They also find that the capital-output ratio has increased, and

the marginal product of capital has declined since around 1993. This pattern of increasing capital-output ratios raises important concerns about the sustainability of recent growth patterns. For example, based on their estimate that it would require the investment-to-GDP ratio reaching unprecedented high levels of 55 percent on average in 2014-24 in order to maintain an annual GDP growth of 8 percent, Kuijs and Wang (2005) conclude that continued investment and industry-led growth in the scenario on current policies is almost certainly unsustainable. Furthermore, as discussed in the next section, this growth path has led to the exacerbation of distributional inequities, which may undermine China's long-run economic prospects.
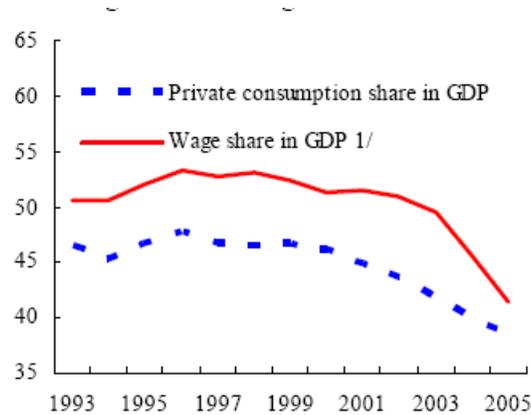

Figure 5: The evolution of private consumption and the wage share of GDP. Source: World Bank (p. 6, 2007)

3.   Uneven growth

3.1   *Macroeconomic Aspects*

According to Chaudhuri and Ravallion (2006), the unevenness of Chinese growth is characterized by at least three characteristics:

- Unevenness across households, with the incomes of the richest households growing much faster than those at the bottom of the income distribution, giving rise to dramatically increased between-household inequality.

- Unevenness across provinces with the inland provinces lagging behind the coastal provinces.

- Unevenness across sectors, with the primary sector (agriculture) lagging behind the secondary (industrial) and tertiary (service) sectors, and the rural areas lagging behind the urban areas.

To analyze the unevenness in outcomes across households, it is convenient to look at a related manifestation of growing polarization, that between the share of profits and wages. As noted earlier, the national share of wages has been on the decline over the last three decades. We can again employ some basic accounting identities to guide our discussion. Rearranging equation (6):

$$Y \equiv (1 - s_W)\, W + (1 - s_R)\, R + I + G + CA \tag{6B}$$

Again, assuming for simplicity that workers do not save, (6B) becomes:

$$Y \equiv W + (1 - s_R)\, R + I + G + CA \tag{6C}$$

Thus, due to workers' higher propensity to consume, an increase in wages has a much greater proportional impact on aggregate demand *from domestic sources* than an increase in profits.[x] This means that a growth strategy based on domestic demand will be likely to focus on ensuring that the share of wages in national income does not decline. This provides an interesting contrast to equations (7) and (8), which imply that a growth strategy based on *external demand* (as manifested in current account surpluses) and investment is likely to focus on maintaining or raising the profit share of national income.

There is another (related) factor that suggests that an outward-oriented strategy would be at best less focused on, and at worst, opposed to taking direct measures to ensure more egalitarian

patterns of growth. For an outward-oriented strategy that relies on boosting the competitiveness of domestically produced tradables, wages that rise at a rate slower than the growth rate of labor productivity mean falling unit labor costs and hence increased sales (in the case of imperfect product market competition) and/or higher profit rates. Existing evidence from China suggests that while wages have been rising rapidly, at least in the urban east coast areas, productivity growth has been even higher.[xi] Reliance on external sources of demand has lessened the obvious economic rationale for reversing this trend. However, the resulting polarization may have serious socio-economic consequences in the long run, especially if job creation stalls.

Turning to one of the other dimensions along which Chinese growth has been uneven, the eastern and southeastern coastal provinces have been the greatest beneficiaries of the post-1978 economic regime. For example, according to Chaudhuri and Ravallion (2006), Chinese provincial rates of GDP growth ranged from a low of 5.9 percent in Qinghai to a high of 13.3 percent in Zhejiang between 1978 and 2004. One obvious reason for this polarization between coastal and inland regions is the heavy public investment in infrastructure that took place in the former due to their geographical proximity to the dynamic east Asian region (especially Hong Kong), and the subsequent arrival of domestic and foreign private investment. A related reason is the differential tax treatment afforded to investors in these areas. Yet another important factor is the geographical proximity of these regions to important trade nodes, and their resulting pivotal position in the existing growth model. A consequence has been, according to an empirical study by Wan *et al.* (2007) *that* uneven distributions of domestic capital, FDI and trade account for almost 50 percent of total regional inequality.

