BOFIT Discussion Papers
8 • 2011

Wing Thye Woo

China's economic growth engine: The likely types of hardware failure, software failure and power supply failure

EUROJÄRJESTELMÄ
EUROSYSTEMET

Bank of Finland, BOFIT
Institute for Economies in Transition

BOFIT Discussion Papers
Editor-in-Chief Laura Solanko

BOFIT Discussion Papers 8/2011
24.5.2011

Wing Thye Woo: China's economic growth engine: The likely types of hardware failure, software failure and power supply failure

ISBN 978-952- 462-703-3
ISSN 1456-5889
(online)

This paper can be downloaded without charge from
http://www.bof.fi/bofit

Suomen Pankki
Helsinki 2011

Contents

Abstract 3

Tiivistelmä 4

1 Introduction The bust in gloom-and-doom talk (so far) 5

2 The road to prosperity might not be a smooth one 6

3 Fiscal Stress from the state-owned banks could cause hardware failure 8

4 Flaws in governance could cause software failure 16

5 The first likely type of power supply failure is trade protectionism 22

6 Trade protectionism against China created by defects in the US economy 23

7 Trade protectionism against China created by defects in the Chinese economy 28

8 The second likely type of power supply failure is environmental collapse in China 31

9 Conclusion 37

References 42

All opinions expressed are those of the author and do not necessarily reflect the views of the Bank of Finland.

Wing Thye Woo*

China's economic growth engine: The likely types of hardware failure, software failure and power supply failure

Abstract

The 6th Plenum of the 16th Central Committee of the Communist Party of China (CPC) concluded on October 11, 2006, with the commitment to establish a harmonious society by 2020. The obvious implication from this commitment is that the present major social, economic and political trends are not leading to a harmonious society or, at least, not leading to a harmonious society fast enough. Analytically, if the Chinese economy is depicted as a speeding car, there are three classes of failures (a) ***a hardware failure*** from the breakdown of an economic mechanism, a development that is analogous to the collapse of the chassis of the car; (b) ***a software failure*** from a flaw in governance that creates frequent widespread social disorders that disrupt production economy-wide and discourage private investment, a situation similar to a car crash that resulted from a fight among the people inside the speeding car; and (c) ***a power supply failure*** from hitting either a natural limit or an externally-imposed limit, a situation that is akin, respectively, to the car running out of gas or to the car smashing into a barrier erected by an outsider. For hardware failure we discuss the possible weakening of China's fiscal position generated by the repeated recapitalization of the state banks. For software failure, we discuss possible social disorder caused by outmoded governance. And for power supply failure, we discuss the possible trade disputes from China's chronic trade imbalances and the physical constraints posed by China's rapidly deteriorating natural environment.

Keywords: China, growth, banks, environment
JEL: O43, O44, P48, O53

I am deeply grateful to Xiaoming Huang, Iikka Korhonen, Aaron Mehrotra and Laura Solanko for incisive comments that improved this paper tremendously. I am also deeply grateful for the guidance on my analysis that I received from the participants in The Wellington Conference on Contemporary China 2011- China and India: The End of Development Models? held at Victoria University of Wellington, New Zealand, on 13 April 2010; and from the participants in the Bank of Finland seminar held on 15 December 2010.

* Wing Thye Woo, Economics Department, University of California, Davis

Wing Thye Woo

China's economic growth engine: The likely types of hardware failure, software failure and power supply failure

Tiivistelmä

Tässä tutkimuksessa tarkastellaan kolmentyyppisiä rajoitteita Kiinan talouskasvulle tulevaisuudessa. 1) Taloudellisten mekanismien rikkoutumisesta johtuva tekninen vika, jonka voidaan ajatella vastaavan auton pohjan pettämistä. Tällaiseen tekniseen vikaan Kiinan taloudellisen kasvun kilpa-autossa voi johtaa pankkien jatkuvasta pääomittamisesta johtuva budjettitasapainon heikkeneminen. 2) Hallintotavan ongelmista johtuva ohjelmointivirhe, joka voisi vastata tilannetta, jossa auton ohjaajan ja matkustajien välinen käsirysy johtaa kolariin.Ohjelmointivirheen kaltaisen ongelman voi aiheuttaa huono hallintotapa tai laaja korruptio. 3) Luonnollisten tai ulkoisten rajoitteiden aiheuttama voimansiirron ongelma, joka vastaa bensan loppumista tai auton törmäämistä radan suoja-aitaan. Tämäntyyppisiä ongelmia voivat luoda sekä mahdolliset kauppakiistat että Kiinan ympäristön tilan heikkeneminen.

Asiasanat: Kiina, talouskasvu, pankit, ympäristö

1 Introduction
The bust in gloom-and-doom talk (so far)

Predictions of gloom and doom for China have a long tradition amongst China economists. For example, in the mid-1990s, Nicholas Lardy of the Peterson Institute for International Economics started highlighting the de facto insolvency of the Chinese banking system with the implication that a bank run leading to financial sector collapse (which would then be likely to send the economy into a tail spin) was a strong possibility in the medium term.[1] The 21st century began with the claim by Gordon Chang (2001) that China's imminent accession World Trade Organization (WTO) would cause such widespread unemployment within China's already alienated population that China's economic and political systems would collapse.

These two dire predictions have turned out to be wrong. China, in fact, accelerated its annual GDP growth to double-digit rates after 2001. Nicholas Lardy was wrong because while the banks were indeed bankrupt, the Chinese government which owned them was not bankrupt and could hence afford to bail out the banks when necessary. The fiscal strength of the government made it irrational for depositors to contemplate a bank run. Gordon Chang was wrong because the WTO membership quickened the pace of job creation in China by greatly increasing the volume of FDI inflow. The WTO membership made China more attractive to FDI because it guaranteed the access of Chinese goods to the US market by eliminating the need for China to get the most-favored-nation (MFN) status annually from the US Congress; McKibbin and Woo (2003).

The most recent literature on China's future growth has once again become pessimistic. One of the most astute of China analysts, Minxin Pei (2006a), has argued that China is now in a *trapped transition* that is described as "a transformative phase in which half-finished reforms have transferred power to new, affluent elites"[2] who are using crony capitalism to generate high economic growth that is not sustainable. He felt that meaningful reform to ensure continued high growth was improbable.[3]

[1] Lardy (1998) wrote that: "China's major banks are even weaker than most official data suggest .. On a realistic accounting, these banks' capital adequacy is negative, and they are insolvent (pp. 95) ... The failure of China's largest financial institutions would disrupt the flow of credit and disrupt the payments system, leading to a collapse of economic activity. The failure of major banks also could have long-term implications for the household savings rate ...A lower savings rate would mean a lower rate of investment and slower growth, in turn depressing the rate of new job creation, leading to sustained higher levels of unemployment" (pp. 143-144).

[2] Pei (2006b).

[3] According to Minxin Pei (2006b):"In a 'trapped transition', the ruling elites have little interest in real reforms. They may pledge reforms, but most such pledges are lip service or tactical adjustments aimed at maintaining the status quo."

Pei's pessimism about the inevitable exhaustion of China's growth momentum is shared by another leading China scholar, Yasheng Huang (2008). In Huang's contrarian assessment, China in 1999 was actually less capitalistic than China in 1989. He asserted that the administration of Jiang Zemin and Zhu Rongji, that ended in March 2003, had reversed the march toward capitalism by systematically promoting the growth of large state-owned firms in the urban areas and suppressing the activities of the privately-owned small and medium firms in the countryside. Huang has attributed the deterioration in income distribution across classes and across regions to this re-occupation of the commanding heights of the economy by state-controlled companies (often in cahoots with foreign private companies), and the intensification of discrimination against the domestic private firms. Because Huang believes (very reasonably, based on international experience) that the state-controlled firms are intrinsically less innovative than the domestic private firms, he concludes that China is unlikely to be able to move on to the next stage of economic development in the near future (at least not before India does so[4]).

2 The road to prosperity might not be a smooth one

This long tradition of forecasting gloom and doom about China is really quite surprising because China's economy has been like a speeding car for almost thirty years. Hence, not surprisingly, it is becoming more common to hear glowingly optimistic assessments of China's future than dismissively pessimistic ones. For example, Jim O'Neill, Dominic Wilson, Roopa Purushothaman and Anna Stupnytska (2005) of Goldman Sachs have predicted that China's GDP would surpass that of the United States in 2040 even after assuming that China's GDP growth rate would slow down steadily from its average annual of 10 percent in the 1979-2005 period to 3.8 percent in the 2030-2040 period.[5]

I think that a good guide on how one should regard the new optimism and the traditional pessimism is found in the discussions of the 6th Plenum of the 16th Central Committee of the Communist Party of China (CPC) that concluded on October 11, 2006. The 6th Plenum passed a resolution to commit the CPC to establish a harmonious society by 2020. The obvious implication

[4] As Huang (2006) sees that India does not discriminate against its indigenous capitalists in favor of foreign capitalists, he predicts that "[u]nless China embarks on bold institutional reforms, India may very well outperform it in the next 20 years."

[5] For a review of the debate on how to interpret China's high growth in the 1978-2000 and why China, unlike the economies of the former Soviet bloc, did not experience a recession when it made the switch from a centrally-planned economy to a market economy, see Sachs and Woo (2000), and Woo (2001).

from this commitment is that the present major social, economic and political trends within China might not lead to a harmonious society or, at least, not lead to a harmonious society fast enough.

Among the disharmonious features mentioned in the fifth paragraph of the "resolutions of the CPC Central Committee on major issues regarding the building of a harmonious socialist society" were serious imbalance in the social and economic development across (and within each of) China's thirty-one provinces; worsening population and environmental problems; grossly inadequate social safety nets, and medical care system; and serious corruption. The harmonious socialist society proposed by the 6th Plenum would encompass a democratic society under the rule of law; a society based on equality and justice; an honest and caring society; a stable, vigorous and orderly society; and a society in which humans live in harmony with nature.

What is the origin of the CPC's decision to change its primary focus from "economic construction" to "social harmony"? And why include a target date of 2020? I believe that this switch in emphasis from "economic construction" to "social harmony" occurs because the Hu-Wen leadership is well aware that the political legitimacy of CPC rule rests largely on maintaining, one, an economic growth rate that is high enough to keep unemployment low, and, two, a growth pattern that diffuses the additional income widely enough. Specifically, the Hu –Wen leadership recognises that without accelerated institutional reforms and new major policy initiatives on a broad front, the 1978-2005 policy framework, which had produced an average annual GDP growth rate of almost 10 percent, is at odds with environmental sustainability and with international concerns about China's persistent trade imbalances. More importantly, unless their new policies could produce significant improvements in social harmony by 2020, social instability would reduce China's economic growth, hence, making the leadership of CPC in Chinese politics unsustainable.

To return to the analogy of China's economy being like a speeding car, the Hu-Wen leadership saw that car could crash in the near future because there were several high-probability failures that might occur and cause an economic collapse. To be specific that there are three classes of failures that could occur hardware failure; software failure; and power supply failure.

A hardware failure refers to the breakdown of an *economic mechanism*, a development that is analogous to the collapse of the chassis of the car. Probable hardware failures include a banking crisis that causes a credit crunch that, in turn, dislocates production economy-wide, and a budget crisis that necessitates reductions in important infrastructure and social expenditure (and also possibly generates high inflation, and balance of payments difficulties as well).

A *software failure* refers to a flaw in *governance* that creates frequent widespread social disorders that disrupt production economy-wide and discourage private investment. This situation is similar to a car crash that resulted from a fight among the people inside the speeding car. Software failures could come from the present high-growth strategy creating so much inequality, and corruption that, in turn, generates severe social unrest, which dislocates economic activities; and the state not being responsive enough to rising social expectations, hence causing social disorder.

A *power supply failure* refers to the economy being unable to move forward because it hits either *a natural limit or an externally-imposed limit*, a situation that is akin, respectively, to the car running out of gas or to the car smashing into a barrier erected by an outsider. Examples of power supply failures are an environmental collapse, e.g. climate change, and a collapse in China's exports because of a trade war. In a sense, the repair of a power supply failure is more difficult than either the repair of a hardware failure or the repair of a software failure because a large part of the repair has to be undertaken in collaboration with other countries. For example, the lowering of trade barriers requires China to negotiate with other countries; and the reversal of environmental damage could require an advance in scientific understanding, a outcome that is more likely to occur when the entire scientific talent in China and the rest of the world is focused on the task.

