

## **China and the United States: The Bonds of Debt**

Donald D. Hester  
Professor of Economics, Emeritus  
The University of Wisconsin – Madison

### **Abstract**

This paper explores the large and growing indebtedness of the United States to the People's Republic of China. Beginning with the 1971 reestablishment of diplomatic relations between the two countries, international trade between them expanded but was very modest until the mid 1980s. At that point, China under Deng Xiaoping adopted a variation on the successful export strategy that had been pioneered by Japan and the smaller Asian "tigers". The first section of the paper analyzes the distinctive features of this variation and provides tabular information about trade and foreign exchange balances and the exchange rate between the dollar and yuan. The second section proposes a crude game-theoretic discussion of what each country might gain and lose from their large growing financial entanglement in the short and long run. The third section is a discussion of the limits of the imbalance and how U.S. debts to and Chinese claims on other countries impact the relation between the P.R.C. and the U.S. The concluding section focuses on the paradox of a poor and rapidly growing authoritarian country financing an undisciplined and relatively declining democratic superpower.

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## **China and the United States: The Bonds of Debt**

### **I. Introduction:**

In the past 25 years the United States has had a growing balance of trade deficit with the People's Republic of China. As shown in Table 1, the deficit began to grow rapidly after decisions were taken by the Twelfth Central Committee of the Chinese Communist Party on October 20, 1984 that radically reformed the economy.<sup>1,2</sup> The reforms effectively transformed state enterprises so that they began to function somewhat like private enterprises in capitalist countries and encouraged the development of privately owned firms and foreign trade. China had been growing fairly rapidly over the period from 1952 through 1985; starting from a very low level its index of total production had grown 14.4 times, but quite unevenly in the last years of Chairman Mao.<sup>3</sup>

Deng Xiaoping took control in 1978 and total production roughly doubled in the next seven years as he experimented with changes that would be incorporated in the 1984 reforms. One of the experiments was the establishment of Special Enterprise Zones where foreign firms could establish manufacturing facilities that employed inexpensive Chinese labor, as in Shenzhen in 1979.<sup>4</sup> The zones allowed Chinese workers and managers to become familiar with foreign technologies and organizational techniques that would pay high dividends in future years. This experiment eventually led to a large number of international manufacturing firms operating in China, either alone or in joint ventures with Chinese collaborators; together they accounted for about 75% of Chinese international trade in 2005.<sup>5</sup> In 1978, the sum of Chinese imports and exports was about 7 percent of its national output; it rose to 25 percent of gross domestic product in 1987, 37

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<sup>1</sup> Chow, Gregory C., [2007], China's Economic Transformation, 2<sup>nd</sup> Edition, p. 51.

<sup>2</sup> Information in Table 1 is from the United States government. Chinese government data on the trade balance are very different. For example, Chinese data show that China had a trade deficit with the U.S. from 1984 through 1992 and that its surplus with the U.S. was only \$114 billion in 2005. For a discussion of the reasons for these differences, see Lum, Thomas and Dick K. Nanto, [2007], "China's Trade with the United States and the World", Congressional Research Service, January, pp. 6-8.

<sup>3</sup> People's Republic of China State Statistical Bureau, [1986], Statistical Yearbook of China, 1986, p. 25.

<sup>4</sup> When I was teaching in Beijing in 1987, four additional Special Enterprise Zones were established.

<sup>5</sup> Guonan, Ma and Zhou Haiwen, [2009], "China's Evolving External Wealth and Rising Creditor Position", BIS Working Paper No. 286, July, p. 2.

percent of GDP in 1998, and about 43 percent in 2008.<sup>6</sup> U.S. imports from and exports to China were about the same in 1985, but never again.

China's policies under Deng were adapted from a highly successful export-oriented strategy employed by Japan in the years after World War II, which the Asian tigers, Hong Kong, Singapore, Taiwan, and South Korea, had also adopted. The economies of these five countries were expanding at a time when there was growing global demand for the goods they exported.