Finally, following the example of many other developing Asian and Latin American countries, the Chinese development model has placed a particular emphasis on moving resources from the rural agricultural sector to the urban secondary and tertiary sectors.[xii] For example, according to estimates made by the People's Bank of China (2004) small and medium-sized enterprises—

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which are significantly more prevalent in services than in industry—account for more than half of Chinese GDP but receive less than 10 percent of total bank loans. The government's channeling of financing to investment in infrastructure has also traditionally been geared towards facilitating industry in particular (cited by Kuijs and Wang, 2005).

Figure 6 illustrates the relative contraction of the agricultural sector, whose share of value-added in GDP declined from about 33 percent in the early 1980s to 12 percent in 2005. This shift is also reflected in the share of total employment in the primary sector which declined from about 70 per cent in 1980 to about 50 per cent in 1997 (Bhalla and Qiu, 2002).[xiii] Not surprisingly, while the rural areas have seen a decline in poverty, their economic growth has been limited relative to the urban areas. Moreover, according to Ravallion and Chen (2007), absolute inequality (as measured by the difference between mean incomes) has increased appreciably, both between and within both urban and rural areas.[xiv] In a major study, Kanbur and Zhang (1999) concluded that the contribution of rural-urban disparities to regional inequality in China exceeded the contribution of coastal-inland disparities, although the contribution of the latter has grown more rapidly, especially in the 1990s.[xv] Wu and Perlof (Table 1, 2005) also find a steady increase in the urban Gini index starting around 1991 or so. Sicular et al. (Table 1, 2007) find that the urban–rural income ratio was close to 3 in 2002 and cite Eastwood and Lipton (2004) to demonstrate that this ratio is quite high by international standards. For example, the ratio for most other Asian countries lay between 1.3 and 1.8 in the nineties, with the Philippines an outlier at 2.17.
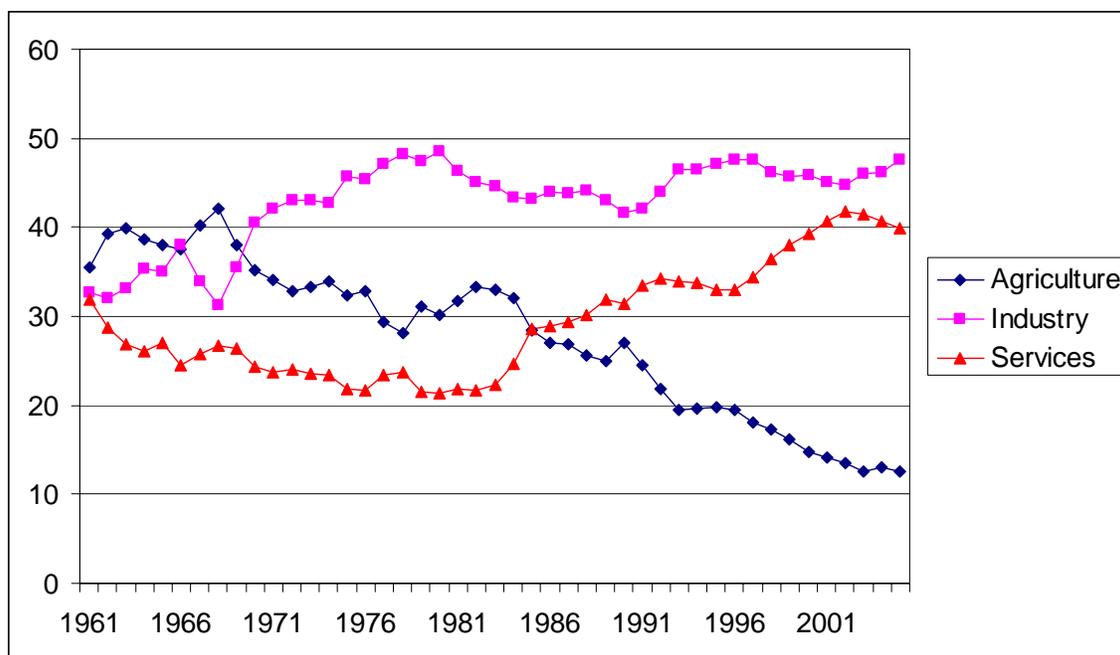
Figure 6: Share of Various Sectors in Total Value-Added (1961-2005)