The discussion of the many events that could make China's high growth unsustainable is beyond the scope of this paper. I will limit my discussion to one or two of the most likely precipitating events in each class of failures. Section 3 identifies the weakening of China's fiscal position by nonperforming loans in the state banks as the likely type of hardware failure that would occur. Section 4 discusses the outbreak of social disorder as the likely type of software failure. For power supply failures, I think that the two most likely ones are (a) the erection of trade barriers against China’s exports (discussed in Sections 5, 6 and 7); and (b) an environmental collapse, especially a shortage of water (discussed in Section 8).

3 Fiscal Stress from the state-owned banks could cause hardware failure

Among doomsayers, one favorite mechanism for the forthcoming collapse of an economy is the inevitable fiscal crisis of the state. What is noteworthy is that this fiscal mechanism is used by doomsayers of all stripes. The Marxist economist, James O'Connor (1973), predicted that the dynamics of capitalist America would precipitate a fiscal crisis that would destabilize the economy completely.

In turn, the capitalist lawyer, Gordon Chang (2001), predicted that a fiscal crisis could be the triggering event in the unavoidable disintegration of socialist China.

This fixation of the doomsayers upon a large negative fiscal shock as a totally destructive systemic shock is understandable because fiscal imbalance is the proximate cause in most crises. The reason is that the state budget is often faced with the task of defusing the cumulative tensions unleashed by deeper, more fundamental social processes. To a first approximation, fiscal capacity is a fundamental determinant of system stability because economic sustainability depends on the ability to cover production costs, and political viability depends on the ability to reward one's supporters and to pay off one's enemies.

The reality in many cases is that fiscal sustainability is the prerequisite for both economic sustainability and political viability, and that economic sustainability and political viability are intricately linked and mutually reinforcing. To see the mutual interdependence of the two, one has only to recall the many times that near-bankrupt governments have been driven out of power after raising the prices of a subsidized item like food, petrol, or foreign exchange.[6] One could indeed go so far as to say that the degree of economic and political resilience of a state can be measured by the state's ability to cover an unexpected, prolonged increase in expenditure or an unanticipated, protracted shortfall in revenue.

An OECD (2006) report has raised grave concerns about China's fiscal management. Specifically:

> "China's officially reported spending figures reflect only about three-quarters of total government spending. Extra-budgetary spending, social security outlays and central government bond financing of local projects are not part of the official budget. Notwithstanding recent reforms, the government remains overly exposed to extra-budget and off-budget activities, which make public expenditures difficult to plan and control and which impair their accountability and transparency. Contingent liabilities have been a major source of unplanned spending and pose perhaps the greatest risk to the controllability of future expenditure." (pp. 10)

The fact that fiscal sustainability is central to economic management can be seen in the two fiscal targets that the original Growth and Stability Pact of the countries in the Euro-Zone specified for its members to meet the consolidated government budget deficit should not exceed 3 percent of GDP except in case of unusually severe downturn, and the debt-GDP ratio should be brought down to 60 percent or lower.

[6] For example, President Soeharto of Indonesia was pushed out of office in May 1998, one month after raising fuel prices

Table 1 gives an international perspective on the fiscal situation in China by comparing it with those in the OECD countries. I chose the year 2001 for China because I want to postpone until later the discussion on the fiscal consequences of the now ongoing recapitalization of the state-owned banks (SOBs). I use the year 2003 for OECD because the cross-country data were conveniently available for this year. [7] Table 1 reports that China's official debt-GDP ratio was 16.4 percent, which compared very favorably with the OECD average of 75.3 percent. If the tiny state of Luxembourg is treated as an exception and excluded from the comparison, then the lower half of the OECD distribution of debt-GDP ratios ranges from 18.6 percent (South Korea) to 55.5 percent (Denmark); and the upper half of the distribution ranges from 58.1 percent (Hungary) to 154 percent (Japan).

As China's debt-GDP ratio of 16.4 percent is below the 18.6 percent of South Korea, and as China's annual budget deficit has nearly always been below 3 percent of GDP, it would seem that China has a sounder fiscal situation than all the OECD countries.8 Such an impression needs to be qualified however. Many analysts have noted that China's official debt-GDP ratio understates the extent of China's fiscal burden because it does not include the nonperforming loans in the SOBs that the state would have to take over during recapitalization, and it does not include many contingent liabilities (e.g. pension schemes of state enterprises) that the state would have to assume responsibility for in order to preserve economic and social stability. Citigroup (2002), for example, has estimated that the cost for SOB recapitalization was 46.9 percent of GDP, social security obligations was 26.1 percent, and external debts was 15.6 percent.

[7] http://stats.oecd.org/wbos/viewhtml.aspx?QueryName=2&QueryType=View&Lang=en
[8] Except for Luxembourg which was excluded because of its atypical nature.

(as a percent of GDP)

Table 1 Comparative perspective on the size of the national debt (as a percent of GDP)

(I) OECD's Fiscal Situation

	General government gross financial liabilities		*Total tax revenue*	
	1995	2003	1995	2003
Luxembourg	6.7	6.7	42.3	41.3
Korea	5.5	18.6	19.4	25.3
Australia	43.4	18.9	29.8	31.6
Ireland	81.2	31.1	32.8	29.7
New Zealand	51.7	32.0	36.9	34.9
Iceland	59.4	41.4	32.1	39.8
United Kingdom	52.7	41.9	35.1	35.6
Czech Republic	19.3	46.8	37.5	37.7
Slovak Republic	n.a.	49.7	n.a.	31.1
Norway	40.5	50.4	41.1	43.4
Finland	65.1	52.0	46.0	44.8
Poland	n.a.	52.1	37.0	34.2
Spain	68.8	54.8	31.8	34.9
Denmark	77.6	55.5	49.5	48.3
Hungary	n.a.	58.1	42.4	38.5
Sweden	82.2	59.8	48.5	50.6
Netherlands	87.0	61.9	41.9	38.8
United States	74.2	63.4	27.9	25.6
Germany	55.8	64.6	37.2	35.5
Portugal	69.9	66.6	33.6	37.1
Austria	69.6	69.4	41.1	43.1
France	62.6	71.7	42.9	43.4
Canada	100.8	75.7	35.6	33.8
Belgium	135.2	103.2	44.8	45.4
Greece	108.7	108.8	32.4	35.7
Italy	125.5	121.4	41.2	43.1
Japan	87.0	154.0	26.7	25.3
OECD total	72.8	75.3	35.7	36.3

(II) China's Fiscal Situation

	Debt-GDP (%)	*Revenue-GDP (%)*		
	2001	1995	2001	2008
Official data	16.4	10.7	16.8	20.5

	Revised debt-GDP ratio in 2001 after taking into account:	
	(a) 2nd recapitalisation costs	*(b) all contingent liabilities*
Citigroup (2002)	65.9	114.9
Fan (2003)	57.4	74.7

OECD data from: http://stats.oecd.org/wbos/viewhtml.aspx?QueryName=2&QueryType=View&Lang=en
China revenue data for 1995 and 2001 are from China Statisctical Yearbook 2005, and revenue estimate for 2007 is from Deutsche Bank (2009).

Part II of Table 1 uses estimates from Citigroup (2002) and Fan (2003) to revise China's official debt-GDP ratio. The outcomes are that China's debt-GDP ratio is 57.4 to 65.9 percent when only SOB recapitalization is undertaken; and 74.7 to 114.9 percent when all contingent liabilities are recognized. This change in China's debt-GDP ratio moves China from the bottom of the OECD distribution to the top half of the distribution; and, in the worst case scenario, puts China in the group of the five OECD countries with the highest ratios; 74.7 to 114.9 percent for China versus 75.7 per-

cent for Canada, 103.2 percent for Belgium, 108.8 percent for Greece, 121.4 percent for Italy, and 154 percent for Japan.

Should the much higher revised debt-GDP ratio raise concern about China's fiscal sustainability? Our cautious reading of the evidence is that a fiscal crisis is not imminent in China. China's ratio not only falls within the OECD experience, its worst-case ratio of 114.9 percent is still lower than Italy, which has been performing satisfactorily in overall economic performance. Most importantly, China's ratio is still substantially lower than the highest OECD ratio of 154 percent (Japan).

While I believe China's fiscal regime to be sustainable, there are two fiscal features that have rendered the fiscal system vulnerable to a crisis. The first fiscal feature is that China has a lower capacity to service its public debt than all the OECD countries. While China's revenue-GDP ratio has been increasing rapidly from 10.7 percent in 1995 to 16.8 percent in 2001, and to an expected 20.5 percent in 2008, the 2008 level is still too low by OECD standards. The average revenue-GDP ratio in the OECD in 2003 was 36.3 percent, with the three lowest ratios (25.3 percent for Japan and South Korea, and 25.6 percent for the United States) higher than China's. While China's best-case debt-GDP ratio of 57.4 to 65.9 percent puts China in the same group as Denmark (55.5 percent), Hungary (58.1 percent), Sweden (59.8 percent), and Netherlands (61.9 percent), China's revenue-GDP ratio is only 20.5 percent compared with Denmark's 48.3 percent, Hungary's 38.5 percent, Sweden's 50.6 percent, and the Netherland's 38.8 percent. For the OECD countries with debt-GDP ratios that are similar to China's worst-case debt-GDP ratio of 74.7 to 114.9 percent, all of them also have higher revenue-GDP ratios: 20.5 percent for China versus 33.8 percent for Canada, 45.4 percent for Belgium, 35.7 percent for Greece, and 43.1 percent for Italy.

The important point about this first fiscal feature is that as China's public debt rises from 16.4 percent of GDP to 74.7 percent with the incremental assumption of the contingent liabilities, the state will have to reduce expenditure steadily to accommodate the additional debt service unless there is an increase in state revenue.

The second fiscal feature that renders China vulnerable to a fiscal crisis is the constant need to recapitalize the SOBs. In 1998-1999, the government injected new capital into China's banks and transferred a large proportion of the NPLs to the state-owned asset management corporations (AMCs) in order to raise the capital adequacy ratio (CAR) of the four largest state-owned banks, commonly referred to as the Big Four[9], from 4.4 percent at the end of 1996 to over 8 percent

[9] The Big Four are Agricultural Bank of China, Bank of China, China Construction Bank and Industrial and Commercial Bank of China.

at the end of 1998. However, the rapid appearance of new NPLs after 1998 has lowered the average CAR of the Big Four to 5.0 percent by the beginning of 2002.

The outcome was that China undertook a second round of recapitalization of the SOBs in 2003. Some unorthodox methods were used, e.g. in late 2003, Bank of China and China Construction Bank received a capital injection US$22.5 billion each from the foreign reserves of the People's Bank of China.[10] The results of this second recapitalization, and the rapid expansion of loans in the last two years is that the NPL ratio has improved, and the CAR of the Big Four was about 8 percent respectively at the end of 2004.

The important question is how many more rounds of bank recapitalization can China afford without generating a fiscal crisis? The simple fact is that fiscal sustainability lies at the heart of whether a banking crisis would actually occur. As long as the state is perceived to be able and willing to bail out the SOBs, depositors would retain their confidence in the SOBs regardless of the actual state of their balance sheets. Since the stock of publicly acknowledged government debt in 2004 is only about 33 percent of GDP, it is usual to hear official assurances that the current fiscal deficits of less than 2 percent of GDP do not pose a problem for debt servicing by the state.[11] However, the current value of the debt-GDP ratio is not a good indicator of the sustainability of the existing fiscal policy regime, a better indicator would involve working out the evolution of the debt-GDP ratio over time.

To put the issue formally, the evolution of the debt-GDP ratio as given by:

$$d(\ln[\text{Debt}/\text{GDP}])/dt = r + [\text{GDP}/\text{Debt}]\cdot[f + b] - y$$

where

r = real interest rate on government debt

f = primary fiscal deficit rate

= [state expenditure excluding debt service – state revenue] / GDP

b = NPL creation rate

= [change in NPL in SOBs] / GDP

y = trend growth rate of real GDP

[10] The People's Bank of China established an investment company (Central Huijin Company) under the State Administration of Foreign Exchange to undertake this injection of capital. This gave Huijin 85 percent of the ownership of China Construction Bank, and 100 percent of Bank of China.

[11] One should really use the consolidated debt of the state sector because it includes at least some part of the contingent liabilities (e.g., foreign debts of SOEs and SOBs, and unfunded pension schemes in the SOE sector) that the state might have to assume responsibility for when the state-owned units default on their financial obligations.

As long as y > r, then the Debt/GDP ratio will have a steady-state value that is nonzero when sum of (f + b) > 0. Specifically,

$$(\text{Debt/GDP})_{\text{steady-state}} = (f + b) / (y - r) \quad \text{when } y > r$$

China appears to belong to this case because its post-1978 annual growth rate has averaged 9.4 percent, its growth rate in the next ten years is likely to be above 8 percent; and the real interest rate has been about 4 percent. For the generation of likely future scenarios, I will make the conservative assumptions that *y* is 8 percent, *f* is 1 percent, and *r* is 6 percent.[12] It is difficult to predict *b*, the rate that banks would generate NPLs, because it depends on the type of banking reform undertaken. If no meaningful reforms are undertaken, then *b* is likely to remain at the historic value of 6 percent.