Between 1980 and 1995 Japan's and to a lesser extent South Korea's exports had reached levels where they were substantially adversely affecting some U.S. industries. German and other European country exports to the U.S. were also very high in the early 1980s. In part, the problem was caused by an appreciating U.S. dollar resulting from expansionary fiscal policy associated with large Reagan administration tax cuts and restrictive monetary policy imposed by the Federal Reserve. A basic result in Keynesian economics is that this mix of policies causes real interest rates to rise, which in turn causes a country's currency to appreciate against those of other countries. As a result, the prices of goods imported by the U.S. fell and the prices of U.S. exports rose, with detrimental consequences for the U.S. balance of trade. An international agreement to reduce the value of the dollar at the Plaza hotel in 1985 and a recession in 1991 reduced the U.S. trade deficit. However, the overall trade deficit increased again during the Clinton presidency and by 2005 the combined Japanese and Chinese bilateral trade surplus with the U.S. was about twice as large a percentage of U.S. GDP as it was in 1995 – more than three-quarters of it was Chinese.<sup>7</sup> While the recent recession has reduced the trade deficit, it is likely to widen again in the coming years.

In 2008, the World Trade Organization (WTO) reported China's global merchandise exports were \$1,428 billion and merchandise imports were \$1,132 billion. Thus, U.S. trade is a relatively small fraction of China's world trade, but a very large fraction of its balance of trade surplus, \$296 billion in that year. Some of China's trade is with other countries that send raw materials and components to China where they are assembled and exported, largely to the U.S. (China joined the WTO in December 2001.)

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<sup>6</sup> Chow, *op. cit.*, p. 54, and IMF web site.

<sup>7</sup> McKinnon, Ronald and Gunther Schnabl, [2009], "China's Financial Conundrum and Global Imbalances," BIS Working Paper No. 277, March, p. 25.

Table 1  
**U.S. Trade in Goods with China, 1985 - 2009**  
(in millions of U.S. dollars)

year	exports	imports	balance
1985	3,855.7	3,861.7	- 6.0
1986	3,106.3	4,771.0	- 1,664.7
1987	3,497.3	6,293.6	- 2,796.3
1988	5,021.6	8,510.9	- 3,489.3
1989	5,755.4	11,989.7	- 6, 234.3
1990	4,806.4	15,237.4	- 10,431.0
1991	6,278.2	18,969.2	- 12,691.0
1992	7,418.5	25,727.5	- 18,309.0
1993	8,762.9	31,539.9	- 22,777.0
1994	9,281.7	38,786.8	- 29,505.1
1995	11,753.7	45,543.2	- 33,789.5
1996	11,992.6	51,512.8	- 39,520.2
1997	12,862.2	62,557.7	- 49,695.5
1998	14,241.2	71,168.6	- 56,927.4
1999	13,111.1	81,788.2	- 68,677.1
2000	16,185.2	100,018.2	- 83,833.0
2001	19,182.3	102,278.4	- 83,096.1
2002	22,127.7	125,192.6	-103,064.9
2003	28,367.9	152,436.1	- 124,068.2
2004	34,427.8	196,682.0	- 162,254.3
2005	41,192.0	243,470.1	- 202,278.1
2006	53,673.0	287,774.4	- 234,101.3
2007	62,936.9	321,442.9	- 258,506.0
2008	69,732.8	337,772.6	- 268,039.8
2009	69,576.0	296,402.1	- 226,826.1

Source: U.S. Census Bureau Foreign Trade Statistics

By way of comparison, the Federal Reserve reports that overall U.S. exports and imports of goods and services were respectively \$1,827 and \$2,523 billion and its trade balance deficit was \$696 billion. China trade accounted for about 43% of the U.S. trade deficit.

The exchange rate between the Chinese yuan and the U.S. dollar is believed to be an important contributor to the growing trade deficit of the U.S. with China. Table 2 reports the history of this rate. The yuan and dollar were officially inconvertible until 1994, so the rates until that year are not too meaningful; a multiplicity of rates existed that were negotiated between the Chinese government and different entities that, among other things, allowed firms in enterprise zones to import and export commodities and withdraw profits from activities in Special Enterprise Zones. Reforms in 1994 established

Table 2  
**Quarterly Spot Exchange Rates: Chinese Yuan per U.S. Dollar, 1987 - 2009<sup>8</sup>**  
 (15<sup>th</sup> of the month or next preceding day with quote)

Year	January	April	July	October
1987	3.73	3.73	3.73	3.73
1988	3.73	3.73	3.73	3.73
1989	3.73	3.73	3.73	3.73
1990	4.73	4.73	4.73	4.73
1991	5.24	5.28	5.37	5.39
1992	5.46	5.53	5.47	5.55
1993	5.77	5.72	5.78	5.80
1994	8.72	8.74	8.66	8.55
1995	8.46	8.44	8.32	8.33
1996	8.34	8.35	8.34	8.33
1997	8.33	8.33	8.32	8.31
1998	8.31	8.31	8.31	8.28
1999	8.28	8.28	8.28	8.28
2000	8.28	8.28	8.28	8.28
2001	8.28	8.28	8.28	8.28
2002	8.28	8.28	8.28	8.28
2003	8.28	8.28	8.28	8.28
2004	8.28	8.28	8.28	8.28
2005	8.28	8.28	8.28	8.09
2006	8.07	8.02	8.00	7.90
2007	7.80	7.72	7.57	7.51
2008	7.23	7.00	6.82	6.84
2009	6.84	6.83	6.83	6.83
2010	6.83			