3.2 *Microeconomic Considerations*

A major puzzle in mainstream international trade theory is the simultaneous growth of wage-wage and profit-wage inequality in many developed and developing countries in recent years. Our earlier discussion suggests that there is substantial evidence that this holds true for China as well. While the Heckscher-Ohlin-Samuelson framework of international trade theory does predict a rise in inequality in capital and skilled labor abundant industrialized countries, it predicts the opposite for unskilled labor abundant developing countries. The intuition is quite straightforward. Given a number of simplifying assumptions,[xvi] a country's comparative advantage in a two good, two country world will lie in producing the good that uses its abundant factor intensively. In other words, a skilled labor abundant country will find its comparative advantage to be in the good that uses more skilled labor *relative* to unskilled labor when compared to the other good. In the presence of perfectly competitive product and factor markets,

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assuming full employment of all factors, and abstracting away from international factor mobility, when a country opens up to more trade, the increase in the relative price of its comparative advantage (export) good leads to a re-allocation of resources towards that sector and a consequent rise in the relative demand for its abundant factor. The latter, in turn, translates into an increase in the returns to that factor. Thus, opening up to trade would mean, for a skilled labor abundant country, an increase in the relative (and absolute) wages of its skilled labor. An unskilled labor abundant developing country, on the other hand, will see its unskilled labor benefit in relative and absolute terms. Making the plausible assumption that the owners of capital and highly-skilled workers will tend to have higher incomes than less-skilled workers, the framework would, therefore, predict for trade liberalization to result in increased inequality in developed countries and reduced inequality in developing countries. China, however, has not experienced the trend in functional distribution predicted by this framework.[xvii] The reasons underlying this development are undoubtedly complex and vary with country. However, we limit ourselves to a few mechanisms that seem to be directly relevant in China's case.

China has pursued an aggressive privatization drive since the State Council announced its plans in 1992 to make China a "socialist market economy."[xviii] Much of the rapidly expanding private sector employment in China falls in the informal sector in the sense that it does not enjoy the labor protections that cover formal sector employees. Add to this the reality that, in the absence of unemployment insurance, most working age persons in developing countries cannot remain unemployed for extended periods of time, even if this means working in informal, unregulated conditions without job security or benefits. Razmi (2009) shows that, in a modified Heckscher-Ohlin framework that assumes nominal wage stickiness in the formal sector, labor retrenchment in the public sector will lead to an expansion of the informal sector at the expense of the formal sector, and growing wage-wage and profit-wage inequality.

Another feature of China's investment- and export-led growth model has been its rapid incorporation into vertically integrated global production networks. Vertical integration, which has alternatively been termed "slicing the value chain," "fragmentation," and "production sharing", refers to the geographic separation of activities involved in goods production across countries. For example, the production of a good may involve research and design, manufacturing, assembly of components, and retail. Typically, the first stage is undertaken in industrialized countries while the labor-intensive assembly stage occurs in labor-abundant developing countries. China participates in global supply chains both as a net seller of intermediate products (for example, firms in East Asia have been importing relatively labor-intensive intermediate products from China since the 1980's) or as an assembler or processor of final products from manufactured components (for example, special economic zones (SEZs) in Shanghai have assembled intermediate products into final goods made for U.S. markets since the 1980's). Indeed, China has become the global assembling/processing powerhouse, with estimates placing its processed exports between 45-55 percent of its total exports (see more on this aspect below).

Feenstra (2001) shows that the trade in inputs between different countries in a vertically integrated production chain has an effect similar to a skill-biased technical change that increases demand for skilled labor. The underlying intuition is a nuanced extension of the Heckscher-Ohlin framework. The same production processes that are relatively unskilled labor intensive in industrialized countries may be relatively skilled labor intensive in developing countries. For example, a manufacturing job that is mechanized in the US, and may therefore, require few skills to perform in the US may require the skills of a college degree holder in China. Increased outsourcing of the relatively unskilled labor intensive processes from the US to China as part of global production fragmentation will, therefore, raise the relative demand for skilled labor in both countries, generating increased inequality within those nations.

