

# ***THE RISE OF CHINA*** ***AND ITS ENERGY IMPLICATIONS***



**Chinese Growth Prospects in the Short to Medium Term**

Mahmoud A. El-Gamal, Ph.D.



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# CHINESE GROWTH PROSPECTS IN THE SHORT TO MEDIUM TERM

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## Chinese Growth Prospects in the Short to Medium Term

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*The Rise of China and Its Energy Implications* is a major research initiative to investigate the implications of China's oil and natural gas policies and domestic energy market development on global energy markets. This study focuses on the influence of China's energy development on U.S. and Japanese energy security and global geopolitics. Utilizing geopolitical and economic modeling and scenario analysis, the study analyzes various possible outcomes for China's domestic energy production and its future import levels. The study considers how trends in China's energy use will influence U.S.-China relations and the level of involvement of the U.S. oil industry in China's domestic energy sector.

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### **ABOUT THE INSTITUTE OF ENERGY ECONOMICS, JAPAN**

The Institute of Energy Economics, Japan (IEEJ), was established in June 1966 and specializes in research activities in the area of energy from the viewpoint of Japan's national economy in a bid to contribute to sound development of Japanese energy supply and consumption industries and to the improvement of domestic welfare by objectively analyzing energy problems and providing basic data, information and the reports necessary for policy formulation. With the diversification of social needs during the three and a half decades of its operation, IEEJ has expanded its scope of research activities to include such topics as environmental problems and international cooperation closely related to energy. The Energy Data and Modeling Center (EDMC), which merged with the IEEJ in July 1999, was established in October 1984 as an IEEJ-affiliated organization to carry out such tasks as the development of energy data bases, the building of various energy models, and the econometric analyses of energy.

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## Chinese Growth Prospects in the Short to Medium Term

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### Abstract

The Chinese economy has grown at incredibly fast rates over the past three decades. This growth has been heavily biased in favor of investment-driven, capital-and-resource-intensive, and export-oriented industrialization. Although China has made great strides in improving energy efficiency and reducing the environmental impact of its growth path, continued fast growth is certain to increase demand pressure on fuels and other resources, and to test the limits of environmental sustainability. A very large literature has evolved over the past decade—one extreme praising the Chinese growth model as a new (Beijing consensus) economic paradigm to challenge the Washington consensus, predicting its continuity for the foreseeable future, and the other extreme predicting an imminent collapse. Proponents of the latter approach point to internal and external imbalances of the Chinese growth model (toward investment and trade surpluses, respectively), potential banking crises, and sociopolitical risks emanating from rampant corruption and growing inequalities.

Chinese officials have been aware of these three categories of problems, and have promised, at least as early as 2004, to address them. However, imbalances have continued over the past few years, suggesting that gradual transformation away from heavy industry toward employment-creating light manufacturing, which would also contribute to shifting demand from investment to domestic consumption and reduce income inequalities, may be difficult to implement. This “addiction to the Beijing consensus” problem notwithstanding, there is not sufficient evidence to suggest that Chinese internal and external economic imbalances have reached crisis levels. Moreover, the banking sector appears sound, and even if economic slow-down, which is inevitable, uncovers large volumes of nonperforming loans, state domination of banking and the economy, together with massive reserves, would allow for relatively low-cost recapitalization. Sociopolitical risk is very real and appropriately a major concern for Chinese leadership, although the massive size of the country makes an Egyptian- or Tunisian-style revolution highly unlikely.

## **I. China's Growth and Energy-Environmental Footprint**

The story of Chinese economic growth has been at once inspirational and worrisome. Since 1980, the Chinese economy has grown at an average rate exceeding 10 percent per annum in real terms. Some consider this remarkable growth simply to be a prolonged recovery after a lost century. This includes Burton Malkiel, cf. [11], who noted that China's GDP was roughly one third of the world's GDP in the early nineteenth century. After half a century of experimenting with a stark form of communism, China has introduced enough economic reforms to allow its massive "continent-sized economy," to use the expression of Martin Jacques, cf. [8], to approach its normal proportion of the global economy. Due to its remarkable growth and potential size, the Chinese economy has been the subject of numerous studies. Of greatest relevance for this study are the two related issues of sustainability of Chinese growth and its (possibly shifting) composition, with an eye to the impact on energy-intensity and demand on the one hand and environmental impact on the other.

The evolution of Chinese economic growth over the past half century is well understood, although studying it from a US-centric viewpoint can lead to erroneous conclusions, as we shall see in this paper. There is no doubt that Chinese growth has been heavily resource intensive and environmentally unfriendly, by the admission of Pan Yue, deputy environment minister, cf. [9, p.41], and that Chinese policymakers have recognized these shortcomings, officially at least since 2004, and have had to balance the need for continued growth to meet "the expectations of people,"<sup>1</sup> as well as to manage the composition of that growth, its sustainability, and its distribution.

Of course, China's ability to address the energy intensity and environmental impact of its growth model factors significantly in sustainability of its growth model. A full study of energy supply and demand and their composition in China are well beyond the scope of this paper. This paper will focus on other aspects of the Chinese growth model that may impact its sustainability and feed into more structural models of the resulting energy demand. In this regard, we shall consider three explanations for why Chinese growth may not be sustainable, even in the medium term: The first argument is that the Chinese investment and export-

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<sup>1</sup>To use the expression used by President Hu Jintao in his report at 17th Party Congress, October 15, 2007; accessed at [http://news.xinhuanet.com/english/2007-10/24/content\\_6938749.htm](http://news.xinhuanet.com/english/2007-10/24/content_6938749.htm) on May 30, 2011.

led growth is intrinsically unstable because of internal imbalances between investment and consumption, and externally unstable because of the global financial imbalances that trade surpluses have generated. The second argument is that the Chinese financial sector is relatively undeveloped and much of the investment-led growth has been financed with state-controlled bank lending. As growth inevitably slows down, this may result in a banking crisis that would produce substantial deflation instead of gradual deceleration of Chinese growth. The third argument is that increasing corruption and income inequality, together with a rising middle class, may cause sufficient sociopolitical turmoil to undermine political stability and derail the current economic growth model (i.e., sustained autocracy and capitalism are incompatible). In the remainder of this section, we summarize the main features of the Chinese growth model and its energy-market and environmental impacts, then address the three outlined arguments regarding the sustainability of this growth model in subsequent sections.

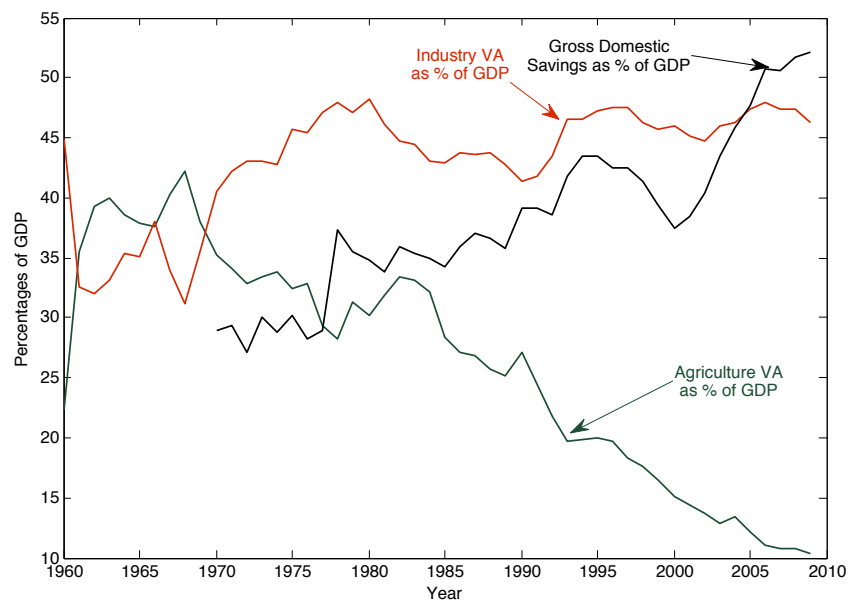


Figure 1: Decomposition of China's GDP. *Source:* WB, WDI.

The two main drivers of Chinese growth are illustrated in Figure 1: (i) incredibly high rates of domestic saving, which have fueled an equally remarkable rate of investment spending at the expense of private consumption, and (ii) a dramatic shift from agriculture to energy and capital-intensive industry. We address the first aspect of growth, which also impacts energy

demand and the environment indirectly, in Section II. The second aspect, which has had an immediate energy and environmental effect, is the dramatic decline of agriculture value added as a percentage of GDP and the continued growth of industrial value added as roughly 45 percent of the fast-growing GDP for three decades (even as GDP was growing at 10 percent in real terms).