Source: Federal Reserve Board Statistical Release H.10.

a uniform exchange rate of 8.70 yuan to the dollar, which was roughly equal to an average of swap rates. There was a high rate of inflation in China between 1993 and 1995 and McKinnon and Schnabl argue that the sharp change in the nominal exchange rate in the table roughly allowed the real exchange rate between 1993 and 1995 to be constant.<sup>9</sup>

From the end of 1995 until the fourth quarter of 2005 the yuan was pegged at 8.3 yuan to the dollar by the Chinese government. This peg was widely assailed as being responsible for the surging U.S. trade deficit with China; the claim was that the yuan was undervalued. It was argued that if the yuan had been allowed to appreciate, the trade

<sup>8</sup> The yuan and renminbi are units of Chinese money; they respectively refer to the currency used in international and domestic accounts. Because of near convertibility, they have very similar values today.

<sup>9</sup> McKinnon and Schnabl, op. cit., pp. 2-3.

deficit would have been smaller, Chinese economic growth would have been slower, the rate of loss of U.S. jobs in competing industries would have been slower, and U.S. consumers would have faced higher prices. In this view the Chinese exchange rate policy was an attack on the foundations of the U.S. economy.

McKinnon and Schnabl have proposed a very different interpretation.<sup>10</sup> They argued that when China opened its economy in 1994 and allowed relatively free trade, the People's Bank of China, the nation's central bank, was operating in a highly uncertain environment where inflation was uncontrolled. A strategy for coping with domestic inflation was to fix its exchange rate to another currency that had little domestic inflation. Other countries have pegged their currencies to the dollar for similar reasons. McKinnon and Schnabl reported that the difference between Chinese and U.S. CPI inflation rates was negligible between January 1997 and January 2007, so that the price stabilization policy appears to have worked. An interpretation of China's growing international trade surpluses then would be that reallocations of resources within China led to changes in relative costs that gave it substantial advantages in world markets – initially in basic commodities. Introducing large quantities of relatively inexpensive labor together with modern technology in world markets was bound to create disequilibria that would only gradually converge to a new balance. Global adjustment costs would be large.

The McKinnon and Schnabl argument is appealing as a short-run tactic for establishing a new exchange rate. Through 2000 the major nominal and real exchange rates of the U.S. were rising and so the yuan was actually appreciating against most other countries.<sup>11</sup> However, it is not a defensible policy for a large country that has the ability to have discretionary monetary policy. The U.S. experienced a minor recession in 2001, which is evident in Table 1 when U.S. imports from China were stagnant. In response to the recession, the Federal Reserve aggressively cut short-term interest rates, which led to decreases in major U.S. dollar nominal exchange rates. As a result of the yuan being pegged to the falling dollar, it also fell in value against most other currencies, beginning in 2002 in the case of major currencies. As Paul Krugman recently explained, this led to a

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<sup>10</sup> McKinnon and Schnabl, *op. cit.*, pp. 3-4.

<sup>11</sup> The major U.S. exchange rates are 1) the broad index, 2) the major currencies index, and 3) the other important countries index. Source: Board of Governors of the Federal Reserve System, Statistical Digest: 1996-2000, pp. 233-7.

massive further trade imbalance with other countries and to soaring international reserves in China.<sup>12</sup> A Chinese policy of allowing the yuan to float or be pegged to an average of a number of foreign currencies would have helped to contain imbalances that now threaten global stability.

As can be seen in Table 2, China did begin to allow the yuan to appreciate against the dollar in the summer of 2005. It rose by about 21 percent between the summers of 2005 and 2008, after which it was again pegged to the dollar at a rate of about 6.83 yuan to the dollar. The second peg again occurred at a time when the dollar was falling sharply against other major currencies – especially the Japanese yen and the euro. One effect of removing the peg in 2005 may have been to slow down the rate of growth of the bilateral trade deficit, as can be seen in Table 1. However, unreported monthly trade data are very erratic and the recession that began in the U.S. in December 2007 makes any strong conclusion about the effects of removing the peg dubious.