Razmi (2009) suggests another mechanism driven by the phenomenon of vertical integration. A significant proportion of vertically integrated export activities in developing countries takes place in the informal sector. Tariff reductions for imports into a vertically integrated tradable goods sector make production in that sector more profitable. In the presence of such a sector that is even more labor-intensive than the formal sector in a developing country, the resulting re-allocation of resources can lead to both informalization and growing wage-wage and profit-wage inequality. We have already provided evidence on growing income polarization in China. The simultaneous increase in informalization is also becoming well-documented. For example, Ghose (2008) reports that during 1997-2005, which is a period of growing income polarization, employment growth in China was entirely accounted for by non-formal and irregular employment, while formal employment experienced a steep decline.[xix] The argument that the simultaneous growth of inequality and informalization in China may share a common causal factor in the form of heavy reliance on export-led growth raises some intriguing questions for future research.

4. Booming investment in non-tradables and real estate

As mentioned earlier, growth based on expanding trade requires shifting of resources from the non-tradable goods sector to the tradable goods sector. This in turn is often achieved by raising the price of tradables relative to non-tradables through maintaining a low (or undervalued) nominal (and real) exchange rate. As mentioned earlier, this has been one of the motives underlying China's rapid accumulation of foreign exchange reserves in recent years. However, the unsterilized accumulation of reserves has the side effect of increasing the money supply, and

making available liquidity for investment in sectors outside the tradable goods sector. To see this, we turn to another commonly used identity:

$$MB \equiv NDA + Res \qquad\qquad (9)$$

where *MB* denotes the monetary base (high-powered money), *NDA* denotes the banking system's net domestic assets (held in the form of domestic securities), while *Res* denotes foreign exchange reserves (held in the form of foreign currency, assets, securities, etc.). An increase in foreign exchange reserves thus increases a country's monetary base. The real estate boom in Shanghai and other urban areas on the east coast is partly a manifestation of pressures arising from rapid liquidity growth in China, which is not unconnected to the rapid expansion of the monetary base.

On a related note, another likely consequence of the rapid liquidity creation and accompanying low interest rates and low cost of capital is the rise in the capital intensity of production. Indeed, the ICOR ratio of Chinese production has risen steadily in recent years. According to Kuijs and Wang (2005), more than 90 percent of the growth in industry in 1993-2004 took the form of labor productivity growth rather than employment growth, mainly led by high investment and increased capital-labor ratio. As a result, absorption of agricultural surplus labor into the industrial (and mostly tradable goods) sector has been limited since the mid 1990s. This, in addition to informalization, at least partly explains the observed decline in the output elasticity of employment in the last decade. For example, Bhalla and Qiu (2002) citing the *People's Daily* report that while in 1980, one per cent of GDP growth rate led to an increase in employment by 0.33 per cent, during the ninth Five Year Plan period (1996–2000), the figure dropped to 0.16 per cent. Kuijs and Wang (2005) report that urban employment growth slowed from 5.4 percent per year during 1978-93 to 2.9 percent during 1993-2004. Considering the immense importance of generating employment in a labor abundant developing country like China, and the need to contain social conflict by keeping unemployment and underemployment low, the reduced ability of investment to create new formal sector jobs becomes a source of concern for policy makers

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and party officials. Moreover, to the extent that slow job growth in the formal sector accelerates the informalization of the work force, the resulting upward pressure on inequality (see the previous section) raises further concerns.