So conditional on the effectiveness of reforming the SOBs, the steady-state ratio is:

$(\text{Debt/GDP})_{\text{steady-state}}$ = 350 percent when *b* = 6 percent
$(\text{Debt/GDP})_{\text{steady-state}}$ = 200 percent when *b* = 3 percent
$(\text{Debt/GDP})_{\text{steady-state}}$ = 100 percent when *b* = 1 percent

The noteworthy finding from above scenarios is that China will produce a level of $(\text{Debt/GDP})_{\text{steady-state}}$ that is high by international experience despite the optimistic assumptions that long-run growth rate is 8 percent, that that b will be lowered from 6 percent of GDP to 1 percent. The most optimistic outcome is still two-third larger than what the European Union has set to be the "safe" debt-GDP target (60 percent) for its members. The banking system has made China vulnerable to a fiscal crisis even though there is a theoretical steady-state level for the debt-GDP ratio. Of course, the creation of NPLs cannot be attributed entirely to the SOBs, their chief customers, the embezzlement-ridden and inefficiency-ridden SOEs,[13] deserve an equal share of the blame.

The important point from this second fiscal feature is that the present ongoing recapitalization of the SOBs is the last time that the government can afford to recapitalize the SOBs, and possibly the last time that the government can do so without upsetting confidence in the financial markets about the soundness of China's fiscal regime.

[12] *f* has been above 1.5 percent for the past seven years. *r* was 4 percent in the past only because the interest rate was regulated. I think that the implementation of financial deregulation that is necessary for normal healthy development of the financial sector will render *r* to be at least 6 percent because, one, according to Solow (1991), the stylised fact for the real interest rate in the United States is that it is 5 to 6 percent; and, two, both the marginal rate of return to capital and the black market loan rate have been more than 20 percent.

[13] See Woo, Hai, Jin, and Fan (1994), and Woo (2001).

Now, how difficult is it to stop losses in the SOBs in order to ensure fiscal sustainability? The solution lies in imposing a hard budget constraint on the SOBs. SOB managers have to be convinced that the present recapitalization is indeed the last free supper (which the 1998 recapitalization was announced to be), and that their compensation and promotion will depend only on the profitability of the SOBs relative to the profitability of private banks.

At the same time, the prudential supervision and monitoring of bank operations will have to be strengthened to prevent asset stripping and discourage reckless investments fostered by the asymmetrical reward system under the soft budget constraint.14 The operations of SOBs could be further improved by bringing in foreign strategic investors who would be part of the management team, and by removing the influence of the local governments on bank operations.

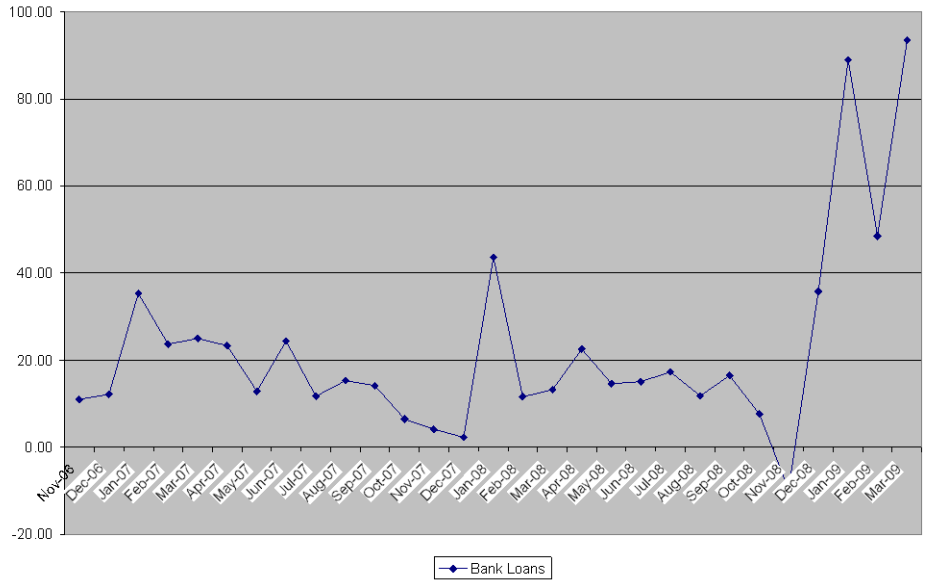
One additional way to harden the budget constraint faced by the SOBs is to privatize some of their branches, and use the performance of the new private banks to gauge the performance of the remaining SOBs. The privatization of some branches will also help convince the SOB managers that the government is indeed serious about the present SOB recapitalization is indeed the last free supper.

The NPL ratio has stayed low since the second round of recapitalization in 2003. It is, hence, now more frequent to hear claims that the SOBs have improved their internal incentives and risk assessment ability so much that large NPL ratios are a thing of the past. I think, however, that it is premature to pronounce victory on SOB reform because the 2003-2008 period has been one of high growth.

The very aggressive fiscal-monetary policy mix undertaken by the government to combat the Global Finance Crisis that hit China at the end of the third quarter of 2008 may yet create a large amount of bad bank loans. The sharp export decline brought GDP growth in 2008:4Q down to 1.5 percent from the double-digit growth rates in the first three quarters. The resulting drop in demand for production financing caused bank loans to fall by 9.8 percent in November 2008.

[14] The asymmetry is from the absence of financial punishment when a loss occurs.

Figure 1 Growth rate of bank loans (annualized)



The Chinese government responded with a fiscal stimulus of 4 trillion RMB that would be undertaken in 2009-2010, an annual stimulus of about 7 percent of GDP. Monetary easing has been even more dramatic. The annualized growth rate of bank loans in the November 2006 to December 2008 period has been in the range of -9.8 percent of 43.6 percent, with an average growth rate of 16.2 percent. Since December 2008, the credit quotas have been relaxed and bank managers have been encouraged to lend generously. The result has been a quantum leap in bank lending in 2009. Bank loans increased 89 percent in January 2009, 48 percent in February 2009, and 94 percent in March 2009 – see Figure 1. It might be too naive believe that this recent rapid increase in bank lending in such a short period would not lead to the emergence of a large amount of NPLs in the future.[15]

4 Flaws in governance could cause software failure

The satisfactory functioning of a market economy requires a wide array of regulatory institutions that range from straightforward law-and-order administration to complicated legal adjudication that would, for example, have the prerequisite scientific understanding to determine whether a patent case involves real technological innovation or not. China's strategy of incremental reform combined with the fact that institution building is a time-consuming process meant that many of its regulatory institutions are either absent or ineffective. The results have been governance failures on

[15] See Woo and Zhang (2010) and Woo and Zhang (forthcoming) for a detailed discussion of the Chinese macroeconomic policy response to the Global Financial Crisis.

many fronts, of which the most well-known recent governance failures are the violations against the welfare of consumers and workers.

There have been significant regulatory failures in keeping China's food supply and pharmaceutical products safe. The misuse of chemicals to lower production costs has resulted in the addition of poisonous substitutes into toothpaste,[16] cough medicine,[17] and animal feed;[18] the application of lead paint to children toys;[19] and the over-employment of antifungals and antibacterials in fish farming.[20] Most of these above abuses received enormous attention because these items were exported to other countries and their harmful effects were reported widely in the international press.[21] Clearly, the Chinese consumers have been suffering much more from such types of malfeasance, the scope of which has not been realized because of the considerable press censorship in China.[22]

Dereliction in duty by government officials is the fundamental reason for such governance failures. The most well-known recent case was the conviction of Zheng Xiaoyu, the former director of China's food and drug safety agency, for accepting bribes to approve production licenses for pharmaceutical companies and food companies. Such dereliction in official oversight has resulted in:

> "tens of thousands of people ..[being] sickened or killed every year as a result of rampant counterfeiting of drugs, and tainted and substandard food and drugs. For instance, last year 11 people died in China with an injection tainted by a poisonous chemical. Six people died and 80 others fell ill after taking an antibiotic that had been produced ... with a substandard disinfectant. Small drug makers in China have long been accused of manufacturing phony or substandard drugs and marketing them to the nation's hospitals and pharmaceutical companies. And mass poisonings involved tainted food products are common."[23]

[16] "China Investigates Contaminated Toothpaste," The New York Times, May 22, 2007; and "China Prohibits Poisonous Industrial Solvent in Toothpaste," The New York Times, July 12, 2007.
[17] "From China to Panama, a Trail of Poisoned Medicine," The New York Times, May 6, 2007
[18] "Filler in Animal Feed Is Open Secret in China," The New York Times, April 20, 2007; and "Another Chemical Emerges in Pet Food Case," The New York Times, May 9, 2007.
[19] "As More Toys Are Recalled, the Trail Ends in China," The New York Times, June 19, 2007; "Train Wreck," The New York Times, June 19, 2007; and "Fisher-Price recalls 1.5m China-made toys," Financial Times, August 2 2007. The first article also reported the recall of a ghoulish fake eyeball that was filled with kerosene, and of an infant wrist rattle that a choking hazard.
[20] "F.D.A. Curbs Sale of 5 Seafoods Farmed in China," The New York Times, June 29, 2007; and "A Slippery, Writhing Trade Dispute," The New York Times, July 3, 2007.
[21] For example, radial tires were manufactured without the gum strips that prevented the tires from separating; see "Chinese Tires Are Ordered Recalled," ," The New York Times, June 26, 2007.
[22] "When Fakery Turns Fatal," The New York Times, June 5, 2007.
[23] "Ex-Chief of China Food and Drug Unit Sentenced to Death for Graft," The New York Times, May 30, 2007; and "For 2 Children, Ban of a Drug Came Too Late," The New York Times, July 13, 2007.

There have also been significant regulatory failures in the treatment of labor, especially in the areas of occupational safety and wage payments. One of the most recent horrifying accounts involved forced labor of kidnapped children in the brick kilns of Shanxi and Henan provinces.[24] The official China Daily reported that "as many as 1,000 children may have been sold into slave labor in central China."[25] This deplorable affair was exposed partly "because of an open letter posted online by a group of 400 fathers appealing for help in tracking missing sons they believed were sold to kiln boss."[26] A parent visiting the brick kilns in her quest to find her son found that the local police were not only unwilling to help but also demanded bribes instead.[27] In one case, the brick kiln was owned by the son of the village Party secretary.[28]

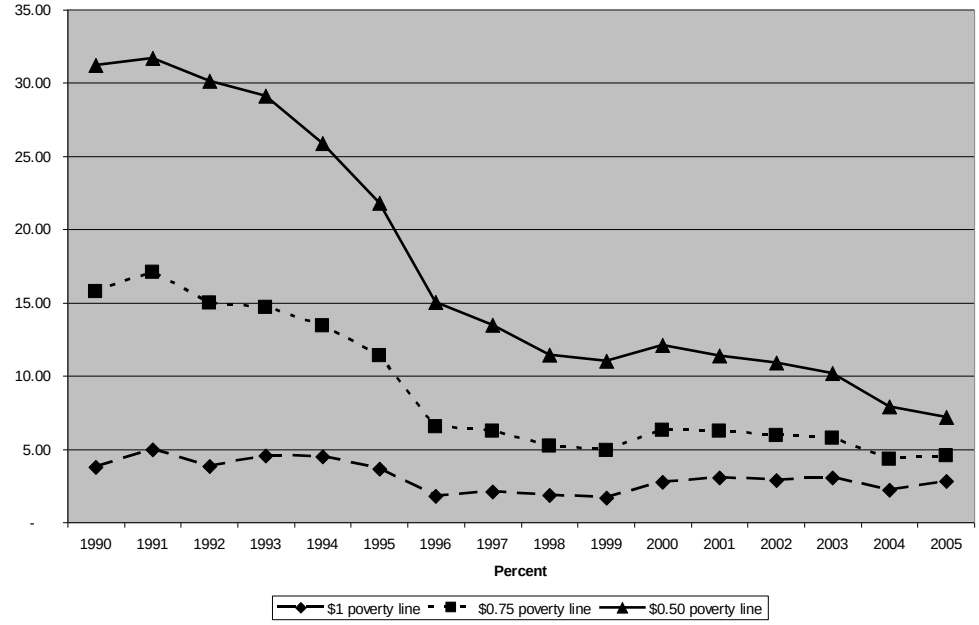
Perhaps, the two most dismaying revelations from the news reports on the brick kiln slavery are that this sad state of affairs had been going on for a decade[29]; and the "forced labor and sexual exploitation have increased as the trend in human trafficking in China has taken a turn for the worst." [30] Yin Jianzhong, the senior official at the Ministry of Public Security who identified the worsening trend in human trafficking in China, recognized a reason for the negative development to be "the loopholes in the legal and labor systems ... [Specifically,] the Criminal Law on human trafficking protects women and children only and leaves out grown-up and teen males. It doesn't have provisions for punishing those trafficking people for forced labor or prostitution."[31] The fact that such legal loopholes exist supports our contention that the main cause behind the administrative failures in China is the "dereliction of duty by government officials."[32]