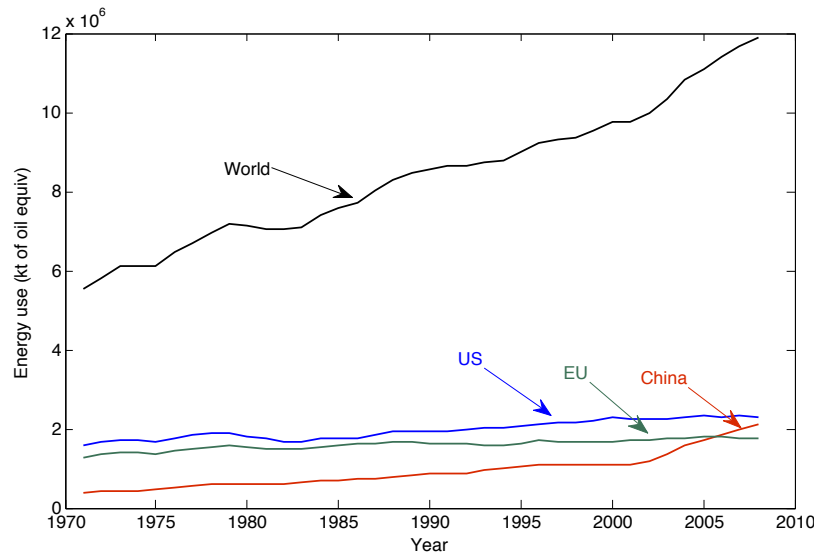


Figure 2: Energy Consumption in kt of Oil Equivalent. *Source:* WB, WDI.

Figure 2 illustrates how China's energy use has thus grown from roughly 7 percent of global use in 1971 to roughly 18 percent in 2008, exceeding energy use in the EU, and eventually exceeding energy use in the United States. This statistic by itself is not very surprising, both because (a) China's (as well as India's and other developing countries') growth exceeds the rates at which Organisation for Economic Co-operation and Development (OECD) countries grew, and (b) the higher energy efficiencies of advanced economies. Figure 3 illustrates the continuing gap in energy efficiency between China on the one hand and the United States and EU on the other. It is clear that the EU has been consistently more efficient in its energy use, producing roughly 45 percent more output per kilogram of oil equivalent than the world average, while the United States has only recently become (slightly) more efficient in its energy use, and China continues to catch up.

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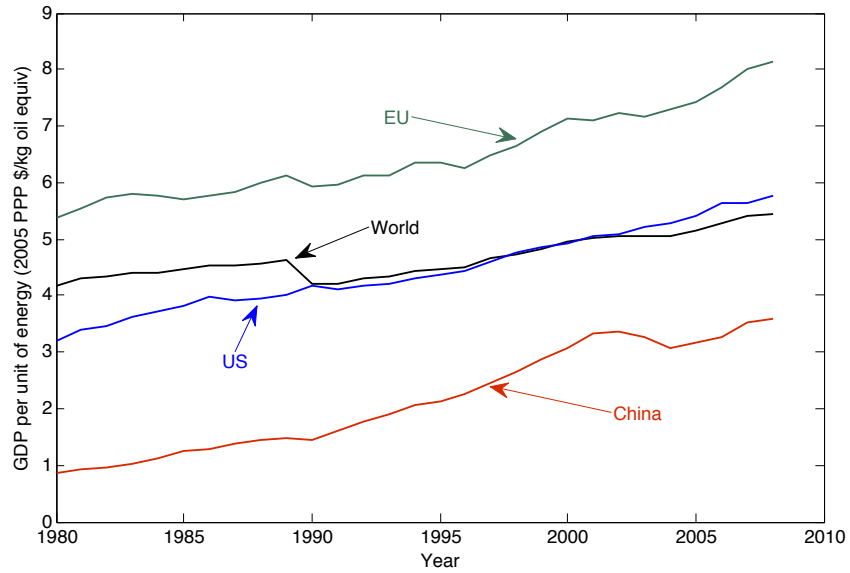


Figure 3: GDP 2005 US\$ per kg of Oil Equivalent. *Source:* WB, WDI.

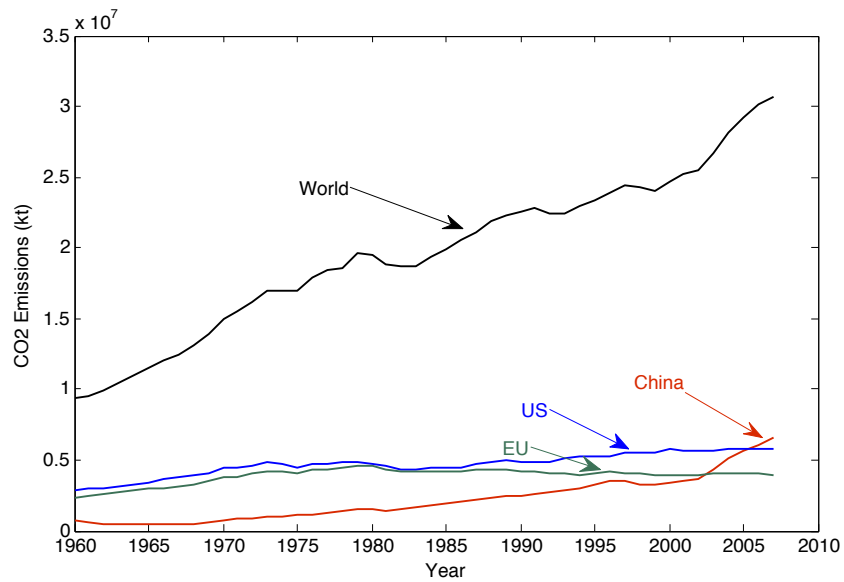


Figure 4: Carbon Dioxide Emissions in kt. *Source:* WB, WDI.

The environmental-impact trend is—not surprisingly—very similar to the energy-use trend, except that it is slightly differentiated because of China’s very high (but relatively declining) dependence on energy from coal due to its natural endowments. Thus, Figure 4 illustrates that China’s CO<sub>2</sub> emissions have increased in parallel to the world’s, and has recently exceeded those of the EU and the United States. In the meantime, Figure 5 shows that China’s carbon dioxide (CO<sub>2</sub>) emissions per real dollar of GDP have declined substantially following reforms that were instituted in 1978, and has resumed after a brief period of reversal in the early 2000s.

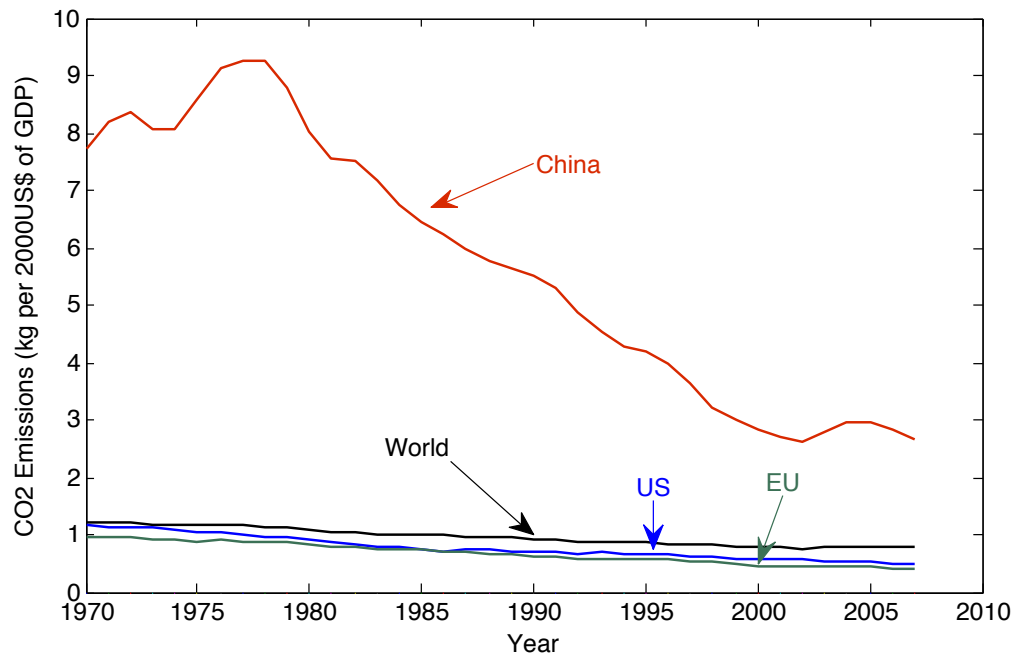


Figure 5: Carbon Dioxide Emissions in kg per 2000 US\$ of GDP. *Source:* WB, WDI.