5.   Sterilization costs low but could eventually rise

Reverting to equation (9), a country can counter inflationary pressures arising from a rapid increase in the monetary base by "sterilizing" its reserve transactions. For example, a country running a balance of payments surplus can sterilize the resulting increase in its monetary base by conducting open market operations (by selling bonds, for example). In other words, the country's central bank can reduce its net domestic assets to offset the increase in foreign exchange reserves. Existing literature suggests that China has been able to successfully sterilize a major portion (but not all) of its reserve accumulation.[xx] A country that sterilizes its foreign exchange accumulation to prevent it from translating into an increase in the money supply can continue to maintain competitive exchange rates, and largely avoid the problems created by excess liquidity, at least in the short run. However, successful sterilization leads to other potential problems. First, by keeping interest rates relatively high, sterilization creates further pressure for capital inflows and external imbalances.[xxi] Secondly, the bonds that the People's Bank issues in order to sterilize reserve accumulation raise its interest obligations. For a typical country that accumulates foreign exchange-denominated assets in the form of US treasury bills, the rise in domestic bond rates as sterilization proceeds,[xxii] and the resulting losses to the Central Bank as it issues high interest bearing securities while earning low interest rates, result in rising "quasi-fiscal" costs of sterilization. Indications to date, however, are that China has been able to continue issuing sterilization bonds at low interest rates, thanks in part to the still largely state controlled banking

system. However, this is likely to change as China liberalizes its banking system while continuing to sterilize.

Although central bank operations are usually less than fully transparent, it is estimated that China holds about 70 per cent of its foreign exchange reserves in the form of dollar denominated assets (Roubini, 2007). An associated problem that grows in importance as the size of China's reserves increases is the potential for large capital losses as the currency eventually appreciates against the dollar. To put things in perspective, China's foreign exchange reserves are now estimated to be approaching 1.8 trillion dollars. Assuming a dollar component of 70 per cent implies approximately one trillion US dollars. A 20-30 per cent appreciation of the dollar would therefore, translate into immediate capital losses to the tune of 360-540 billion dollars, or significantly more than 10 per cent of Chinese GDP. While a more careful analysis would weigh this consideration against the possible losses from not holding reserves, this potential (and growing) cost of reserve accumulation cannot be ignored. Indeed it is the rising actual and potential financial cost of rapid reserve accumulation that has encouraged China to increasingly invest in non-government securities, and recently to start a sovereign investment fund in order to diversify its portfolio of foreign asset holdings.[xxiii]

Finally, and perhaps most importantly from a longer-run perspective, foreign exchange reserves (or accumulation of low interest bearing US treasury securities) carry social opportunity costs in the sense that the resources could be used for more socially productive purposes such as financing public capital expenditure or paying down external debt and reducing the interest bill.

6.   The Growing Threat of Protectionism (Man-Made and Natural)

The trade deficit with China has been the largest bilateral component of the ever-growing US current account deficit in recent years. The resulting trade tensions between the US and China have led to some unfortunate China-bashing, especially in the US Congress, where a number of members have held currency manipulation and "unfair" trade practices such as export subsidies responsible for the increasing imbalances. For example, in 2005, Senators Charles Schumer and Lindsey Graham introduced a bill in the Senate calling for the imposition of an across-the board tariff on Chinese imports in an effort to reduce China's alleged "undervalued" currency advantage. More recently, the Hunter-Ryan bill (currently under consideration in the House) calls for treating currency manipulation as a subsidy that can be remedied by WTO-compliant countervailing duties. Another piece of legislation under consideration, the Davis-English bill, would grant the US Department of Commerce the explicit authority to apply countervailing duties to non-market economies, such as China.[xxiv] It is perhaps useful to recall here that as part of China's entry into the WTO in December 2001, other member states retained the right to impose special escape clause provisions on Chinese exports when producers are under threat of injury from rapid Chinese penetration of domestic markets. These special provisions came into play recently in the aftermath of the expiration of the Multifiber Arrangement (MFA) on January 1 2005, when the US and EU quickly slapped significant restraints on rapidly accelerating textile and clothing imports from China. These measures, which are to remain in force until 2008, highlight the protectionist threat to the Chinese growth model. While the problem is much more complicated than the proposers of simplistic legislative measures often let on to,[xxv] the probability of the Congress legislating protectionist measures to address trade imbalances seems to be growing by the day.