Inadequate institutions of governance are not the only cause of social tensions in China, however. The present economic development strategy, despite its ability to generate high growth, also generates high social tensions because, in the last ten years, it has had great difficulties in reducing extreme poverty further and in improving significantly the rural-urban income distribution

[24] "China to investigate into 'slave labor' incident," China Daily, June 16, 2007. The New York Times ("China Slave Scandal Brings Resignation Calls," June 18, 2007) reported that: "The workers endured prison-like confinement with fierce dogs and beatings ... Released workers were shown on television with festering wounds and emaciated bodies."
[25] "China brickwork slave children may number 1,000," China Daily, June 15, 2007.
[26] "5 Chinese Arrested in Enslavement Case," The New York Times, June 18, 2007.
[27] "Reports of Forced Labor Unsettle China," The New York Times, June 16, 2007.
[28] "5 Chinese Arrested in Enslavement Case," The New York Times, June 18, 2007.
[29] This point was made by the popular tabloid Southern Metropolis Daily, see "China Slave Scandal Brings Resignation Calls," The New York Times, June 18, 2007.
[30] "More forced into prostitution, labor," China Daily, July 27, 2007.
[31] "More forced into prostitution, labor," China Daily, July 27, 2007.
[32] This point was made by the Shanxi governor, Yu Youjun, who said: "For a long time, relevant government departments did little to regulate rural workshops, small coal mines and small factories, and they are basically out of control and are not being supervised ... The dereliction of duty by civil servants and the corruption of individuals have made it possible for illegal labour to exist, particularly the abductions of migrant workers, and forced labour of children and mentally disabled people" -- see "Fears linger over child slaves at kilns," *South China Morning Post*, June 23, 2007.

and the regional income distribution; see Woo, Li, Yue, Wu, and Xu (2004), and Démurger, Sachs, Woo, Bao, Chang, and Mellinger (2002). In the first half of the 1990s, the $1 poverty rate (i.e. the proportion of rural population receiving a daily income of $1 or less), dropped rapidly from 31.3 percent in 1990 to 15.0 percent in 1996. But in the following six years, the decline was only 5 percentage points, see Figure 2.[33] The $1 poverty rate stayed in the 10-12 percent rate in the 1998-2003 period even though the GDP growth rate averaged 8.5 percent annually. It was only after the sustained large-scale effort to develop western China began in 2001 and the post-2002 rise in the GDP growth rate to 10 percent or higher that the $1 poverty rate dropped to 7.9 percent in 2004 and then to 7.2 percent in 2005.

Figure 1 Proportion of rural population below poverty rate line



However, the progress in poverty alleviation in the last decade is considerably much less impressive when the poverty line is lowered. The $0.71 poverty rate stayed unchanged from 1998 (4.6 percent) to 2005 (4.2 percent); and the $0.50 poverty rate actually increased from 1.9 percent in 1998 to 2.8 percent in 2005. In short, the higher growth rate in the 2003-2005 period did not cause income to trickle down to the poorest 5 percent of the rural population, and hence caused income inequality to worsen.

[33] The 1990-97 figures are from World Bank (2001) Annex 1 Table 3, and the post-1997 figures are computed by Ximing Yue (private communication).

In the 1985-1987 period, China's Gini coefficient was below 0.3.34 According to a report in the official *China Daily* in June 2005:

> "China's income gap widened in the first quarter of the year [2005], with 10 percent of the nation's richest people enjoying 45 percent of the country's wealth … China's poorest 10 percent had only 1.4 percent of the nation's wealth … No precise Gini coefficient was provided [by the state statistical agency], but state press reports in recent weeks said the value was more than 0.48 and approaching 0.5 …. Most developed European nations tend to have coefficients of between 0.24 and 0.36, while the United States has been above 0.4 for several decades .."[35]

The Asian Development Bank (2007) recently conducted a study of income inequality in 22 Asian countries over the 1992-2004 period. For 2004, only Nepal had a Gini coefficient (47.30 percent) that was higher than China's (47.25). However, in 2004, China's income ratio of the richest 20 percent to the poorest 20 percent (11.37) was the highest in Asia; significantly higher than the next highest income ratio (9.47 for Nepal). China is probably the most unequal country in Asia today.

Table 2 presents the income inequality in China within the international context. China's income inequality today is generally lower than in Latin America but generally higher than in Africa. The steady increase in China's income inequality since 1985 raises the possibility that China is heading toward the Latin American degree of income inequality.

Table 1 China's income ineuality across time and space

		Gini Coefficients		Income Ratio of Top 20%/Bottom 20%	
	Period	Initial Year	Final Year	Initial Year	Final Year
Nepal	1995–2003	37.65	47.30	6.19	9.47
China	1993–2004	40.74	47.25	7.57	11.37
India	1993–2004	32.89	36.22	4.85	5.52
Indonesia	1993–2002	34.37	34.30	5.20	5.13
Taipei,China	1993–2003	31.32	33.85	5.41	6.05
South Korea	1993–2004	28.68	31.55	4.38	5.47
Japan	1993	24.90		3.37	
Colombia	2003		58.60		25.30
Brazil	2004		56.99		23.00
Cote d'Ivoire	2002		44.60		9.70
Nigeria	2003		43.60		9.80
United States	2000		39.42		8.45
United Kingdom	2002		34.37		5.59

Sources: Asian Development Bank (2007) and United Nations (2006)

[34] The Gini coefficient has a value between 0 and 1, and the higher the value, the greater the degree of income inequality.

[35] "Income gap in China widens in first quarter," *China Daily*, June 19, 2005-06.

The reason why doing more of the same economic policies in today's China will not produce the same salubrious results of quick reduction in poverty and slow increase in inequality as in the early phases of economic reform is because the development problems have changed. In the first phase of economic development, the provision of more jobs (through economic deregulation) was enough to lower poverty significantly. At the present, many of the people who are still poor require more than just job opportunities, they need an infusion of assistance (e.g. empowering them with human capital through education and health interventions) first in order to be able to take up these job opportunities. Effective governance for equitable growth has now become even more challenging, and so the probability of improving social harmony has been diminished.

Furthermore, the present mode of economic development also generates immense opportunities for embezzlement of state assets, seizure of farmlands for industrial development, and corruption because of the absence of effective mechanisms to supervise government employees; see Woo (2001). These features certainly make social harmony hard to sustain.

The data on social unrest are consistent with the hypothesis of rising social disharmony. First, the incidence of public disorder, labeled "social incidents", has risen steadily from 8,700 in 1993 to 32,500 in 1999 and then to 74,000 in 2004. Second, the average number of persons in a mass incident has also risen greatly, from 8 in 1993 to 50 in 2004.[36] It should be noted, however, that these numbers might not portray accurately the degree that social unrest has increased because the data include disco brawls and gambling den raids as well as social protests; see EastSouthWestNorth (no date).

Clearly, the number of mass incidents would have been lower if China had better governance. There would have been more pre-emptive efforts at conflict mediation by the government and less abuse of power by government officials if the government's actions had been monitored closely by an independent mechanism and the government had also been held more accountable for its performance.

One main source of recent social unrest in rural China has been the conversion of farm land to industrial parks without adequate compensation to the farmers. It is interesting therefore that the No. 1 Document issued jointly in January 2006 by the CPC Central Committee and the State

[36] 1993 number is from Keidel (2006, pp. 1), and 2004 number is from Pei (2005) who wrote that, in 2004, there were 74,000 "mass incidents" involving 3.7 million people compared to 10,000 such incidents involving 730,000 people in 1994. Possibly, because of the widespread attention in the Western media on the marked rise in mass incidents, the post-2004 definition of mass incidents appeared to have been changed, making post-2004 data not comparable with the 1994-2004 data; see discussion in EastSouthWestNorth (no date).

Council pledged not only to "stabilize and regulate the transfer of land-use rights and accelerate land acquisition reforms" but also to "expand channels to express public opinions in the countryside and improve the mechanism to resolve social conflicts."[37]

The desire by the Hu-Wen leadership to improve the institutions of governance is also borne out by the following report from the *South China Morning Post* about what Premier Wen said when he met a group of Chinese citizens in Japan in April 2007: [38]

> "During 30 minutes of impromptu remarks, he said the key to pursuing social justice, the mainland's most important task, was to 'let people be masters of their houses and make every cadre understand that power is invested in them by the people'.
> ……. Although he did not deviate from the official line and spoke informally on both occasions, Mr Wen is known for being careful about what he says, whether in prepared remarks or speaking off the cuff. The fact that he highlighted, in the presence of Hong Kong and overseas journalists, the need for political reform is uncharacteristic and interesting, particularly in the context of the leadership reshuffle looming at the Communist Party's 17th congress later this year.
> There have been signs that the leadership under President Hu Jintao is under increasing pressure to undertake drastic political reforms to consolidate the party's grip on power and stamp out widespread corruption."

While there are reasonable grounds for an analyst to doubt either the sincerity of Premier Wen's words or his ability to act on them, the analyst cannot doubt that Premier Wen is at least aware that democracy is one way to solve many of China's problems of governance. The embrace of the Harmonious Society program by the Hu-Wen leadership reveals CPC's acknowledgement that democracy, the rule of law, and a stable income distribution comprise an indivisible combination that is necessary to ensure the social stability that will keep the economy on the high growth path to catch up with the United States (a vision which acts as the bedrock of CPC's legitimacy to rule).

5 The first likely type of power supply failure is trade protectionism

China's emergence as a major trading nation has been accompanied by increasing conflicts with the European Union (EU) and the United States (US) about China's trading practices and its exchange

[37] "New pledge to give farmers a louder voice," *South China Morning Post*, Tuesday, January 30, 2007. The No. 1 Document designation is designed to show that this is the most important task in the New Year.
[38] "Impromptu remarks reveal the party's pressure for reforms," *South China Morning Post*, Monday, April 16, 2007.

rate policy. The dissatisfaction over trade with China is evident from the following two press reports:

> "Peter Mandelson, the EU trade commissioner, .. called various aspects of China's trade policy "illogical", "indefensible" and "unacceptable" and accused [China] of doing nothing to rein in rampant counterfeiting .. Mr. Mandelson also refused to grant China market economy status .. [because it has] fulfilled [only] one of five criteria."[39]

> " After years of inconclusive skirmishing, trade tensions between the United States and China are about to intensify .. 'We are competing not only with a country with low wages but with very high and heavy subsidies and a rigging of their currency ..' says Rep. Sander Levin, D-Mich., chairman of the House trade subcommittee .. 'I hate the term trade war because it is always used when you try to get a fair break ...," he says: "Sometimes pressure works.' "[40]

While the trade deficit is many times identified as the cause of the trade tension, the true cause is the ongoing large shift in the international division of labor that has been set in motion by the post-1990 acceleration of globalization and by the continued fast pace of technological innovations. The next two sections will set out the case that the trade tensions reflect, one, the pains of structural adjustment in the United States because of its very inadequate social safety nets (Section 6); and, two, the dysfunctional nature of China's financial system (Section 7).

6 Trade protectionism against China created by defects in the US economy

It is not uncommon to encounter allegations that the bilateral US-China trade deficit represented the export of unemployment from China to the United States, and that it lowered the wage for labor. These allegations are not supported by the facts, however. Table 3 shows that the steady rise in the trade deficit from 1.2 percent of GDP in 1996 to 5.9 percent in 2006 was accompanied by a fall in the civilian unemployment rate from 5.4 percent in 1996 to 4.6 percent in 2006, and by a rise in the total compensation (measured in 2005 prices) received by a full-time worker from $48,175 in 1996 to $55,703 in 2005.41

[39] "Surplus fuels EU-China war of words," *Financial Times*, June 13, 2007.
[40] "Tensions push U.S. to get even with China," *USA Today*, June 13, 2007.
[41] This positive wage trend for the average worker is also seen in that for the average blue-collar worker; see Woo (2008).