Table 3 reports China's official yearend levels of foreign exchange reserves, net of gold.<sup>13</sup> The levels are expressed in dollars, but consist of a number of foreign currencies. The currency composition of Chinese reserves is not available, but it has been reported that China held \$1.2 trillion of U.S. securities at the end of June 2008.<sup>14</sup> China held \$895 billion of U.S. Treasury securities at the end of December 2009. The level of reserves was roughly constant in the late 1990s, but then accelerated. Changes in foreign exchange reserves are the sum of a country's current account balance with other countries, net private capital movements into the country, and net government capital movements into the country. The current account balance is equal to the trade balance on goods and services, investment income, and net government international transfers, net private transfers, and remittances into the country. Private foreign direct investment utilized in China has risen from \$48.8 billion a year in 2001 to \$92.4 billion in 2008.<sup>15</sup>

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<sup>12</sup> Krugman, Paul, [2009], "The Chinese Disconnect", *New York Times*, October 23, p. 31.

<sup>13</sup> China has been acquiring gold reserves recently, but they are less than ten percent of its total reserves. See Flood, Chris [2009], "Bank moves spur the gold rush", *Financial Times*, November 7/8, p. 15.

<sup>14</sup> Morrison, Wayne M. and Marc Labonte, [2009], "China's Holdings of U.S. Securities: Implications for the U.S. Economy", Congressional Research Service, July 30, p. 5. Focusing on securities with a maturity of more than one year, these authors reported that China held \$568 billion of Treasury securities, \$527 billion of government agency securities, \$26 billion of corporate bonds, and \$100 billion of equities at the end of June 2008. They also reported China held \$30 billion of U.S. short-term debt on that date.

<sup>15</sup> Source: <http://www.chinability.com/FDI.htm>. There is a distinction between Chinese foreign direct investment that is "contracted" and that is "utilized". The latter is relevant in this paper.

Table 3  
**China's Foreign Exchange Reserves – Net of Gold, 1992 - 2009**  
(end of year in billions of U.S. dollars)

year	reserves
1992	20.6
1993	22.4
1994	52.9
1995	75.4
1996	107.0
1997	142.8
1998	149.2
1999	146.2
2000	165.6
2001	212.2
2002	286.4
2003	403.3
2004	609.9
2005	818.9
2006	1,066.3
2007	1,528.2
2008	1,946.0
2009	2,399.2

Source: State Administration of Foreign Exchange,  
People's Republic of China, via [www.chinability.com/Reserves.htm](http://www.chinability.com/Reserves.htm)

International accounts are notoriously difficult to interpret and typically have large discrepancies. In this discussion such measurement problems are being ignored. What is clear beyond any accounting niceties is that China's foreign exchange reserves increased more than tenfold in the most recent eight years.

When interpreting this table, it is important to recognize that foreign exchange reserves by all nations have risen markedly in the current decade. The International Monetary Fund reports that total foreign exchange holdings have risen from \$1.4 trillion in 1995 to \$2.1 trillion in 2001 and to \$6.6 trillion in 2008. The amounts of reserves held in dollar denominated assets may also have risen irregularly, but the evidence is unclear. Of the amounts that were allocated to currencies by the IMF, 59% were in dollars in 1995, 72% were in dollars in 2001, and 64% were in dollars in 2008. However, the percentage of total exchange holdings that were not allocated to currencies has risen from 26% in 1995 to 37% in 2008. In 2009, Wikipedia has reported world foreign exchange

reserves to be \$8.7 trillion. In addition to China's \$2.4 trillion in 2009 as shown in Table 3, in trillions, Japan had \$1.05 in September, the Euro zone had \$0.54 in April, Russia had \$0.42 in October, Saudi Arabia had \$0.40 in May, and Taiwan had \$0.33 in August. Apart from Japan and the Euro zone, the currencies of these countries are not widely held and they have relatively large volumes of international trade. China holds more than one quarter of world foreign exchange reserves.

## **II. An Interpretation of the Growing Interdependence of China and the U.S.**

It is instructive to view the economic imbalances between China and the U.S. as a game. In this section it is convenient to focus narrowly on the two countries in a bilateral game, in which the actions of all other countries are taken as exogenous. Section 3 presents a multi-country discussion where some of their behavior will be endogenous. The players in Section 2 are the two governments, consumers in each country, and multinational firms. The principal assumptions in this section are 1) labor costs for equally productive workers are lower in China, 2) trade is not subject to tariffs or other barriers, 3) capital is mobile between the countries, and 4) the exchange rate is administratively set by the Chinese government. The first assumption implies that the administered exchange rate of yuan for dollars is high, as is commonly believed to be the case.