While political threats may or may not eventuate, and much in this regard depends on the balance of political forces, there is another natural source of protection that is becoming ominous by the day. The dramatic upsurge in international oil prices is likely to act as a major exogenous shock to the Chinese economy. To understand this, one has to recall that a large proportion of Chinese export production is based on its location in vertically integrated international production networks. Thus, according to estimates derived by Koopman et al. (2008), Chinese value-added constitutes only up to 50 percent of the value of exports. This proportion is even lower for exports by foreign-owned or foreign-invested firms, and for products such as computers and telecommunications devices that are considered to be technologically more sophisticated. This finding -- taken together with the fact that international markets for developing country exports tend to be quite competitive, reducing individual countries to the role of being price takers -- implies that the rise in oil and associated input costs could act as a pincer in China's case. To understand how, consider a world with three countries, Mexico, China, and the US. Suppose the former two export toys to the US. For simplicity, assume that the transportations costs for Mexican exporters are negligibly small. Next suppose Chinese and Mexican firms sell a toy for x in the US. A change in international oil prices raises the cost of importing inputs for the final assembly of those toys. However, to the extent that China competes with Mexico in the US market, the Chinese firms cannot raise the final price of their good. Instead, they have to *lower* their export price (before transportation) in order to offset the increased transportation costs. Thus, the oil shock acts as a double whammy, acting adversely on both the input cost and sales price ends. Of course, Mexican firms would also be hurt by the increased price of imported inputs, but they wouldn't be exposed to the shock from the end demand side. Moreover, the same logic applies even more starkly to competition between domestic US producers and Chinese exporters. In essence, the oil shock has acted as a real appreciation of the renminbi. If high oil prices are here to stay, therefore, these present a significant threat to the Chinese growth model.[xxvi]

7. Concluding Remarks

This paper has explored the sustainability of China's growth pattern. We discuss the evolution of the Chinese economy, comparing it to other countries in the region that experienced sustained episodes of rapid growth, increased investment and savings, and rising exports in the past. Using a Kaleckian framework, we analyzed some of the macroeconomic aspects of investment- and export-led growth, both in terms of the changes in the structure of domestic output and expenditures that facilitate it and the distributional shifts that, in turn, ease the path to those changes. We combined this macroeconomic analysis with a look at some trade-related microeconomic distributional issues, analyzing how developments in recent decades may have counteracted the benign (equalizing) tendencies that trade theory predicts trade liberalization would create in a skill and capital scarce developing economy. Our attention then turned to some of the other pitfalls that have arisen from the kinds of policies such as reserve accumulation, sterilization, and rapid liquidity creation that have accompanied effective pursuit of export-led growth. One consequence of these developments has been the rising threat of protectionism originating from China's main export destinations. Another has been much increased vulnerability to exogenous shocks (such as the recent dramatic increase in oil prices which is, ironically enough, itself partially a manifestation of rapidly rising Chinese demand for oil) that noticeably neutralize key elements of China's growth strategy, leaving it exposed to unforeseen setbacks. Our main conclusion is that the current growth strategy may have largely outlived its utility, on both economic and socio-political grounds, and an effective change of course appears to be highly desirable.

We end by pointing out that while the sustainability of its current growth patterns may be creating concerns from a narrow Chinese perspective, there exists an even larger issue from the

perspective of the developing world at large. If a group of countries simultaneously pursue growth based on expanding exports to industrialized countries, then, in the presence of limited growth on the demand side, this creates a possible fallacy of composition or adding-up constraint. Considering China's exceptionally successful pursuit of an export-based strategy and its large size, this has implications for countries attempting to emulate China. Given our focus on Chinese domestic considerations, however, this paper ignores this increasingly important aspect of the global economy.

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Endnotes

[i] For example, Ravallion and Chen (2007) report that in the 20 years after 1981, the proportion of the population living in poverty fell from 53 per cent to 8 per cent, although half the decline in this percentage came in the early half of the 1980s. The poverty line used here are an income of 850 yuan per person per year for rural areas and 1,200 yuan per person per year for urban areas, both in 2002 prices. The aggregate poverty index is a population-weighted average of the indexes for rural and urban areas.

[ii] See, for example, Gittings (2005) for an extensive discussion.

[iii] The contribution is expected to have been even higher in 2007.

[iv] The US remains China's largest export market, the share of exports destined for the US having increased from about 9 percent to 21 percent between and 1984 and 2006. Partly due to the depreciation of the dollar relative to the euro, however, Chinese exports to the European Union have grown at a much faster pace in recent years.

[v] If we were to define national income in the form of GDP instead of GNP, the corresponding identities will be:

$$Y \equiv C + I + G + TB, \text{ and } TB = (T - G) + (S - I).$$

[vi] The World Bank's *World Development Indicators* database does not contain data for Taiwan, which explains its absence from the figures.