What is fueling the resentment toward imports from China when the median US worker is experiencing neither more unemployment nor lower compensation? The explanation is that the U.S. worker is feeling more insecure in the 2000s than in the 1980s because of the faster turnover in employment. Globalization and technological innovations have required the worker to change jobs more often and he finds that there are considerable costs associated with the job change because of the inadequacies of the US social safety nets.

The more frequent change in jobs is documented in Table 3 by the declining trend in the length of the median job tenure for older male workers. The median job tenure for males in the:

- 33 to 44 age group, decreased from 7.0 years in 1987 to 5.1 years in 2006;
- 45 to 54 age group, decreased from 11.8 years in 1987 to 8.1 years in 2006; and
- 55 to 64 age group, decreased from 14.5 years in 1987 to 9.5 years in 2006.

Table 1 Trace balance, unemployment rate, total compensation for labor, and job tenure in selected ear

	1987	1996	2000	2006
Trade Deficit as percent of GDP (%)	**3.1**	**1.2**	**3.9**	**5.9**
Unemployment Rate (in percent)	**6.2**	**5.4**	**4.0**	**4.6**
Total compensation for a full-time equivalent employee (at 2005 prices)	**$46,041**	**$48,175**	**$52,728**	**$55,703**
Median tenure at job for male workers by age group (in years)				
33 to 44	**7.0**	**6.1**	**5.3**	**5.1**
45 to 54	**11.8**	**10.1**	**9.5**	**8.1**
55 to 64	**14.5**	**10.5**	**10.2**	**9.5**

Trade deficit and unemployment data are from U.S. President (2007).
Data on compensation in real terms are from Gary Burtless (2007).
Compensation under column 2006 is actually for year 2005.
Data on average job tenure in 1996-2006 are from the Bureau of Labor Statistic website:
http://www.bls.gov/news.release/tenure.t01.htm
1987 data are from Burtless (2005)

In terms of social safety nets, Gary Burtless (2005) reports that within the G-7 in 2004, only the United Kingdom has a less generous unemployment benefits scheme than the United States. An unemployed person in the US received initial unemployment benefits that equaled 53 percent of previous income compared to 78 percent in Germany, 76 percent in Canada and France, 61 percent in Japan, 60 percent in Italy, and 46 percent in UK. The duration of unemployment benefits was 6

months in the US compared to 12 months in Germany, 9 months in Canada, 30 months in France, 10 months in Japan, and 6 months in Italy and the UK.

There are two major factors behind the more frequent changes in jobs. The first factor is globalization, especially the post-1990 integration of the labor force in the former Soviet Union, India and China (SIC) into the international division of labor. Table 4 shows that the number of workers already engaged in the international division of labor in 1990 was 1,083 million, and the combined labor force of SIC was 1,232 million. The international division of labor in 1990 was certainly an unnatural one because half of the world's workforce had been kept out of it by the SIC's autarkic policies.

The economic isolation of the Soviet bloc started crumbling when the new non-communist Solidarity government of Poland began the marketization and internationalization of the Polish economy on January 1, 1990.42 For the Chinese elite, the end of the Soviet Union in August 1991 confirmed that there was no third way in the capitalism-versus-socialism debate. In early 1992, Deng Xiaoping entrenched China firmly on the path of convergence to a private market economy.43 In 1991, India faced a balance of payments crisis, and it responded by going well beyond the administration of the standard corrective macroeconomic medicine of fiscal-monetary tightening and exchange rate devaluation into comprehensive adjustments of microeconomic incentives.

A decade after the start of the deep integration of the SIC economies into the world economic system, the number of workers involved in the international economic system in 2000 had increased to 2,672 million (with 1,363 million workers from SIC); see Table 4.The Heckscher-Ohlin model would predict that this doubling of the world labor, achieved by bringing in cheaper labor from SIC, would lower the relative price of the labor-intensive good and hence reduce the real wage in the industrialized country.44 Furthermore, the fact that US capital could now move abroad to set up production facilities in the SIC economies to service the US market as well as third markets also gave globalization another channel to lower the US wage.

[42] The economic transition and political disintegration of the Soviet bloc became irreversible when Yeltsin replaced Gorbachev as the unambiguous leader of Russia in August 1991 and implemented market-oriented reforms in January 1992.

[43] Today, under the heading of a socialist market economic with Chinese characteristics, the Chinese constitution gives private property the same legal status as public property, and the Chinese Communist Party accepts capitalists as members.

[44] More accurately, the wage of the formerly isolated SIC worker would rise while the wage for the worker in the industrialized country would fall.

Table 2 Distribution of the global labor force (millions)
(SIC countries = former Soviet bloc, India and China)

		The non-SIC countries			The SIC countries			
	Global Total	**Non-SIC Total**	***Developed Economies***	***Developing Economies***	**SIC Total**	***China***	***India***	***Soviet bloc***
1990	**2,315**	**1,083**	***403***	***680***	**1,232**	***687***	***332***	***213***
2000	**2,672**	**1,289**	***438***	***851***	**1,383**	***764***	***405***	***214***

Source: Freeman (2004). Our figure for "total" in 2000 is different from that in Freeman.

However, the US real wage has not fallen (Table 3). The reason is that the remarkably high US productivity growth since the late 1980s (perhaps enabled in large part by the information and communications technology (ICT) revolution) prevented the real wage from declining. Furthermore, as the import competition is focused on the good that uses low-skilled labor intensively, the wage gap between low-skilled labor and high-skilled labor in the US has widened. In short, the economic impact of globalization in the US is therefore manifested in, one, a diminished labor share of GDP rather than in a lower real wage; and, two, an increased dispersion in US wages.

While the Heckscher-Ohlin model does provide a coherent mechanism for globalization to have the above two wage outcomes, the inconvenient truth is that China might not be the most influential factor in these developments even though China accounted for 764 million of the combined SIC labor force of 1,383 million in 2000. China is unlikely to be the most important culprit because there have been three other independent developments that also had important consequences for US wages.

First, there have been many technological innovations that have substituted capital for labor; for example, fewer secretaries are now needed because today's answering machines can convert messages into voice files and email them to the traveling professionals. Technological innovations have also have transformed many of what have been traditionally non-tradable services into tradable services, allowing jobs to be outsourced to foreign service providers. For example, the ICT revolution has allowed offshore call centers to handle questions from US customers, offshore accountants to process US-based transactions, and offshore medical technicians to read the X-rays of US patients. The empirical literature suggests that technological innovations are likely to have had a bigger influence on US wages than import competition from China.[45]

[45] There is a large empirical literature on relative impact of technological changes and globalisation on the US wage rate, e.g. Sachs and Shatz (1994), and Feenstra and Hanson (1996).

Second, there have been institutional changes that attenuated labor share of income. Union membership has declined, reducing the bargaining power of labor. There has also been an upward shift in the compensation norms for high-level executives. Third, there has been increased immigration into the United States (before 2001), especially a disproportionate inward immigration of low-skilled labor.[46]

In short, much of the popular outcry in US and EU against China's trade surpluses is misplaced. A widening of the US trade deficit creates additional stress on US labor because US imports are more labor-intensive than its exports. However, even if China's trade balance were zero, the pains of structural adjustment and income redistribution caused by technological innovations, institutional changes, globalization, and immigration would still be there; and the amount of worker anxiety they generated collectively would be much larger than the additional worker anxiety generated by the widening trade deficit.

The reduction of trade tensions between the US and China would be helped if the US now strengthens its social safety nets to lower the cost of changing jobs. Specifically, the US Congress should quicken the reduction in fiscal imbalance, and expand trade adjustment programs, especially those that upgrade the skill of the younger workers. The Trade Adjustment Assistance (TAA) program still functions inadequately after its overhaul in 2002. Lael Brainard (2007) reported that:

> "Participation has remained surprisingly low, thanks in part to confusing Department of Labor interpretations and practices that ultimately deny benefits to roughly three- quarters of workers who are certified as eligible for them. TAA has helped fewer than 75,000 new workers per year, while denying more than 40 percent of all employers' petitions. And remarkably, the Department of Labor has interpreted the TAA statute as excluding the growing number of services workers displaced by trade .. Between 2001 and 2004, an average of only 64 percent of participants found jobs while they participated in TAA. And earnings on the new job were more than 20 percent below those prior to displacement."

The TAA program is in clear need of further improvement. Brainard's (2007) proposal for the establishment of wage insurance is an excellent way to bring the US social safety more in line with the type structural adjustments driven by globalization and technological changes.

[46] Ottaviano and Peri (2005) are good discussions of this topic.

7 Trade protectionism against China created by defects in the Chinese economy

China's chronic and growing overall trade surplus reveals a deep-seated serious problem in China's economy, its dysfunctional financial system. This problem is revealed by the aggregate-level accounting identity that the overall current account balance (of which, in China, the overall trade account is the biggest part) is determined by the fiscal position of the government, and the savings-investment decisions of the state-controlled enterprise (SCE) sector and the private sector, which together make up the non-government sector.[47] Specifically:

$$CA = (T - G) + (S_{SCE} - I_{SCE}) + (S_{private} - I_{private})$$

where CA = current account in the balance of payments

$CA = (X - M) + R$
X = export of goods and non-factor services
M = import of goods and non-factor services
R = net factor earnings from abroad (i.e. export of factor services)
T = state revenue
G = state expenditure (including state investment)
S_{SCE} = saving of the SCEs
I_{SCE} = investment of the SCEs
$S_{private}$ = saving of the private sector
$I_{private}$ = investment of the private sector

The Chinese fiscal position (T-G) has for the last decade been a small deficit, and so it is not the cause for the swelling current account surpluses in the 2000s. The current account surplus exists because the sum of savings by SCEs and the private sector exceeds the sum of their investment expenditures.

Why has China's financial system failed to translate the savings into investments? Such an outcome was not always the case. Before 1994, the voracious absorption of bank loans by SCEs to invest recklessly kept the current account usually negative and the creation of nonperforming loans (NPLs) high. When the government implemented stricter controls on the state-owned banks (SOBs) from 1994 onward (e.g. removing top bank officials whenever their bank lent more than its credit quota or allowed the NPL ratio to increase too rapidly), the SOBs slowed down the growth of loans to SCEs. This cutback created an excess of savings because the SOB-dominated financial sector did not then re-channel the released savings (which were also increasing) to finance the investment of the private sector. This failure in financial intermediation by the SOBs is quite understandable.

[47] The SCE category covers companies that are classified as SOBs (state-owned companies); and joint-ventures and joint-stock companies which are controlled by third parties (e.g. legal persons)" who are answerable to the state.

Firstly, the legal status of private enterprises was, until recently, lower than that of the state enterprises; and, secondly, there was no reliable way to assess the balance sheets of the private enterprises, which were naturally eager to escape taxation. The upshot was that the residual excess savings leaked abroad in the form of the current account surplus. Inadequate financial intermediation has made developing China a capital exporting country!

This perverse current account outcome is not new. Taiwan had exactly this problem up to the mid-1980s when all Taiwanese banks were state-owned and were operated according to the civil service regulation that the loan officer had to repay any bad loan that he had approved. The result was a massive failure in financial intermediation that caused Taiwan's current account surplus to be 21 percent of GDP in 1986. The reason why China has not been producing the gargantuan current account surpluses seen in Taiwan in the mid-1980s is because of the large amount of SCE investments.

Why is the savings rate of the non-government sector rising? The combined savings of the SOE and non-SOE sector rose from 20 percent in 1978 to 30 percent in 1987, and then went above 45 since 2004. In discussions on the rise of the savings rate, a common view is that the rise reflects the uncertainty about the future that many SOE workers feel in the face of widespread privatization of loss-making SOEs. We find this explanation incomplete because it seems that there also been a rise in the rural saving rate even though rural residents have little to fear about the loss of jobs in the state-enterprise sector because none of them is employed there.[48]

We see two general changes that have caused both urban and rural saving rates to rise significantly. The first is "increased worries about the future". The steady decline in state subsidies to medical care, housing, loss-making enterprises, and education, and mismanagement of pension funds by the state have led people to save more to insure against future bad luck (e.g. sickness, job loss), buy their own lodging, build up nest eggs for retirement, and invest in their children.

The second change is the secular improvement in the official Chinese attitude toward market capitalism. Given the high rate of return to capital, this increasingly business-friendly attitude the Communist Party of China has encouraged both rural and urban residents to save for investment, i.e. greater optimism about the future has spawned investment-motivated saving.[49]

In our explanations for the existence of the current account surpluses and the growth of the surplus, there is a common element in both and that common element is China's financial system.

[48] Economist Intelligence Unit (2004, pp. 23) reported that "farmers' propensity to save seems to have increased."
[49] Liu and Woo (1994) and Woo and Liu (1995) contain formal modeling and econometric support for the investment-motivated saving hypothesis.