Collectively, this summary shows the extent to which China’s growth has been driven by extensive investment in industrialization, which fueled a voracious appetite for resources, including energy fuels. However, China has also made significant strides in improving its energy efficiency and reducing pollutant emissions per unit of output. Moreover, starting in 2004, China has announced its goal to moderate its growth model away from excessive reliance on investment and exports toward greater domestic consumption, cf. [2, pp. 105,109]. No doubt, some of that additional consumption will be in the form of automobile purchases and miles driven, which will transition from one energy-intensive form of spending on investment

to more energy-intensive consumption, albeit using different fuels. To the extent that China also hopes to shift away from excessive reliance on heavy industry and toward labor intensive light manufacture, cf. [2, p.155], which would help with consumption growth, and also with emissions due to its lower level of energy consumption, the energy-demand and emissions effects of continued Chinese growth depend on the growth scenario. In this paper, we focus on the sustainability of the current growth path with minor modifications.

## II. Internal and External Imbalance Considerations

A number of studies have suggested that Chinese growth figures may be significantly exaggerated, cf. [9, p.20,26,27], and in fact some of the improvement in energy efficiency (measured in terms of constant GDP dollar per kilogram [kg] of oil equivalent, as shown in Figure 3) may have been an artifact of exaggerated GDP growth figures, especially in the 1990s. This would also explain the trend reversal in CO<sub>2</sub> emissions per constant dollar of GDP after 2000, as shown in Figure 4. However, even those with the most pessimistic estimates of actual Chinese GDP growth during the past few decades still admit that sustained growth rates were very significant, even if the Chinese goal in 1982 of quadrupling GDP by 2002 may not have been “met two years ahead of schedule,” as suggested by some, cf. [18, p.19].

Detractors from the “Chinese miracle” narrative point out that growth was strongly biased in favor of heavy industry, and that it was made possible by heavy subsidies to energy and land prices, which created many rent seeking opportunities to local officials as we shall discuss later, cf. [14, p. 106]. This incentive structure fueled feverish competition for investment in heavy industry, which resulted in extensive fragmentation and massive duplication and redundancy. For instance, it has been reported that as early as 1989, the industrial structure of 22 Chinese provinces was 90 percent identical to the country’s overall structure, cf. [13, p.129]. This extensive duplication has resulted in massive excess capacity, and eventually to mounting unsold stocks of steel, cement, automobiles, and other products of heavy industry, which some have predicted would result in a third very significant recession, cf. [9, p.154], that may eclipse the magnitudes of earlier Chinese recessions during 1989-90 and 1995-2001.

As we have noted in the introduction, the trend of unbalanced Chinese growth, which does make it unsustainable in the long run, has been well understood, including by Chinese officials. Chinese leaders have thus professed their intent to correct these trends and pursue a more balanced and hence more sustainable growth path. Analysts point to two main imbalances that we study in this section. The first is an internal imbalance in the composition of domestic spending. High household savings rates (approximately 25 percent) coupled with high savings and reinvestment by the corporate sector have driven investment rates (measured by gross fixed capital formation) to around 40 percent. Thus, as we can see in Figure 6, domestic investment spending has grown much faster than household consumption expenditure. To the extent that a growing portion of this investment was in export-oriented sectors, the contribution of net exports (= exports – imports) has also been growing at the expense of domestic consumption growth. The bias in favor of investment is considered a domestic imbalance, and the bias in favor of net exports is considered an external imbalance, and of course the two are closely related.

It is interesting to note that despite the Chinese government's admission in 2004 that these imbalances, internal and external, threaten the sustainability of economic growth, as well as sociopolitical stability due to rising inequalities between provinces and sectors, and their professed aim to correct these imbalances, the trend has in fact accelerated after 2004. In the remainder of this section, we shall consider the two imbalances in light of experiences of other countries, suggesting that perhaps the claims of imminent collapse based on these imbalances are exaggerated. Indeed, because the same imbalances have sustained the growth of other countries, a collapse in China caused by these imbalances would mean a simultaneous collapse in many other countries—a mega-great depression.

Figures 7 and 8 compare the contributions of investment and net exports to GDP for China to their counterparts for Germany and Japan (two advanced economies that have still pursued export-oriented strategies), respectively. The following trends are apparent:

- On investment spending as a percentage of GDP, it is clear that China's rates are higher than those of Germany and Japan, but that is to be expected from standard neoclassical growth models, where the rate of investment is higher in earlier stages of development in order for sufficiently high growth rates and capital stocks to enable higher consumption

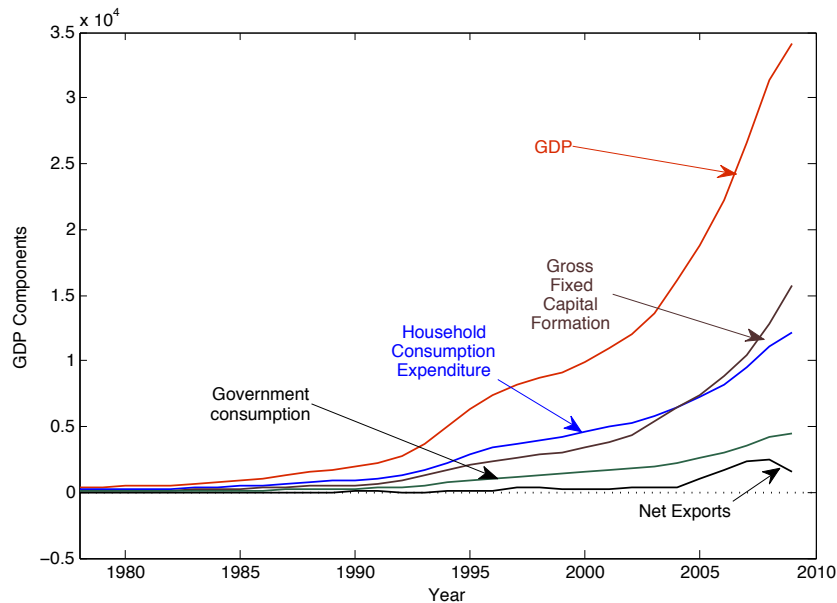


Figure 6: Decomposition of China's GDP (CNY billions). *Source:* IMF, IFS.

levels at later stages. In this regard, it is notable that China's investment to GDP ratio during the 1980s was similar to Germany's in 1964, its investment to GDP ratio during the 1990s was similar to Japan's in 1973, and its investment to GDP ratio during the last decade was similar to South Korea's in 1991.

- On external imbalances, as measured by net exports as a percentage of GDP, the evidence is even stronger: China's net exports to GDP ratios continue to be similar to Germany's and significantly lower than Japan's. In fact, Germany's ability to recover from the recent Great Recession was significantly dependent on exports of capital goods to China, showing that the system is tightly coupled.

A strong reason for the salience of the argument that external imbalances must end soon is the growing U.S. trade deficit (as well as fiscal deficit) and indebtedness, as well as more severe recessions and indebtedness in Europe, the main destination for Chinese imports, suggesting that external imbalances are unsustainable at the global level. There is merit to this argument, as Figure 9 illustrates that the current account surpluses of China, Germany, and Japan

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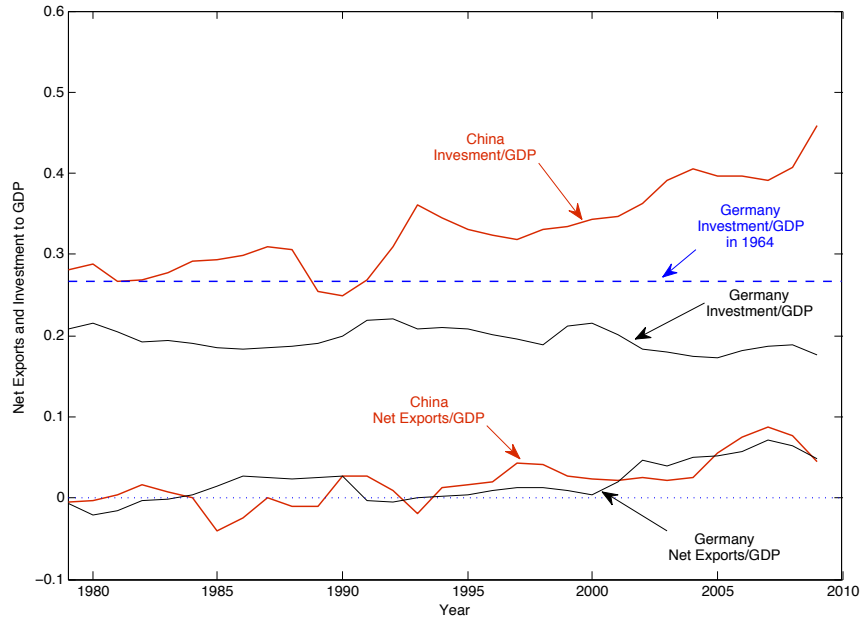


Figure 7: Comparison of German and Chinese GDP Components. *Source:* IMF, IFS.