Under these conditions consumers in the U.S. prefer to purchase goods made in China to those made in the U.S., if they are of similar quality, and multinational firms chose to locate manufacturing facilities in China. China has a balance of trade surplus and in the absence of capital flows has rising dollar exchange reserves. Because of the continuing relatively low wage rates in China, multinational firms desire to invest in new facilities there so private direct capital flows to China also result in rising dollar exchange reserves. Dollar reserves in China will continue to rise until something changes. This is a caricature of the current disequilibrium situation, but it has obvious similarities.

As Chinese workers continue to take market share from the U.S., American workers suffer increasing job losses and decreasing wage rates. An endogenous limit on the trade imbalance is that multinational firms may eventually be unable to market goods to U.S. consumers. In this simple example, China's growing balance of trade surplus and

corresponding accumulation of dollars must be invested in asset-backed securities that finance U.S. consumers' purchases of goods. At some point China is unlikely to tolerate excessive U.S. consumer indebtedness because of the growing risk of default. Multi-national firms would need to find other markets or trade would atrophy.

In what other ways can the disequilibrium in the model be resolved so that balance is restored? Clearly allowing the yuan to appreciate is one answer. Why doesn't that happen? Large segments of the Chinese population are extremely impoverished and experience large increases in income when multinational firms or other Chinese exporters hire them. With a pegged yuan, per capita Chinese income is rising, even though workers are being underpaid relative to U.S. workers. Thus, the pegging policy could be defended as part of a program to increase average income of all Chinese workers. However, the Chinese government may eventually allow the yuan to appreciate after the reserve army of its impoverished population has been substantially depleted. A higher valued yuan could allow its workers to enjoy benefits from trade, as Ricardo argued in his discussion of comparative advantage. In this hypothetical two-nation world, China is now temporarily trading off losses from holding low yielding dollar assets with gains from more effectively allocating human capital.

Another way to restore balance would be to penalize multinational firms that are investing in China. The U.S. does not tax corporate profits that are earned overseas until they are repatriated. China collects taxes from foreign enterprises, but at rates that are lower than would be paid on repatriated profits. If corporate profits were taxed when they were earned anywhere, there would be less of an incentive to locate facilities in China. The importance of this tax advantage is unclear, but it does provide incentives to produce in China.

A third way to restore balance would be for the U.S. to threaten to increase its money stock rapidly through inflationary monetary policy. Irresponsibly large U.S. fiscal deficits would have a similar effect, if investors perceived that interest obligations on a surging federal deficit could not be met without turning to the printing press. Thus, the U.S. could make the trade off mentioned above too expensive. Such irresponsible monetary or fiscal policies would, of course, have dire consequences for the U.S.

Finally, the two countries could try diplomacy. This is where a game strategy comes to the fore. The U.S. could argue that while it appreciates and approves of the gains in average Chinese income, it has become intolerable for U.S. citizens; the transfer of gains from good jobs in the U.S. to China has been excessively severe. The bargaining chips of hyperinflation or default on debt are too heavy handed, but other threats are available. Although assumed away at the outset of this section, tariffs and other controls could be mentioned. Both countries are already posturing in a limited way with these tools of economic warfare, e.g. tariffs on tires, steel pipes, automobiles and chicken feet. Obviously and unfortunately, both countries are also investing heavily in their military establishments. The U.S. has rebuffed China when it sought to buy an American oil company (Unocal), banks, and other properties. The island nation of Taiwan seems always to be in play when tensions arise between the U.S. and China. All of these and other moves could be represented in a matrix summarizing a non-constant-sum dynamic game between these two countries. Assigning parameters to cells of the matrix and proposing its dynamic (intertemporal) structure is no small task, but is almost surely being done in both countries. Whether a stable and mutually acceptable solution between them exists in this game is an open question that cannot be answered in this short paper.