The fact is that savings behavior is not independent of the sophistication of the financial system. An advanced financial system will have a variety of financial institutions that would enable pooling of risks by providing medical insurance, pension insurance, and unemployment insurance; and transform savings into education loans, housing loans, and other types of investment loans to the private sector. *Ceteris paribus*, the more sophisticated a financial system, the lower the savings rate. China generates the current account surplus shown in Figure 2 because of inadequate financial intermediation, and the surplus grows over time because the dysfunctional financial system fails to pool risks to reduce uncertainty-induced savings and fails to provide loans to reduce investment-motivated saving.

What is to be done in China? The obvious short-run policy package has three components. First, the steady process of yuan appreciation begun in July 2005 should be quickened, and be used more aggressively as an anti-inflation instrument. Second, import liberalisation should be accelerated (e.g. implement seriously the commitments made in negotiations for WTO membership like IPR protection) and expanded beyond WTO specifications.

The third component of the short-run policy package is to have an expansionary fiscal policy (e.g. rural infrastructure investments) to soak up the excess savings, with an emphasis on import-intensive investments (e.g. buying airplanes and sending students abroad). It is important that time limits be put on the expanded public works and SCE investments because, in the long-run, the increased public investments could follow an increasingly rent-seeking path that is wasteful (e.g building a second big bridge to a lowly-populated island to benefit a politically-connected construction company as in Japan), and the increased SCE investments could convert themselves into non-performing loans at the SOBs.

Clearly, the optimum solution to the problem of excess saving is not for the government to absorb it by increasing its budget deficit but to establish an improved mechanism for coordinating private savings and private investments. The establishment of a modern financial system will not only achieve the objective of intermediating all of domestic saving into domestic investment, it will also enhance welfare and lower the savings rate by pooling risks through vehicles like medical insurance and pension insurance. In a nutshell, China's main challenge today is to develop smoothly-functioning financial, planning, and regulatory systems that can employ the remaining rural surplus labor (as indicated by an average wage of about $120 per month for 480 million rural and migrant workers) and surplus capital, which now shows up now as China's sustained current account surplus and rising foreign exchange reserves.

The important conclusion from this section is that US-China trade tension would be lowered much more if both countries undertake corrective policies rather than if China acted alone, and that a wider range of policy instruments should be employed (e.g. wage insurance program in US and financial market development in China) rather than relying just on exchange rate adjustment alone.

8 The second likely type of power supply failure is environmental collapse in China

The present mode of economic development has given China the dirtiest air in the world, is polluting more and more of the water resources, and, is, possibly, changing the climate pattern within China. The reality is that CPC's new objective of living in harmony with nature is not a choice because the Maoist adage of "man conquering nature" is just as unrealistic as creating prosperity through central planning. China's fast growth in the last two decades has done substantial damage to the environmental. Elizabeth Economy (2004, pp. 18-19) summarized the economic toll as follows:

> "China has become home to six of the ten most polluted cities in the world.[50] Acid rain now affects about one-third of China's territory, including approximately one-third of its farmland. More than 75 percent of the water in rivers flowing through China's urban areas is [unsuitable for human contact[51]] … deforestation and grassland degradation continue largely unabated[52] ... The [annual] economic cost of environmental degradation and pollution … are the equivalent of 8-12 percent of China's annual gross domestic product."

Water shortage appears to pose the most immediate environmental threat to China's continued high growth.[53] Presently, China uses 67 to 75 percent of the 800 to 900 billion cubic meters of water available annually, and present trends in water consumption would project the usage rate in 2030 to

[50] "300,000 people die prematurely from air pollution annually, which is twice the number for South Asia, which has a roughly comparable population" Economy, (2004, pp.85)
[51] Economy (2004, pp.69)
[52] " … degradation has reduced China's grassland by 30-50 percent since 1950; of the 400 million or so hectares of grassland remaining, more than 90 percent are degraded and more than 50 percent suffer moderate to severe degradation." *Economy* (2004, pp. 65)
[53] Air pollution is a serious problem. Of the twenty cities in the world identified by the World Bank as having the dirtiest air, sixteen of them are located in China. It is shocking that lead and mercury poisoning are more common than expected, see. "China's economic miracle contains mercuric threat," *Financial Times*, December 18, 2004; and "A Poison Spreads Amid China's Boom," *Wall Street Journal*, September 30, 2006.

be 78 to 100 percent.[54] The present water situation is actually already fairly critical because of the uneven distribution of water and the lower than normal rainfall in the past fifteen years. Right now, "[about] 400 of China's 660 cities face water shortages, with 110 of them severely short."[55]

The extended period of semi-drought in northern China combined with the economic and population growth have caused more and more water to be pumped from the aquifers, leading the water table to drop three to six meters a year.[56] And a study using measurements from satellites (the Global Positioning System) has established that the part of China north of the 36th parallel latitude has been "sinking at the rate of 2 mm a year."[57] Specifically, "Shanghai, Tianjin, and Taiyuan are the worst hit in China, with each sinking more than two meters (6.6 feet) since the early 1990s."[58] The overall water situation in northern China is reflected in the fate of the Yellow River,

> "which started drying up every few years from 1972, did so for increasing periods of time over longer distances in the 1990s until 1997, when it dried up for almost the entire year over a stretch of several hundred kilometres."[59]

The utilization rate of Yellow River's water is 60 percent, far exceeding the internationally recommended utilization limit of 40 percent. All the mentioned factors have contributed to lowering the "amount of Yellow River water feeding into the Bohai Sea" from an annual 49.6 billion cubic meters in the 1960s to 14.2 billion cubic meters in the 1990s to the present 4.65 billion cubic meters.60

Water shortage and the increasing pollution of what water there is61 are not the only serious environmental threats to the economy of northern China. The desert is expanding (possibly, at an accelerating pace), and man appears to be the chief culprit. The State Forestry Administration reported that 28 percent of the country's land mass was affected by desertification in 1999, and 37 percent was affected by soil erosion. The report identified about 65 percent of the desert as having been created by "over-cultivation, overgrazing, deforestation and poor irrigation practices."[62] The

[54] "Top official warns of looming water crisis," *South China Morning Post*, November 7, 2006.
[55] "China may be left high and dry," *The Straits Times*, January 3, 2004. The shortage is reported to be most acute in Taiyuan in Shanxi and Tianjin (Becker, 2003).
[56] "Northern cities sinking as water table falls," *South China Morning Post*, August 11, 2001; and Becker (2003).
[57] "Northern China sinking... as the south rises," *The Straits Times*, March 18, 2002. "Some 60 percent of the land in Tianjin municipality is plagued by subsistence" (Becker, 2003).
[58] "Chinese cities, including Olympic host Beijing, slowly sinking," Agence France-Presse, July 23, 2004.
[59] "China may be left high and dry," *The Straits Times*, January 3, 2004.
60 "Top official warns of looming water crisis," *South China Morning Post*, November 7, 2006.
61 Examples of serious water pollution are "Main rivers facing a 'pollution crisis' ," *South China Morning Post*, June 6, 2003; "Booming cities polluting scarce water supplies," *The Straits Times*, September 18, 2003; "Rivers Run Black, and Chinese Die of Cancer," *New York Times*, September 12, 2004; " 'Cancer villages' pay heavy price for economic progress," *South China Morning Post*, May 8, 2006; and "Rules Ignored, Toxic Sludge Sinks Chinese Village," *New York Times*, September 4, 2006.
[62] "Quarter of land now desert -- and Man mostly to blame," *South China Morning Post*, January 30, 2002.

rate of desertification is 3,900 square miles a year,[63] an annual loss of a land area twice the size of Delaware. One direct upshot is a great increase in the frequency of major sandstorms[64] that play "havoc with aviation in northern China for weeks, cripples high-tech manufacturing and worsens respiratory problems as far downstream as Japan, the Korean peninsula and even the western United States."[65] In the assessment of Chen Lai, Vice-Minister of water resources: "It will take nearly half a century for China to control the eroded land and rehabilitate their damaged ecosystems in accordance with China's present erosion-control capabilities."[66]

While northern China has been getting drier and experiencing desertification, nature as if in compensation (or in mockery) has been blasting southern China with heavier rains, causing heavy floods which have brought considerable deaths and property damage almost every summer since 1998.67 The sad possibility is that the northern droughts and southern floods may not be independent events but a combination caused by pollution that originates in China. I will have more to say about this possibility later.

Clearly, without water, growth cannot endure. And in response, the government begun implementation in 2002 of Mao Zedong's 1952 proposal that three canals be built to bring water from the south to the north: an eastern coastal canal from Jiangsu to Shandong and Tianjin, a central canal from Hubei to Beijing and Tianjin, and a western route from Tibet to the northwestern provinces, and each canal will be over a thousand miles long.68 Construction of the eastern canal (which would be built upon a part of the existing Grand Canal) started in 2002, and the central canal in 2003. Work on the western canal is scheduled to begin in 2010 upon completion of the first stage of the central canal.

The scale of this water transfer project is simply unprecedented anywhere:

"Together, the three channels would pump about 48 billion liters of water a year --

[63] This is average of the 3,800 square miles reported in "Billion of Trees Planted, and Nary a Dent in the Desert," New York Times, April 11, 2004, and the 4,014 square miles reported in "Quarter of land now desert -- and Man mostly to blame," *South China Morning Post*, January 30, 2002.
[64] The number of major sandstorms in China was 5 in the 1950-59 period, 8 in 1960-69, 13 in 1970-79, 14 in 1980-89, 23 in 1990-99, 14 in 2000, 26 in 2001, 16 in 2002, and 11 in 2003 according to Yin Pumin, "Sands of Time Running Out: Desertification continues to swallow up 'healthy' land at an alarming rate," *Beijing Review*, June 16, 2005.
[65] "Billion of Trees Planted, and Nary a Dent in the Desert," *New York Times*, April 11, 2004
[66] "Quarter of land now desert -- and Man mostly to blame," *South China Morning Post*, January 30, 2002.
[67] The National Development and Reform Commission (2007) reported: "The regional distribution of precipitation shows that the decrease in annual precipitation was significant in most of northern China, eastern part of the northwest, and northeastern China, averaging 20~40 mm/10a, with decrease in northern China being most severe; while precipitation significantly increased in southern China and southwestern China, averaging 20~60 mm/10a ... The frequency and intensity of extreme climate/weather events throughout China have experienced obvious changes during the last 50 years. Drought in northern and northeastern China, and flood in the middle and lower reaches of the Yangtze River and southeastern China have become more severe."
[68] "Ambitious canal network aims to meet growing needs," *South China Morning Post*, November 27, 2002.

> enough to fill New York's taps for a quarter century. Only a tenth as much water flows through the next-largest water diversion project, in California."[69]

This massive construction project will not only be technically challenging but also extremely sensitive politically and fraught with environmental risks. The central canal will have to tunnel through the foot of the huge dyke that contains the elevated Yellow River, and the western canal will have to transport water through regions susceptible to freezing. The number of people displaced by the Three Gorges Dam was 1.1 million, and this water transfer scheme is a bigger project. The enlargement of the Danjiangkou Dam (in Hubei) alone to enable it to be the source of the central canal will already displace 330,000 people.[70] Moving people involuntarily is certainly potentially explosive politically. The project could also be politically explosive on the international front as well. One plan for the western canal calls for "damming the Brahmaputra river and diverting 200 billion cubic metres of water annually to feed the ageing Yellow river," a scenario that is reportedly "giving sleepless nights to the Indian government ... [which is concerned that this 'Great Western Water Diverson Project] could have immense impact on lower riparian states like India and Bangladesh."[71]

The environmental damages caused by this project are the most serious for the central and western canals. In the case of the central canal,

> "environmental experts [in Wuhan where the Hanjiang River flows into the Yangtze] are worried about ... [whether the annual extraction of eight billion cubic metres of water could affect] the river's ability to flush out the massive pollution flows released by the thousands of factories and industries along the tributaries ... The reduced flows could increase the frequency of toxic red algae blooms on the Yangtze near the confluence with the Hanjiang River. There have already been three blooms ... [by May of that year, 2003]."[72]

The western canal has generated a lively controversy. Some scientists are contending that it "would cause more ecological damage than good"[73] because it "could cause dramatic climate changes ... [and] the changed flow and water temperature would lead to a rapid decline in fish and other aquatic species."[74]

[69] "China approves project to divert water to arid north," *South China Morning Post*, November 26, 2002.
[70] "Massive scheme aims to quench China's thirst," *Financial Times*, July 26, 2004; a lower estimate of 300,000 is given in "China Will Move Waters to Quench Thirst of Cities," *New York Times*, August 27, 2002.
[71] "China's river plan worries India," *Times Of India*, October 23, 2006.
[72] "Massive scheme aims to quench China's thirst," *South China Morning Post*, May 12, 2003.
[73] "China Water Plan Sows Discord," *Wall Street Journal*, October 20, 2006.
[74] "Chinese water plan opens rift between science, state," *American-Statesman*, September 10, 2006.