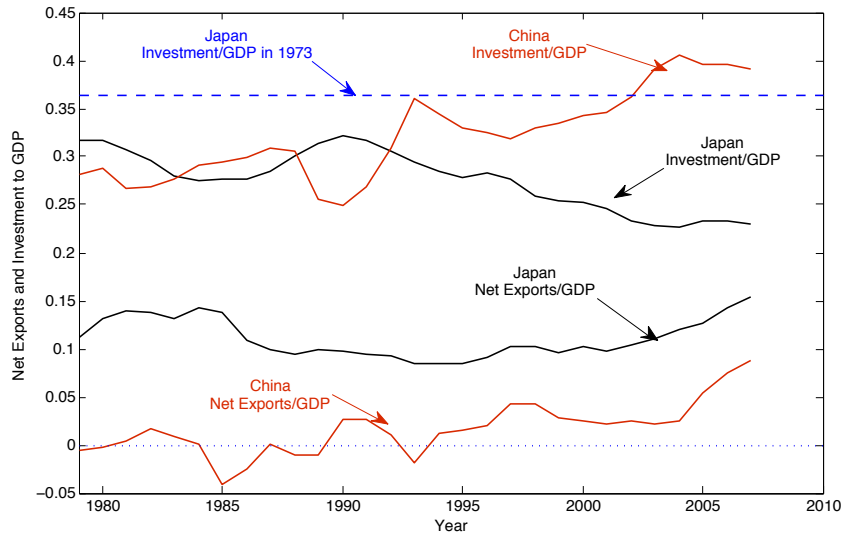


Figure 8: Comparison of Japanese and Chinese GDP Components. *Source:* IMF, IFS. (Korea's Gross Capital Formation to GDP ratio reached 0.39 in 1991)

combined are indeed roughly equivalent in magnitude to the size of the U.S. current account deficit. However, this simple accounting is misleading because approximately half of the U.S. trade deficit is accounted for by its oil-import bill, cf. [3, p.8]. In addition, Chinese imports from the United States have recently, in fact, grown faster than U.S. imports from China, cf. [3, p.9], again suggesting that globalization has coupled international economies in much more complex forms than the simple story that the Chinese lend Americans to buy Chinese goods would suggest.

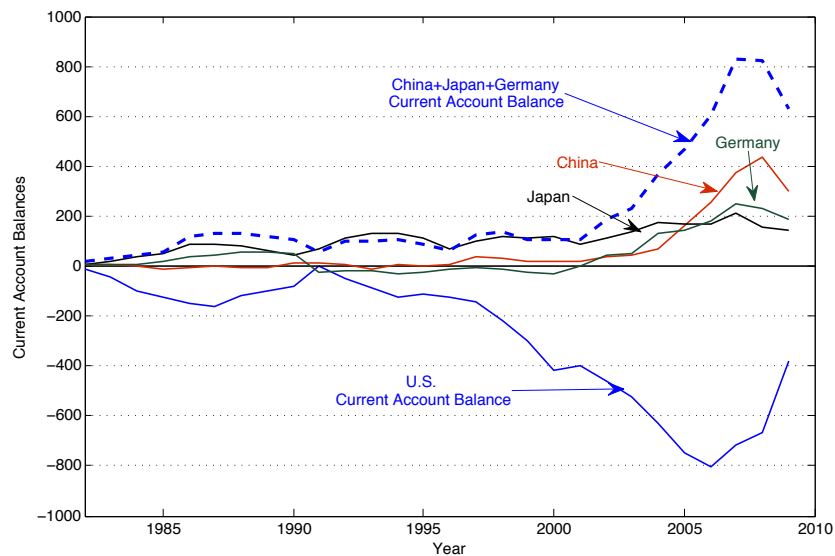


Figure 9: Current Account Balances. *Source:* IMF, IFS.

Some authors have emphasized strongly that too many countries pursuing export-led growth strategies simultaneously would be infeasible, cf. [4, pp. 6,15]. Of course, this “fallacy of composition” is only problematic if it is pursued in a manner whereby too many countries aim, in a mercantilist sense, to run trade surpluses over an extended period of time. It is not problematic, however, if all countries pursue growth strategies that are based on greater openness with balanced growth of imports and exports, resulting in higher production efficiency as countries specialize based on comparative advantage. Thus, although many studies have questioned whether export growth influences economic growth or otherwise, evidence of growth being export-led in many countries is tied to increasing efficiency, cf. [4, pp. 16-17], [10].

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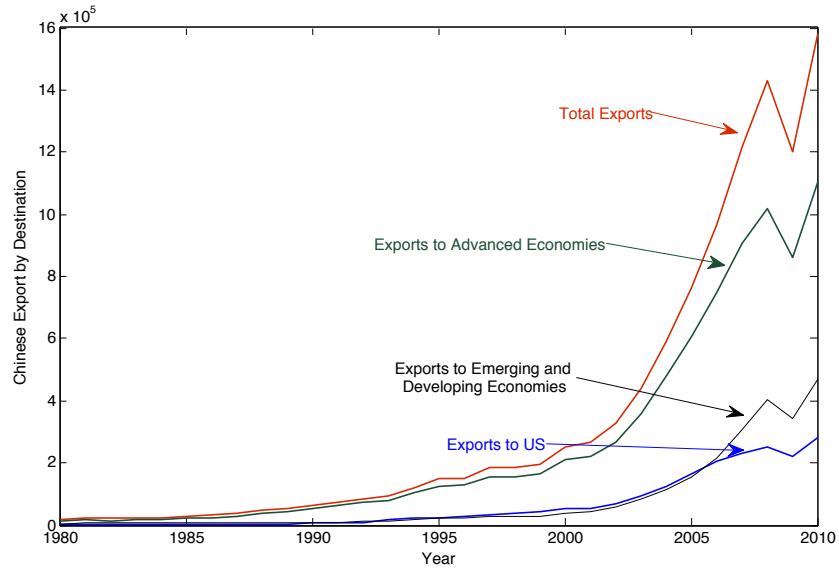


Figure 10: Chinese exports by Destination. *Source:* IMF, DOT.

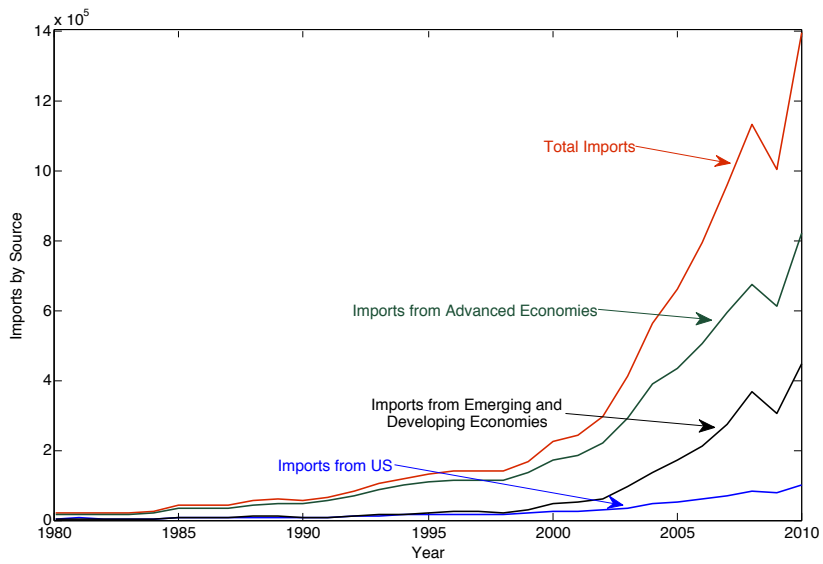


Figure 11: Chinese Imports by Source. *Source:* IMF, DOT.