[vii] See also Li (2006).

[viii] Although this is a somewhat extreme assumption, it captures the empirically observed higher savings rates out of profit earnings. Assuming positive but lower savings out of wages does not change our analysis qualitatively.

[ix] Notice that this is somewhat different from the typical Kaleckian exposition in which the variables are expressed as a proportion of the total capital stock instead of national income. Since we do not focus on issues related to capacity utilization here, our approach is more in line with the objectives of our discussion.

[x] Note that this assumes that investment is relatively independent of savings, and is determined by a host of factors including investors' "animal spirits," expectations of future profits, etc. If we were to take the classical loanable funds approach, or alternatively, if we were to assume that investment always equals savings *ex-ante*, and/or if aggregate demand were very sensitive to investment, then we could have a regime of "profit-led" growth that depends on high capitalist savings as the major source of domestic demand. Given the high proportion of investment in China, some may argue that its economy now operates under a profit-led growth regime rather than a wage-led one.

[xi] See Figure 5. See also Kim and Kuijs (2007).

[xii] Although, as noted elsewhere in this section, the movement of labor in recent years has been more towards services than manufacturing. The primary sector usually consists of agriculture, forestry, and mining, the secondary sector consists of manufacturing and construction, while the tertiary sector consists of retail trade, financial services, utility provision, and other categories of services.

[xiii] This number further declined to 44 per cent in 2002, according to the World Bank's *World Development Indicators Online*.

[xiv] According to their estimates, since growth in the primary sector (primarily agriculture) did more to reduce poverty and inequality in China than either the secondary or tertiary sectors, starting in 1981 if the same aggregate growth rate had been balanced across sectors, it would have taken 10 years to bring the poverty rate down to 8%, rather than 20 years.

[xv] They attribute the latter observation to the still existent prohibitions on inter-provincial movement of labor in China. See also Yang (1999).

[xvi] The reader is referred to any standard international trade textbook for a list of these assumptions.

[xvii] This also happens to be true for a number of other developing countries. See Goldberg and Pavcnik (2007) for a comprehensive survey.

[xviii] See Overman (1995) for an overview of China's privatization plans.

[xix] Indeed, in spite of all the hype over China's booming manufactured exports, Banister (2005) finds that manufacturing employment actually *declined* between 1995 and 2002. At least some of this is likely to be due to increased informal employment which does not show up in official statistics.

[xx] See, for example, Ouyang *et al*. (2007).

[xxi] Note that China has run both a current account and a capital account surplus in recent years. This of course, is offset by the official reserve transactions of the People's Bank.

[xxii] As the Chinese central bank sells bonds to neutralize the effects of reserve accumulation on the monetary base, this increases the relative supply of Chinese bonds on the market, and should have the effect of raising the interest rate on Chinese offerings. This `portfolio balance'' effect, although hard t o empirically detect, seems to be present when developing countries offer sterilization bonds on the market. Since much of the banking system in China is still under state control, however, the sale of sterilization bonds appears to have had negligible effects on interest rates.

[xxiii] Indeed, Premier Wen Jiabao recently highlighted this concern when he told a business audience in Singapore that ``we are worried about how to preserve the value of our reserves," and that "we have never been experiencing such big pressure." (Dickie et al., 2007).

[xxiv] The US Department of Commerce has had a long-standing practice of not applying countervailing duties on products exported from so-called "non-market economies" on the grounds that it is not possible to accurately evaluate the free market price of goods exported by such economies. The duty imposed on Chinese glossy paper in early 2007 was a major departure in this regard.

[xxv] For example, the imposition of tariffs on Chinese exports, or the successful culmination of efforts to get the Chinese to revalue their currency – a revaluation acts simultaneously as an import tariff and an export subsidy – is likely to displace exports from China to other cheap labor countries such as Vietnam.

[xxvi] Indeed, in a story for the Wall Street Journal, Aeppel (2008) reports that a number of companies are already moving production and purchases back to the US. DESA LLC, for example, reported that the 15% increase in the cost of shipping goods from China contributed to its decision to produce more in Kentucky. Also, see Rubin and Tal (2008) for an interesting analysis of the China, Mexico, and US case.