Many opponents of the water transfer project have argued that water conservation could go a long way toward addressing this problem because currently a tremendous amount of the water is just wasted, e.g. only 50 percent of China's industrial water is recycled compared to 80 percent in the industrialized countries,[75] and China consumes 3,860 cubic meters of water to produce $10,000 of GDP compared to the world average of 965 cubic meters.[76] The most important reason for this inefficient use of water lies in the fact that "China's farmers, factories and householders enjoy some of the cheapest water in the world"[77] even though China's per capita endowment of water is a quarter of the world average.[78]

There is, however, the unhappy possibility that neither the price mechanism nor the three canals can solve China's water problem and make its growth sustainable unless the present mode of economic development is drastically amended. There is now persuasive evidence that China's voluminous emission of black carbon (particles of incompletely combusted carbon) has contributed significantly to the shift to a climate pattern that produces northern droughts and southern floods of increasing intensity.[79] The biggest source of what has been called the "Asian brown cloud" in the popular media is burning of coal and bio-fuels in China. If the pollution-induced climate change analysis is valid, it means that:

China's massive reforestation program will not succeed in reducing sandstorms in the north because trees cannot survive if the amount of rainfall is declining over time; and the number of south-north canals will have to be increased over time in order to meet the demand for water in northern China; until China reduces its emission of black carbon significantly (presuming no new large emissions from neighboring countries like India).

The general point is that effective policy-making on the environmental front is a very difficult task because much of the science about the problem is not known. For example, China must no longer select its water strategy and it energy strategy separately. A systems approach in policymaking is necessary because the interaction among the outcomes from the different sectoral policies can generate serious unintended environmental damage. If part of the shift in China's climate is integral to global climate change, then a sustainable development policy would require a complete rethink-

[75] "China may be left high and dry," *The Straits Times*, January 3, 2004.
[76] "Alert sounded over looming water shortage," *The Straits Times*, June 10, 2004.
[77] "Water wastage will soon leave China high and dry," *South China Morning Post*, March 8, 2006.
[78] "Alert sounded over looming water shortage," *The Straits Times*, June 10, 2004.
[79] Menon, Hansen, Nazarenko, and Luo (2002), and Streets (2006).

ing about the location of population centers, and types of enhanced international cooperation on global environmental management.

The uncomfortable reality for China is that unless ecological balance is restored within the medium-term, environmental limits could choke off further economic growth. And the uncomfortable reality for the rest of the world is that the negative consequences of large-scale environmental damage within a geographically large country are seldom confined within that country's borders. The continued march of China's desertification first brought more frequent sand storms to Beijing and then, beginning in April 2001, sent yellow dust clouds not only across the sea to Japan and Korea but also across the ocean to the United States. China's environmental management is a concern not only for China's welfare but for global welfare as well.

In discussing the environmental aspects of the water transfer plan, it is important to note that there is now an open controversy in China involving a key government infrastructure project, and that this controversy is not limited to members of the technocracy. The very public nature of the controversy and the involvement of more than just scientists, engineers and economists in it reveal how very far social attitudes have progressed. The important point is that this change in social expectations will require any government in China to live in harmony with nature. However, any government will have great difficulties in doing so even if it wants to because a green growth policy involves a systems approach, and scientific understanding of many ecological sub-systems and the nature of their interactions is still rather incomplete,

Proper management of the environment has now become critical for China if it is to continue its industrialization process. The unexpurgated version of a 2007 World Bank reported that "about 750,000 people die prematurely in China each year, mainly from air pollution in large cities"[80]; and a 2007 OECD study has estimated that "China's air pollution will cause 20 million people a year to fall ill with respiratory diseases."[81] Pan Yue, the deputy head of the State Environmental Protection Agency, summed up the present situation in China very well when he said:

"If we continue on this path of traditional industrial civilization, there is no chance that we will have sustainable development. China's population, resources, environment have already reached the limits of their capacity to cope. Sustainable development and new sources of energy are the only road that we can take."[82]

[80] "750,000 a year killed by Chinese pollution," *Financial Times*, July 2, 2007. 350,000 to 400,000 died prematurely from air pollution in Chinese cities, 300,000 from poor air indoors, and 60,000 (mostly in countryside) from poor-quality water.
[81] "OECD highlights Chinese pollution," *Financial Times*, July 17, 2007.
[82] Quoted in James Kynge, "Modern China is facing an ecological crisis," *Financial Times*, July 26, 2004.

The bad news is that there has been no significant progress in China's efforts to reduce pollution. China failed to meet its 2006 target for modest improved energy efficiency[83]; and the Netherlands Environmental Assessment Agency has claimed that China became "the world's top producer of carbon dioxide" in 2006.[84] The worrying sign is that there might not be significant progress in the near future because of the concern that environmental protection might slow growth down too much. This concern might be the reason for the suspension of the release of green GDP estimates[85] in 2007, and for the planning agency's objection to the proposed new auto emissions standards in 2007.[86]

There is no doubt, however, that the Chinese government is trying to improve its performance in sustainable development. The 12th Five-Year Plan for 2011-2015 that was passed by the National People's Congress in March 2011 has identified "Green China" as one of its core objectives. But it is still hard to call China's green targets ambitious, e.g. energy intensity is to decline by 17% in the forthcoming 5-year period when it fell 20% in the last 5-year period, and non-fossil fuel will account for 11.3% of overall energy use in 2015 up from 8% in 2011.[87]

9 Conclusion

In appraising whether the attainment of the October 2006 vision of a Harmonious Society would be sufficient to sustain high economic growth in China, the greatest inadequacy I see is the absence of an objective to build a harmonious world. A harmonious society cannot endure in China unless there is also a harmonious world, and vice-versa. China's pursuit of a harmonious society requires it to actively help provide the global public goods that makes a harmonious world possible; and the two global public goods that come readily to mind are the strengthening of the multilateral free trade system, and the protection of the global environmental commons.

[83] "China fails to hit target for saving energy," *Financial Times*, January 11, 2007.
[84] "Report on mainland's No. 1 emissions status 'flawed'," *South China Morning Post*, June 21, 2007. Chinese officials have questioned the credibility of the report's conclusion "that the mainland's carbon dioxide emissions, which topped 6.2 billion tonnes last year, had surpassed those of the United States by 8 percent."
[85] "China's Bid to Gauge Cost of Pollution Is Set Back," *The Wall Street Journal*, July 17, 2007; and "Faith in green GDP idea lost amid the bickering," *South China Morning Post*, July 24, 2007.
[86] "China's new car fuel in disarray," *Financial Times*, June 19, 2007.
[87] "12th Five Year Plan Hailed as 'Greenest FYP in China's History' " (Posted Tue, 2011-04-12 14:54 by China Briefing); http://deltabridges.com/news/prd-news/12th-five-year-plan-hailed-%E2%80%98greenest-fyp-china%E2%80%99s-history%E2%80%99

China has benefited immensely from the GATT-WTO free-trade regime, and yet it has, up to this point, played a very passive role in pushing the Doha Round negotiations forward to completion. By default, Brazil and India have assumed the leadership of the developing economies camp in the trade negotiations. According to Susan Schwab, the U.S. Trade Representative, at the G4 (US, EU, Brazil and India) meeting in Potsdam in June 2007, Brazil and India retreated from their earlier offers to reduce their manufacturing tariffs in return for cuts in agricultural subsidies by the developed economies because of "their fear of growing Chinese imports."[88] The Brazilian-Indian action caused the Potsdam talks to fail and hurt the many developing economies that were agricultural exporters.

China should now seek a leadership role in the Doha Round negotiations that is commensurate with its participation in international trade. Failure of the Doha Round could set in motion the unraveling of multilateral free trade because the present international atmosphere is right for protectionism. The US, which has traditionally been at the forefront for expanding the multilateral free trade system, is now beset by self-doubt for three major reasons.

First, the US was willing to put up with the pains of structural adjustments in the 1960-1990 period to accommodate the growing imports from Japan, South Korea, Taiwan, and ASEAN because they were frontline allies in the Cold War. With the end of the Cold War, it is natural for the US to re-consider the economic cost of structural adjustment because the security and ideological benefits from it have gone down.

Second, the amount of required structural adjustment in the US to accommodate the rise of the SIC bloc is far greater than the earlier adjustment to the rise of its Cold War allies. As noted, the entry of the former Soviet, Indian and Chinese economies has doubled the labor force participating in the international division of labor.

Third, the strongest lobby for free trade in the US has been the economics profession, and the free trade doctrine has come under strong internal criticism in the last few years. Paul Samuelson has made many fundamental contributions to the development of the standard trade models that convinced mainstream economists that free trade is the best policy, and it was therefore an intellectual earthquake when he argued in 2004 that under free trade, where outsourcing accelerates the transfer of knowledge to the developing country, there could be a decline in the welfare of

[88] "Schwab surprised by stance of India and Brazil," *Financial Times*, June 22, 2007; and "China's shadow looms over Doha failure," *Financial Times*, June 22, 2007.

the developed country.[89] Intellectual apostasy is spreading; for example, in 2005, Alan Blinder joined Paul Samuelson in criticizing free trade fundamentalism.

While it is not yet clear about the veracity of the Samuelson hypothesis, it is clear, however, that the hypothesis reflects the widespread pains of structural adjustment that they witness around them -- a phenomenon captured by the decreasing length of median job tenure. In April 2007, the US bypassed multilateralism in free trade by agreeing to form a Free Trade Area (FTA) with South Korea. With the US weakening in its resolve to protect the multilateral free trade system, China should now become more active in the Doha Round negotiations to deregulate world trade further. Such a role will be very much in China's interest because Brazil is now bypassing multilateral trade liberalization by entering into FTA negotiations with the European Union. The fact is that a growing number of nations like Brazil "are increasingly wary of a multilateral deal because it would mandate tariff cuts, exposing them more deeply to low-cost competition from China. Instead, they are seeking bilateral deals with rich countries that are tailored to the two parties' needs."[90] It is the time for China to show that it is a responsible stakeholder by joining in the stewardship of the multilateral free trade system.

The global environment is the second area where China can help to build a harmonious world system. Specifically, China should be mobilizing international consensus to form an international research consortium to develop ways to burn coal cleanly because China is now building a power station a week and is hence able to facilitate extensive experimentation on prototype plants to burn coal cleanly. If successful, this global cooperation on clean energy research will unleash sustainable development in China as well as in the rest of the world.

We realize of course that while the need to maintain high growth could motivate China to become more active in supplying global public goods, it might not be allowed to do so however because of the usual reluctance of the existing dominant powers to share the commanding heights of the world political leadership. The sad experience of Japan being denied permanent membership in the Security Council of the United Nations is a case in point. Harmonious international relations are the omitted item in China's perception of a Harmonious Society in 2006, and it could turn out to be a very soft spot in the Chinese growth engine.

Besides the adept management of international relations, the competent management of economic issues is also fundamental to maintaining China's high growth path. The most important

[89] See Samuelson (2004); and "Shaking Up Trade Theory," *Business Week*, December 6, 2004.
[90] "Brazil, Others Push Outside Doha For Trade Pacts," *The Wall Street Journal*, July 5, 2007.

realization on this front is that in today's China, doing more of the same economic policies will not produce the same salubrious results on every front because the development problems have changed. For example, in the first phase of economic development, the provision of more jobs (through economic deregulation) was enough to lower poverty significantly. At the present, many of the people who are still poor require more than just job opportunities, they need an infusion of assistance (e.g. empower them with human capital through education and health interventions) first in order to be able to take up these job opportunities. This is why the poverty rate (defined by a poverty line of a daily income of US$1) in China has stayed at about 11 percent since 1998.

On the fiscal management front, my analysis suggests two main policy suggestions to reduce the vulnerability of China to possible future fiscal difficulties. First, the extractive capacity of the state should be enhanced so that the revenue-GDP ratio would increase to 25 percent in the medium term. This extra revenue will be the fiscal cushion that allows the state to accommodate unexpected expenditure demands or revenue shortfalls. As noted in the paper, the collection of revenue might probably first require overcoming the challenge of forging the political consensus for a tax increase. Second, the management of state assets and the regulation of the financial sector should be reformed to eliminate the phenomenon of repeated recapitalization of the SOBs. The privatization of some units of the SOBs, and the emergence of large domestic private banks will help in strengthening the budget constraints perceived by the managers of SOBs.