Figures 10 and 11 show decompositions of China's exports and imports, respectively. The first fact that is apparent in these figures is the declining importance of the U.S. market to China, both as a destination for its exports as well as a source for its imports. This trend is even starker for Germany (Figures 12 and 13) and Japan (Figures 14 and 15), clearly suggesting that the role of the United States in global trade has been declining, and that unsustainability of U.S. trade deficits and mounting debts should not be mistaken for unsustainability of the entire system. The exception, of course, is that unsustainability of the U.S. dollar as the global reserve currency if U.S. indebtedness continues to mount may destabilize the entire post-World War II financial system that has made the current episode of globalization feasible. In this regard, a scenario under which Chinese export-led growth becomes unsustainable is also one under which Germany's and Japan's become unsustainable, and the global economy falls into a great depression. China may be too big to fail, but more importantly, in a highly trade-dependent globalized economy, China's failure would not be the only catastrophic component of the collapse in global output and demand.

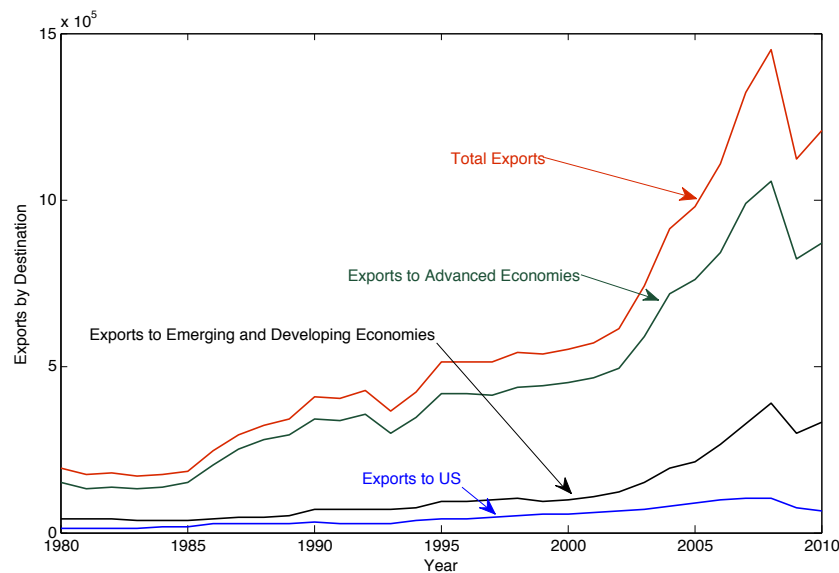


Figure 12: German Exports by Destination. *Source:* IMF, DOT.

On a different note, recent research has shown that the composition of China's exports may be of greater importance for economic growth than the sheer volume of exports. In this regard, Chinese export dependency is not as high as export-to-GDP ratios imply, cf. [7], but the

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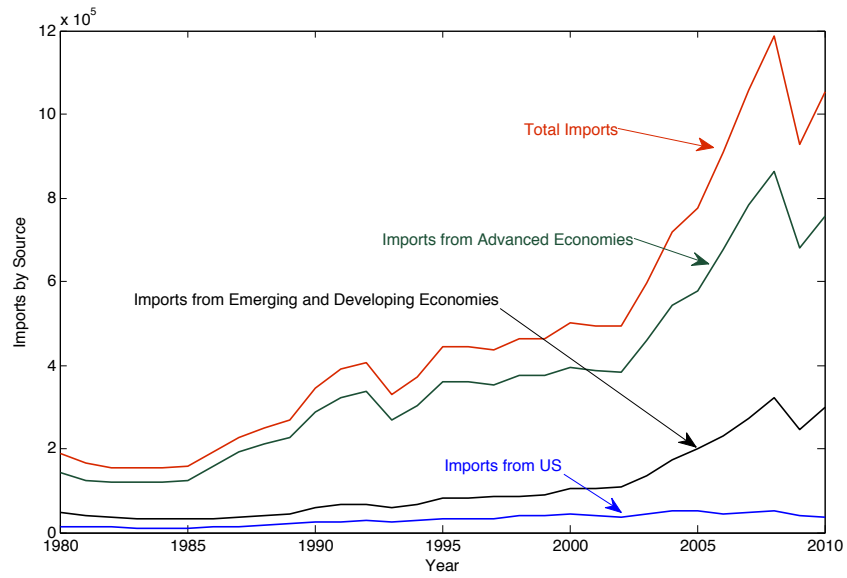


Figure 13: German Imports by Source. *Source:* IMF, DOT.

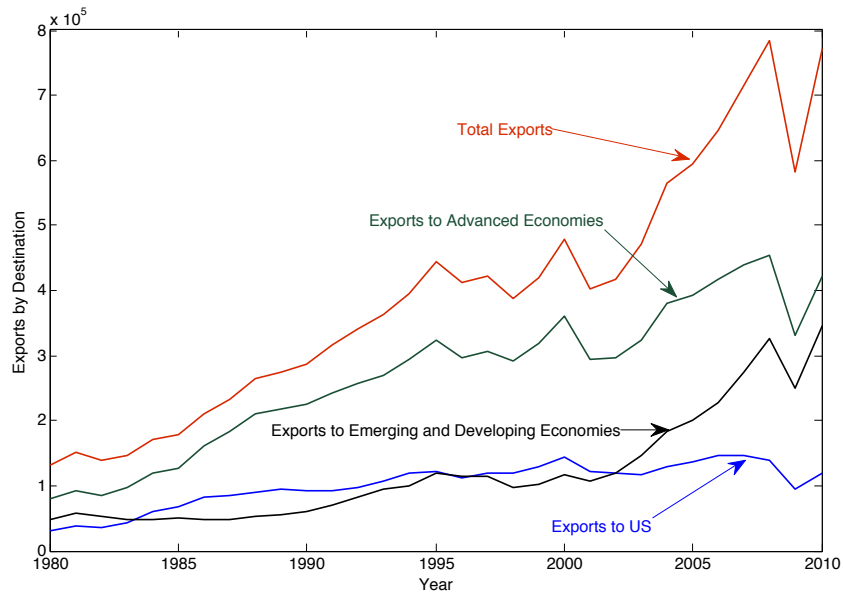


Figure 14: Japanese Exports by Destination. *Source:* IMF, DOT.

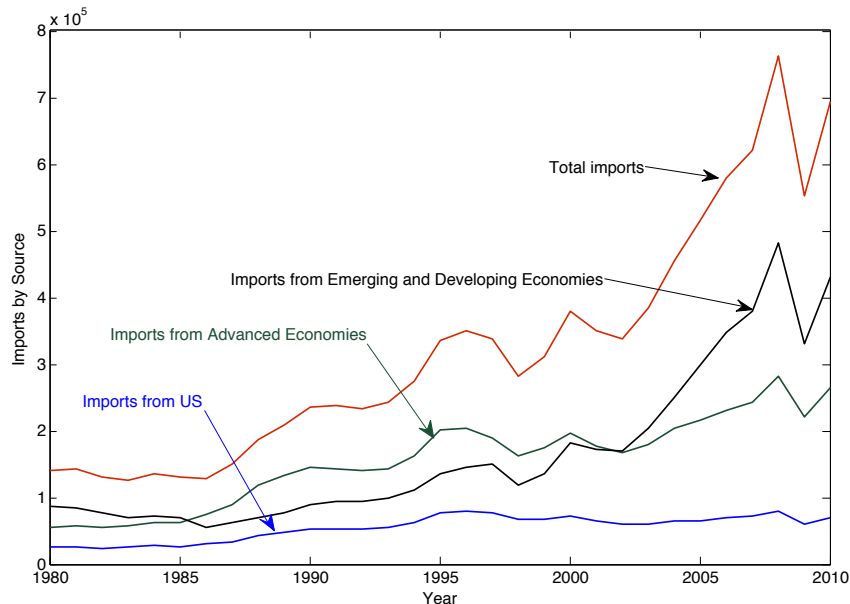


Figure 15: Japanese Imports by Source. *Source:* IMF, DOT.

export sector remains critically important because it attracts more foreign direct investment (FDI) and results in greater total factor productivity through technology adoption, than the rest of the economy. Thus, FDI in China plays the same role that was played by licensing and reverse engineering in Japan during its very-high growth episode, cf. [5, p.4]. Moreover, although Chinese exports to third markets have indeed crowded out exports by developing Asian neighbors, especially starting in the 1990s, rapid growth of Chinese output and demand from these Asian neighbors have more than compensated for this crowding out, cf. [6, p.22] and [15, 16]. In other words, a big component of the trend has been simply reconfiguration of trade patterns that need not necessarily end soon.

The traditional argument that external imbalances make the Chinese growth model unsustainable, built as it is on exports of manufactured products to the United States, is based on the premise that this export-led growth model will unravel as U.S. demand for these products slows down, cf. [12, p.12]. However, as Dani Rodrick has argued, cf. [17, p.24], the biggest contributor to Chinese export-led growth has not been the sheer volume of trade to GDP ratios, but rather China's ability to move up the value chain to export products that

are otherwise exported by countries with much higher per capita incomes (such as consumer electronics). Sustainability of the Chinese export-led model, therefore, according to Rodrick, depends not on its ability to continue exporting manufactured goods to the United States, but rather on its ability to “latch on to higher-income products over time.” Dependence on cheap labor and an undervalued currency to export cheap manufactured goods would be, admittedly, unsustainable. However, this is not the growth path that China has pursued and hopes to continue pursuing.

On the currency-valuation front, as Eichengreen and Hatase have suggested, cf. [5, p.33], China can learn from Japan’s experience to continue its gradual transition from its dollar peg. Their advice is to avoid giving in to pressure for a quick revaluation, as Japan did between 1985 and 1987, which drove Japan into a decade-long deflationary spiral. The Chinese “external imbalance” story may thus be countered with a story that FDI inflow is motivated mainly by eventual access to China’s massive domestic market. Early Chinese emphasis on exports of increasingly sophisticated manufactured products has allowed for technology transfer and increased efficiency driven by competition, and may successfully enable a greater role for domestic consumption in future growth.

The eventual transition to domestic-consumption-driven growth therefore seems quite reasonable under this scenario. The trap of letting past growth successes build massive internal and external imbalances that eventually undermine long-term growth prospects remains a concern, but Chinese officials appear quite aware of this threat, and recent history suggests that myopic adherence to the same growth strategies that were successful in past decades is unlikely.

### **III. Financial Sector Considerations**

We now turn to the possibility of financial crises derailing China’s growth in the short to medium term. First, we must note that China’s dependence on external sources of financing is very limited, thus differentiating it from other Asian tigers that suffered a major setback in the mid-to-late 1990s. In this regard, although FDI has been significant, its stock having grown from approximately \$1 billion in 1983 to \$446 billion in 2002, cf. [13, p.3], it has played

a relatively small role in China from a financial standpoint, cf. [3, p.5]. For example, FDI flows in 2007 were only approximately 4 percent of GDP, cf. [14, p.119], although their role in increasing total factor productivity was important as discussed above. Moreover, capital controls have constrained portfolio and debt financial inflows, and restrictions on foreign bank access have likewise made significant (Asian-flu style) capital outflows highly unlikely, cf. [14, p.114].

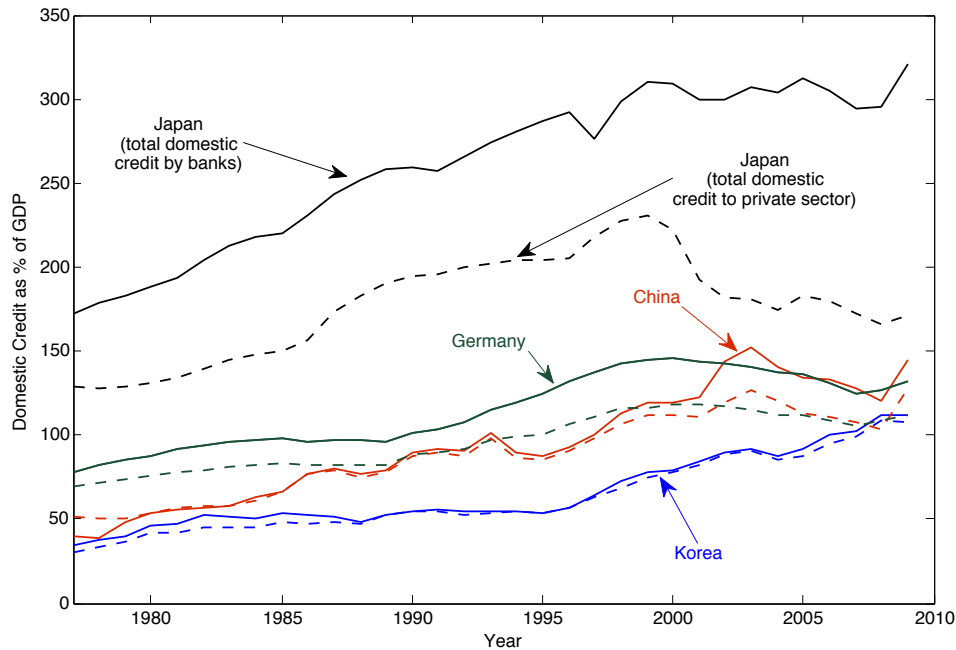


Figure 16: Credit Growth Comparison: Total Domestic Credit by Banks (solid lines) and Total Domestic Credit to Private Sector (dashed lines). *Source:* WB, WDI.

Therefore, because of its capital controls and other financial restrictions, as well as its primary reliance on domestic savings to fuel growth, China is likely to remain insulated from an Asian-flu type financial crisis. However, a Japanese-style domestic banking crisis, which results from massive volumes of nonperforming loans being unmasked by deceleration of economic growth, may still be possible under these conditions. The two culprits for this type of financial crisis would be: (1) a property boom fueled by cheap credit, and (2) massive excess capacity in the industrial sector as a legacy of cheap land, credit, and energy prices, which would eventually result in excess inventories, corporate losses, and defaults on loans.

The first question is whether the credit boom in China was significantly abnormal. Figure 16 compares two measures of credit extension for China, Japan, Germany, and South Korea: (1) total domestic credit extended by banks as a percentage of each country's GDP, and (2) total domestic credit to the private sector as a percentage of each country's GDP. This figure shows that both measures for China were similar to South Korea during the 1980s, but have become similar to Germany starting in the 1990s, and still remain below 150 percent, thus suggesting that either the credit boom in China, if it exists, has not reached alarming levels, or conversely, that the problem is not unique to China and an imminent credit bubble collapse would be catastrophic for the entire world. Taking into account the dominance of Chinese finance by banks that are under strong government control, given the underdevelopment of bonds and other financial markets, and the Chinese authorities' efforts to cool property markets by increasing downpayment requirements and tightening restrictions on ownership of multiple homes, cf. [3, p.16], as well as the massive size of bank deposits at around 160 percent of GDP, cf. [14, p.120], and with the benefit of very large official reserves that can be used to recapitalize banks as needed, a domestic credit bubble-driven banking crisis similar to Japan's seems highly unlikely.<sup>2</sup>

Indeed, Figure 16 shows that Japan's volume of domestic credit extended by banks has hovered around 300 percent in recent years, and has been consistently more than twice its counterpart for China. In addition, the relatively closed nature of the Chinese financial system, which has helped to insulate it from the financial crisis of 2006-2010, has also made periodic non-performing loan problems during growth deceleration relatively easy to handle through bank recapitalization, cf. [12, p.10]. In this regard, Chinese authorities admitted openly the existence of a significant non-performing loan problem around 2000, which required roughly \$500 billion in capital injection. Figure 17 shows that—at least according to official figures—the ratio of non-performing loans to total loans has been brought down to comfortably low levels, and banks' capital to asset ratios have likewise been excellent, especially considering that the banking sector is dominated by state-controlled banks that are easily recapitalized by the central bank.

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<sup>2</sup>An anonymous referee pointed out that the volume of extended credit reported here may be an underestimate because of growth of off-balance-sheet structured-finance activities in China. In this regard, Chinese banks are catching up with banks in countries with better developed financial systems, and the results of our analysis are unlikely to change substantially.