The fact is, however, that the probability of a software failure and the probability of a power supply failure are both higher than the probability of a hardware failure. This means that development policymaking in China has become more challenging. There must now not only be more adroit, but also fuller accommodation, of domestic social demands in order to keep China's growth rate high. The reality is that popular satisfaction with the status quo depends inversely on the level of expectations, and the expectations of the Chinese people towards their government have risen dramatically along with income, and, more importantly, risen along with their growing knowledge of the outside world. A Chinese government that consistently fails to produce results in line with the rise in social expectations runs the increasing risk of being challenged by another faction within the CPC, culminating into an open split with each side seeking the support of non-party groups.

Complicating matters is that there has not been just rising expectations but also diversification of expectations. In this new situation, the greater use of democratic procedures, the establishment of an independent judiciary, and the restoration of a free press might be inevitable if CPC is to successfully accommodate the rising social expectations and mediate the emerging differences in social expectations. What will happen will depend on whether the CPC is sufficiently confident that

it will be politically skillful enough to lead the democratic transition and emerge afterward as the most important political force. History tells us that the French monarchy and the British monarchy reacted very differently to the popular requests for reform, and the outcomes were very different in each case.

References

Asian Development Bank, 2007, Key Indicators: Inequality in Asia.

Brainard, Lael. 2007. Testimony on Meeting the Challenge of Income Instability, Joint Economic Committee Hearing, 28 February 2007, Washington, D.C. http://jec.senate.gov/Documents/Hearings/02.28.07%20Income%20Instability/Testimony%20-%20Brainard.pdf

Burtless, Gary. 2005. Income Supports for Workers and Their Families: Earnings Supplements and Health Insurance. Paper presented at the Workforce Policies for the Next Decade and Beyond conference, 11 November 11 Washington, D.C.

Burtless, Gary. 2007. Income Progress across the American Income Distribution, 2000-2005. Testimony for the Committee on Finance, U.S. Senate, 10 May 2007, Washington, D.C.

Chang, Gordon G. (2001), The coming collapse of China, Random House, New York.

Citigroup (2002), Greater China Insights, 14 June.

Démurger, Sylvie, Jeffrey D. Sachs, Wing Thye Woo, Shuming Bao, Gene Chang and Andrew Mellinger, 2002, "Geography, Economic Policy and Regional Development in China," Asian Economic Papers, Vol. 1 No. 1, Winter, pp. 146-197.

Deutsche Bank, 2009, “China” in Asia Economics Monthly, 13 March 2009 issue, Deutsche Bank AG/Hong Kong

EastSoundWestNorth, no date, "Statistics of Mass Incidents," on website:

http://zonaeuropa.com/20061115_1.htm

Economy, Elizabeth C., 2004, The River Runs Black: The Environmental Challenge to China’s Future, Cornell University Press

Fan, Gang (2003), "China's Nonperforming Loans and National Comprehensive Liability," Asian Economic Papers, Vo. 2 No. 1, Winter, pp.145-152.

Feenstra, Robert C. and Gordon H. Hanson. 1996. Globalization, Outsourcing, and Wage Inequality. American Economic Review, LXXXVI, 240-245.

Freeman, Richard, 2004, Doubling the Global Work Force: The Challenge of Integrating China, India, and the Former Soviet Bloc into the World Economy. Harvard University, manuscript, 8 November 2004.

Huang, Yasheng, 2006, “China could learn from India’s slow and quiet rise,” Financial Times, 23 January 2006.

Huang, Yasheng, 2008, Capitalism with Chinese Characteristics: Entrepreneurship and the State, Cambrdige.

Keidel, Albert, 2006, "China's Social Unrest: The Story Behind the Stories," Policy Brief No. 48, Carnegie Endowment for International Peace, September.

Lardy, Nicholas R., 1998, China’s unfinished economic revolution, Washington, DC : Brookings Institution.

Liu, Liang-Yn and Wing Thye Woo. 1994. Saving Behavior under Imperfect Financial Markets and the Current Account Consequences. Economic Journal May 1994. Volume 104, Issue 424:pp.512-527

McKibbin Warwick J., and Wing Thye Woo, 2003, "The Consequences of China's WTO Accession on its Neighbours,", Asian Economic Papers, Vol. 2 No. 2, Spring/Summer 2003, pp. 1-38.

Menon, Surabi, James Hansen, Larissa Nazarenko, and Yunfeng Luo, 2002, "Climate Effects of Black Carbon in China and India," Science, Vol. 297, 27 September, pp. 2250-2253.

National Development and Reform Commission, 2007, China's National Climate Change Programme, June.

O'Connor, James (1973), The Fiscal Crisis of the State, St. Martin's Press, New York.

O'Neill, Jim, Dominic Wilson, Roopa, Purushothaman and Anna Stupnytska, 2005, "How Solid are the BRICs?" Global Economics Paper No: 134, Goldman Sachs, December 15.

OECD (2006), Challenges for China's Public Spending: Toward Greater Effectiveness and Equity, Organisation for Economic Co-Operation and Development, Paris.

OECD public debt and state revenue data:
http://stats.oecd.org/wbos/viewhtml.aspx?QueryName=2&QueryType=View&Lang=en

Ottaviano, Gianmarco I.P. and Giovanni Peri. 2005. Rethinking the Gains from Immigration: Theory and Evidence from the U.S. NBER Working Paper No. 11672. Cambridge, Mass.: National Bureau of Economic Research.

Pei, Minxin, 2005 "China is Paying the Price of Rising Social Unrest'," Financial Times, November 7, 2005.

Pei, Minxin, 2006a, China's Trapped Transition, Harvard University Press.

Pei, Minxin, 2006b, "China is Stagnating in Its 'Trapped Transition'," Financial Times, February 24, 2006.

Sachs, Jeffrey D. and Howard J. Shatz. 1994. Trade and Jobs in U.S. Manufacturing. Brookings Papers on Economic Activity 1 (1994), 1-84. Washington, D.C.: Brookings Institution.

Sachs, Jeffrey D., and Wing Thye Woo "Understanding China's Economic Performance," Journal of Policy Reform, Volume 4, Issue 1, 2000, pp. 1-50.

Samuelson, Paul. 2004. Where Ricardo and Mill Rebut and Confirm Arguments of

Mainstream Economists Supporting Globalization. Journal of Economic Perspectives 18(3): 135-146.

Solow, Robert, 1991, "Sustainability: An Economist's Perspective," the 18th J. Seward Johnson Lecture to the Marine Policy Center, Woods Hole Oceanographic Institution; published in Robert N. Stavins, 2000, Economics of the Environment: Selected Readings, 4th edition, W.W. Norton, New York, pp. 131-138.

Streets, David, 2005, "Black Smoke in China and Its Climate Effects," Asian Economic Papers, Vol. 4 No. 2, Spring/Summer, pp. 1-23. The Economist Intelligence Unit. 2004. Country Report: China, December. United Nations, 2006, 2006 Human Development Report, New York, NY.

United States President. 2007. Economic Report of the President, http://www.gpoaccess.gov/eop/index.html

Woo, Wing Thye, 2001, "Recent Claims of China's Economic Exceptionalism: Reflections Inspired by WTO Accession," China Economic Review, Vol. 12, No. 2/3, pp. 107-136 2001.

Wing Thye Woo, "Understanding the Sources of Friction in U.S.-China Trade Relations: The Exchange Rate Debate Diverts Attention Away from Optimum Adjustment," Asian Economic Papers, Vol. 7 No. 3, Fall 2008, pp. 65-99.

Woo, Wing Thye and Liang-Yn Liu. 1995. Investment-Motivated Saving and Current Account Malaise. Asia-Pacific Economic Review 1(2): 55-68.

Woo, Wing Thye, Wen Hai, Yibiao Jin and Gang Fan, 1994, "How Successful Has Chinese Enterprise Reform Been? Pitfalls in Opposite Biases and Focus," Journal of Comparative Economics, June, Vol. 18, No. 3, pp. 410-437.

Woo, Wing Thye, Shi Li, Ximing Yue, Harry Xiaoying Wu, and Xinpeng Xu, 2004, "The Poverty Challenge for China in the New Millennium," report to the Poverty Reduction Taskforce of the Millennium Development Goals Project of the United Nations.Combating the Global Financial Crisis with Aggressive Expansionary

Woo, Wing Thye and Wei Zhang, 2010, "Time for China to Move from Macro-Stability to Macro-Sustainability: Making Macro-Stimulus Work and Maintaining Its Effects," Journal of the Asia Pacific Economy, Vol. 15, No.4, November 2010, pp. 349-368.

Woo, Wing Thye and Wei Zhang, forthcoming, "Monetary Policy: Same Medicine, Different Outcomes in China, UK and USA," The World Economy.

World Bank, 2001, China: Overcoming Rural Poverty. The World Bank, Washington, D.C.

Earlier BOFIT Discussion Papers

For a complete list of Discussion Papers published by BOFIT, see www.bof.fi/bofit

2010
- No 1 Anatoly Peresetsky: Bank cost efficiency in Kazakhstan and Russia
- No 2 Laurent Weill: Do Islamic banks have greater market power?
- No 3 Zuzana Fungáčová, Laura Solanko and Laurent Weill: Market power in the Russian banking industry
- No 4 Allen N. Berger, Iftekhar Hasan and Mingming Zhou: The effects of focus versus diversification on bank performance: Evidence from Chinese banks
- No 5 William Pyle and Laura Solanko: The composition and interests of Russia's business lobbies: A test of Olson's "encompassing organization" hypothesis
- No 6 Yu-Fu Chen, Michael Funke and Nicole Glanemann: Off-the-record target zones: Theory with an application to Hong Kong's currency board
- No 7 Vladimir Sokolov: Bi-currency versus single-currency targeting: Lessons from the Russian experience
- No 8 Alexei Karas, William Pyle and Koen Schoors: The effect of deposit insurance on market discipline: Evidence from a natural experiment on deposit flows
- No 9 Allen N. Berger, Iftekhar Hasan, Iikka Korhonen, Mingming Zhou: Does diversification increase or decrease bank risk and performance? Evidence on diversification and the risk-return tradeoff in banking
- No 10 Aaron Mehrotra and José R. Sánchez-Fung: China's monetary policy and the exchange rate
- No 11 Michael Funke and Hao Yu: The emergence and spatial distribution of Chinese seaport cities
- No 12 Alexey A. Ponomarenko and Sergey A. Vlasov: Russian fiscal policy during the financial crisis
- No 13 Aaron Mehrotra and Alexey A. Ponomarenko: Wealth effects and Russian money demand
- No 14 Asel Isakova: Currency substitution in the economies of Central Asia: How much does it cost?
- No 15 Eric Girardin and Konstantin A. Kholodilin: How helpful are spatial effects in forecasting the growth of Chinese provinces?
- No 16 Christophe J. Godlewski, Zuzana Fungáčová and Laurent Weill: Stock market reaction to debt financing arrangements in Russia
- No 17 Zuzana Fungáčová, Laurent Weill , Mingming Zhou: Bank capital, liquidity creation and deposit insurance
- No 18 Tuuli Koivu: Monetary policy, asset prices and consumption in China
- No 19 Michael Funke and Michael Paetz: What can an open-economy DSGE model tell us about Hong Kong's housing market?
- No 20 Pierre Pessarossi, Christophe J. Godlewski and Laurent Weill: Foreign bank lending and information asymmetries in China

2011
- No 1 Aaron Mehrotra and Jenni Pääkkönen: Comparing China's GDP statistics with coincident indicators
- No 2 Marco Lo Duca and Tuomas Peltonen: Macro-financial vulnerabilities and future financial stress - Assessing systemic risks and predicting systemic events
- No 3 Sabine Herrmann and Dubravko Mihaljek: The determinants of cross-border bank flows to emerging markets: New empirical evidence on the spread of financial crises
- No 4 Rajeev K. Goel and Aaron Mehrotra: Financial settlement modes and corruption: Evidence from developed nations
- No 5 Aaron Mehrotra, Riikka Nuutilainen and Jenni Pääkkönen: Changing economic structures and impacts of shocks - evidence from a DSGE model for China
- No 6 Christophe J. Godlewski, Rima Turk-Ariss and Laurent Weill Do markets perceive sukuk and conventional bonds as different financing instruments?
- No 7 Petr Jakubik: Households' response to economic crisis
- No 8 Wing Thye Woo: China's economic growth engine: The likely types of hardware failure, software failure and power supply failure

Bank of Finland
BOFIT – Institute for Economies in Transition
PO Box 160
FIN-00101 Helsinki

☎ + 358 10 831 2268
bofit@bof.fi
http://www.bof.fi/bofit