Therefore, the concern that “excessive reliance on investment and net exports to drive growth threaten” to produce excess inventories, losses, and another nonperforming loan buildup seems less threatening, cf. [2, p.112], [9, p.63]. The tight control over banking, which results in distortionary interest rate policies, does not seem to have resulted in an excessive credit boom, and has in the meantime helped to keep the detrimental effects of nonperforming loans minimal, cf. [13, pp.112-4]. Of course, as Pei has noted, cf. [13, p.117], official nonperforming loan statistics may be as misleading today as they were during 1999-2002, in part because bad loans are covered up when state-controlled banks are instructed to extend further loans in order to avoid default, cf. [9, p.46]. However, all things considered, and absent dramatic opening of the country’s financial sector that may cause massive outflow of deposits and other funds, growth deceleration remains unlikely to uncover a volume of nonperforming loans so large that recapitalization from existing reserves would not be sufficient to fix the problem.

#### **IV. Tunisia, Egypt ... and *China*? Wild-Card Sociopolitical Risk**

Increasing income inequality, wage repression, and other results and tools of economic growth have contributed to progressively higher degrees of discontent in China. The frequency and intensity of protests in China have increased significantly in recent years. For example, it has been reported that the number of mass protests grew tenfold between 1993 and 2005 (from 8,700 to 87,000), and that the total number of participants increased 60-fold, cf. [9, p.155]. Some have argued that it was shocking for Chinese society to transition from one of the most egalitarian to one of the most unequal within one generation, cf. [8, p.166]. Capital intensive heavy-industry growth has exacerbated the problem. For example, between 2000 and 2006, non-agriculture employment grew by 3 percent per annum even as non-agriculture growth grew by 9.5 percent per annum, and foreign-invested enterprises, mostly financed by European and US firms, accounted for less than 20 percent of the economy, but accounted for 40 percent of economic growth, concentrated in coastal provinces, cf. [19, p.3].

Thus, it has been reported that prominent Chinese economists and political scientists, including Wang Shaoguang, Hu Angang, and Ding Yuanzhu, have argued that China may become socially unstable, [13, p.14]. Susan Shirk has commented that “[p]rotests by workers laid-off by state factories are a daily occurrence, and rural unrest is spreading ... Well aware that Chi-

nese dynasties traditionally were toppled by peasant rebellions, the Communist Party leaders are trying to ease the dangerous strains in rural society by channeling more funds countryside,” cf. [18, p.256]. Toward that end, a portion of the domestic stimulus put in place to counter the global Great Recession has been directed to serve social objectives with an eye to averting massive social unrest, cf. [3, p. 13].

To date, and especially after averting a Tiananmen-led revolution, China, led by Deng Xiaoping, has gambled that fast growth, with gainers outnumbering losers, would be the best policy forward, cf. [9, p.122]. However, recent revolutions in Tunisia and Egypt, where similar bets and growth strategies were pursued, suggests that this strategy can backfire, as gradualism of reform—also pursued in Tunisia and Egypt—fails to produce the desired results because of rent-seeking behavior by insiders, which continues to distribute the fruits of growth in a distorted and apparently inequitable manner, c.f. [13, pp.23-8].

In this regard, the similarities between the Chinese experience on the one hand, and the Tunisian and Egyptian experiences on the other, is striking (perhaps not surprisingly, because the latter emulated the former in many ways). *International Risk Guide* shows increasing corruption in all three countries since the 1980s, with “quality of governance” and “regulatory quality” in China being very comparable to Egypt, cf. [13, p.5]. Investment growth in Tunisia and Egypt, much like Chinese investment growth, was as much driven by local politicians’ and their cronies’ rent-seeking as it was by productive economic opportunity, resulting in local mafias that controlled land sales and the like, cf. [9, p.34, 152] and [13, p.163].<sup>3</sup>

The irony in Tunisian and Egyptian revolutions is that the two countries had been successful in generating some advances in economic growth, which later led to worker empowerment, and labor strikes over the course of a few years, eventually paving the road for destabilizing revolutions. Chinese labor has also increased its assertiveness and the frequency and magnitudes of its protests, also ironically, in part, because of empowerment achieved through limited wage inflation, cf. [3, p.21]. However, significant redistribution from richer to poorer

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<sup>3</sup>An anonymous referee disagreed with the *International Risk Guide* and cited authors’ perception of the extent of corruption in China. The referee cites the high rate of incoming FDI to suggest that corruption in China cannot be as massive as these sources suggest. However, it is difficult to argue based on FDI numbers and relatively favorable assessments of EU and American Chambers of Commerce in China, as the referee suggests, because the counterfactual is difficult to quantify and Chambers of Commerce play an advocacy role that biases their assessments favorably.

provinces and sectors, which would reduce the level of discontent, is highly unlikely (e.g., richer provinces have even resisted paying higher taxes to central government, cf. [8, p.167]).

Therefore, China is facing the same destabilizing income distribution dynamics that Tunisia and Egypt have faced. Economic growth in these countries has helped to create a (quite visible) super-rich class at the expense of the poorer and middle classes. Thus, as shown in Figure 18, the three countries show much higher concentration of income among the rich than either less developed countries like Bangladesh or more developed ones like Korea.

China, Egypt, and Tunisia have also attained sufficiently higher levels of education than Bangladesh to raise expectations of upper social mobility, although tertiary education continues to lag significantly behind advanced economies such as South Korea, as shown in Figure 19. Therefore, the emerging middle classes in these countries dream of a more equitable knowledge-based economy that is still decades away from attainment, even if high rates of economic growth were to persist. This discrepancy between expectations and feasible attainment, together with information about rampant corruption that is widely available to an increasingly educated populace, serve as fuel for revolution.

The problem is made worse by policies that explicitly favor the rich. China's remarkable 25 percent savings rate by households makes the Chinese monetary policy, which has favored cheap credit, exceedingly redistributive in favor of rich businesses.<sup>4</sup> Although Egyptian savings rates are much lower, and Egypt's financial sector is much more open, at least to the richer classes, there are significant parallels to be drawn. Figure 20 shows that for both China and Egypt, there have been extended periods during which real interest rates for depositors have been negative—an inflation tax on household savings, which only the rich have financial options to avoid. Moreover, real lending rates have also been negative for extended periods of time—an explicit subsidy to the lucky (connected) businessmen who have access to bank credit. The (correct) perception that the government's policy amounts to a regressive tax code can further fuel discontent, which may eventually lead to destabilizing revolution.

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<sup>4</sup>An anonymous referee argued that interest rates may be low simply because of the abundance of savings, and that interest rates are not held low intentionally by the government to favor the rich. Of course, I am not suggesting that the government is explicitly favoring the rich, but the outcome is still effectively the same, that businesses can borrow cheaply and savers get virtually no return on their savings. This can be a source of discontent for the saving masses, even if the government is not accused of any pro-rich malice.

The security approach to growing discontent has also been quite similar in these countries: ruthless crackdown on leaders of protest movements, attempts at infiltration of protest groups, misinformation and censoring campaigns, and the like. One cannot rule out the possibility that years of fragmented protest movements may—with the help of increasingly sophisticated use of information technology to circumvent the governments' information blockades—result in massive and destabilizing revolt in China. In Egypt, the 2011 revolution has resulted in reduction of GDP growth forecasts from 7 percent to 2 percent, and a Chinese revolution would be a much larger sociopolitical seismic shift with larger impact on economic growth.

However, the fact remains that mounting a revolution is a difficult collective action problem. One can use a crass rule of thumb: The Tunisian revolution succeeded only when 10 percent of the population (approximately 1 million citizens) was mobilized to take to the streets. The Egyptian revolution, significant precursors of which were already in evidence as early as 2006, materialized later—with encouragement from Tunisian success, no doubt—and succeeded only when 10 percent of the Egyptian population (approximately 8 million citizens) took to the streets on February 11, 2011. If the same rule of thumb were to work for China, then more than 100 million would have to be mobilized simultaneously, a near impossibility. Of course, like major seismic shifts, the effects would be as terrible as the odds are small.

In addition, as an anonymous referee has pointed out correctly, citing Pew Research surveys, the masses in China have witnessed significantly higher improvement in their economic conditions and therefore have had much lower levels of discontent about the economic condition relative to the masses in Egypt and Tunisia. Thus, the levels of shared frustration that have made spontaneous revolution-size demonstrations possible in Tunisia and Egypt are less manifest in China. In other words, the authoritarian bargain has worked to much greater extent in China by delivering incredible rates of economic growth. Coupling the lower level of frustration with the gargantuan collective action problem to mobilize tens of millions of prospective protesters, it appears that the risk of disruptive upheaval in China is minimal. The referee is also correct in pointing out that a disruption in China would be so destabilizing to the global economy that Western powers would actively intervene to help the Chinese government muddle through any difficulties. In the referee's words, "China is too big to fail."

## Chinese Growth Prospects in the Short to Medium Term

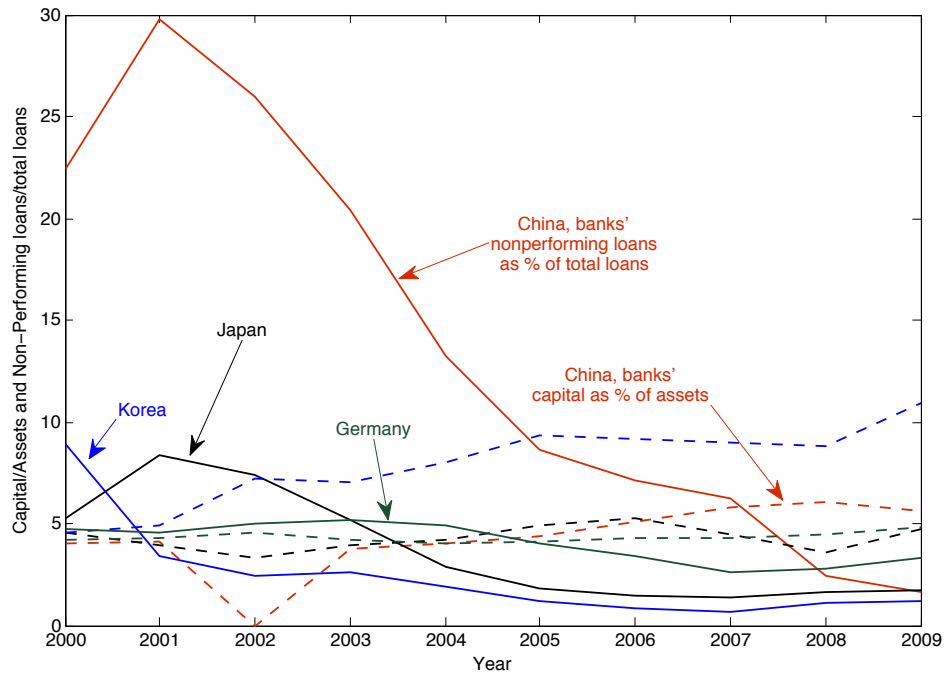


Figure 17: Bank Health Comparison: Nonperforming loans as a Percentage of Total Loans (solid lines) and Capital as a Percentage of Total Assets (dashed lines). *Source:* WB, WDI.

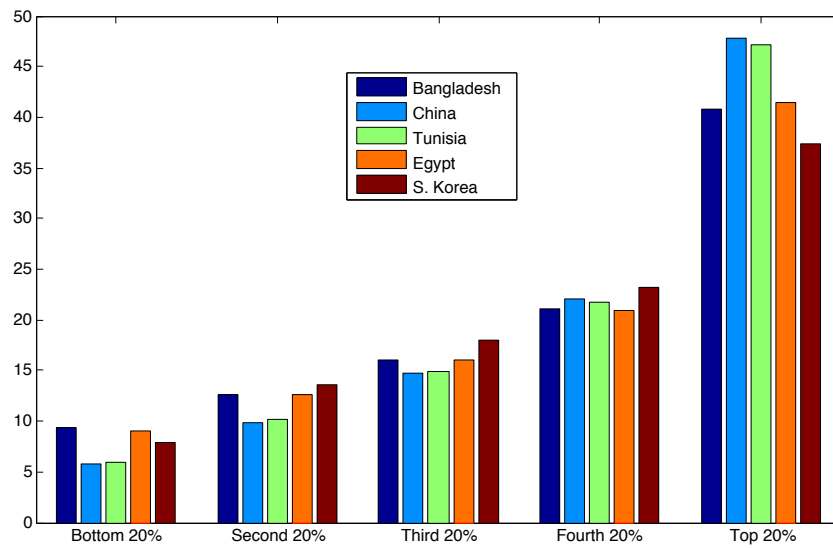


Figure 18: Income Distribution Comparison by Quintiles. *Source:* WB, WDI.

## Chinese Growth Prospects in the Short to Medium Term

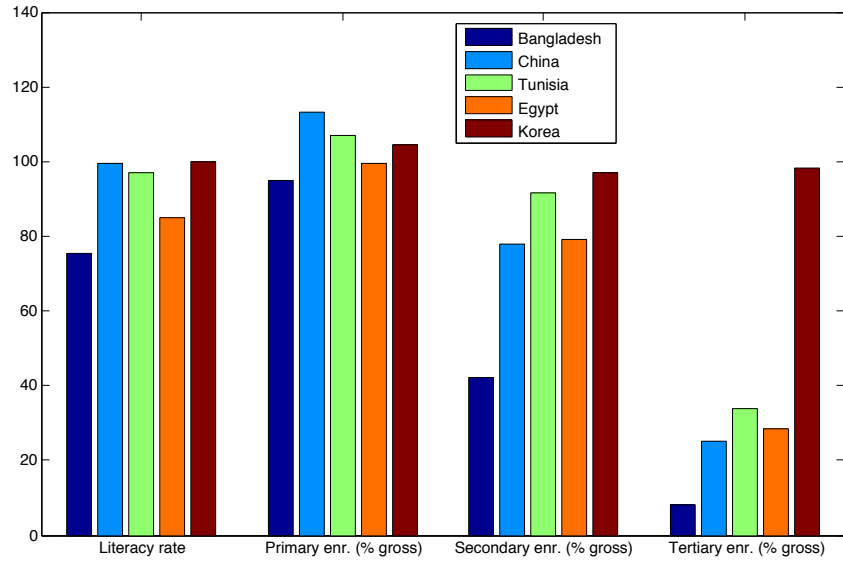


Figure 19: Levels of Education Comparison. *Source:* WB, WDI.

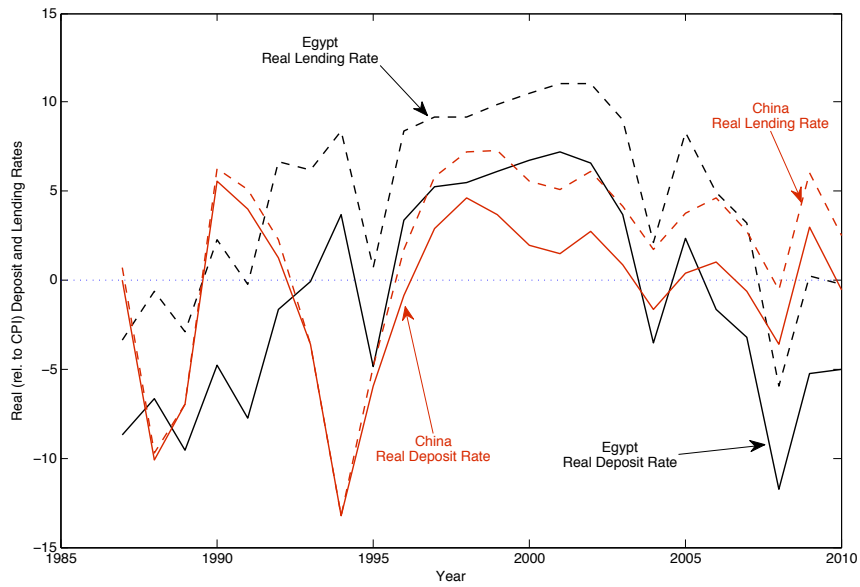


Figure 20: Deposit and Mortgage Lending Rates Less CPI % Change. *Source:* IMF, IFS.

In conclusion, expectations that Chinese growth will fizzle away in the medium term due to imbalances of the growth model, financial crises, or sociopolitical revolt are all remote. Moreover, if any of these factors or a combination were to result in significant slowdown of Chinese growth, the same factors would impact other countries that share the same economic, financial, and sociopolitical imbalances. If one's goal was to forecast the effect of Chinese economic growth on energy-demand growth, one can safely consider only two scenarios: a likely one where Chinese growth continues for the medium term and a remote but devastating one where the entire world is thrown into an economic downturn worse than the Great Depression. Scenarios where Chinese growth slows down significantly but the rest of the world continues to grow moderately seem so extremely unlikely as not to warrant any consideration.

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