Domestic policies could also address the imbalance, but they are awkward for politicians and difficult to put into effect. I have already mentioned increasing taxes on offshore corporate profits. In China the personal saving rate is believed to be very high because of the need for precautionary funds to cover education, medical emergencies, and retirement. Consumption there can be stimulated by improving social infrastructure, such as by introducing a public retirement program and increasing subsidies for education and health. Expanding access to consumer credit in China would also help. In principle, these initiatives could be funded by its foreign exchange reserves. In the U.S. consumption could be discouraged by 1) limiting the deductibility of interest on home equity lines of credit and otherwise deterring equity extraction by house owners, 2) introducing a national sales tax, 3) penalizing early withdrawals from retirement accounts further, and

4) encouraging saving by automatically signing up workers to retirement accounts, as has been recommended by some behavioral economists.<sup>16</sup>

With no elaborate gaming by the countries, the simple trade imbalance is likely eventually to be eliminated, when the reserve army of the impoverished is depleted. Convergence may not be monotonic, and the reserve army might even appear in the second country. But it is in the interest of both countries to end the imbalance in a minimally disruptive way. In a two-country game there is no choice of other currencies in which to hold foreign exchange reserves. However, in a multi-country game it is not clear that eliminating a trade imbalance is in everyone's interest and there are portfolio choices to be made in the currency composition of foreign exchange reserves.

### **III. Curbing Bilateral Imbalances in a Multi-country World.**

In this section the discussion is expanded to incorporate both China's trade with the rest of the world and the U.S. trade imbalances with other countries. As reported in Section I, the U.S. trade deficit with China in 2008 was nearly 90% of China's reported trade surplus with the rest of the world, but only about 43% of the overall U.S. trade deficit. In 2002 the U.S. had the largest value of summed exports and imports in the world followed by Germany and then China;<sup>17</sup> the estimated ranking in 2008 was unchanged, with Germany being the largest exporter and the U.S. the largest importer. (It has recently been reported that China has become the largest exporter in 2009.) However, in 2005 the sum of exported and imported goods of China was 64% of its GDP, about three times the share of other major countries.<sup>18</sup>

The continued peg of the yuan to the falling value of the dollar has resulted in a depreciation of the yuan against currencies of China's other main trading partners of 7.6% between March and the end of October 2009, although its current account surplus was expected to fall by 50% in 2009 because of the global recession and strong Chinese

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<sup>16</sup> Greenspan and Kennedy have documented a large amount of home equity extraction, which reached \$600 billion a year in 2005. See Greenspan, Alan and James Kennedy, [2007] "Sources and uses of equity extracted from homes", Federal Reserve Finance and Economics Discussion Series Paper No. 2007-20.

<sup>17</sup> Chow, op. cit., p. 301.

<sup>18</sup> Naughton, Barry, [2007], The Chinese Economy: Transitions and Growth, Cambridge, MA: MIT Press, p. 377.

growth.<sup>19</sup> The yuan had depreciated 11.9% against the euro, based on monthly averages, between March and October 2009. The U.S. balance of trade in goods and services deficit has fallen more than 50% between the second quarter of 2008 and the second quarter of 2009. The future course of Chinese imbalances with the U.S. and other countries in this volatile environment is very difficult to predict. The modest goal of this section is to identify the principal strategies that are being used or are likely to be used in the coming years in this complex game.

*a. China's trade with the rest of the world.* When China opened Special Enterprise Zones, it located them on the coast in part to facilitate importing technical components so that it might assemble products to export. Significant amounts were also exported to Hong Kong for re-export to other countries in the 1980s, which partly accounts for the discrepancy between U.S. and Chinese trade balance accounts, because the U.S. views such exports as Chinese when they reach the U.S.; China records them as exports to Hong Kong. There is a large volume of trade between China and other East Asian countries, but it cannot be analyzed adequately in the present paper, and measuring the inter-country trade balances is very difficult. For example, using their own systems of accounts, both China and Japan claim to have trade deficits with one another.<sup>20</sup> Similar but less severe reported inconsistencies exist for balances between China and Hong Kong, Taiwan, South Korea, and Singapore.

Table 4 reports recent national product accounts for Mainland China. There are several remarkable features of these accounts. First, since 2003 China is probably unique in having fixed investment that exceeds consumption. Second, fixed and inventory investment and net exports (exports less imports) have been growing much more rapidly than its gross domestic product. Third, inflation as measured by the rate of change in the GDP deflator was not excessive, but rose a bit more rapidly in 2007 and 2008. Finally, the Chinese economy was achieving spectacular growth and the growth in its net exports in 2007 accounted for 14.4% of the growth in its GDP, but in the recession year of 2008 the growth in its net exports accounted for only 1.7% of GDP growth.

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<sup>19</sup> Dyer, Geoff, [2009], "China's external surplus set to halve", *Financial Times*, November 5, p. 4.

<sup>20</sup> Lum and Nanto, op. cit., p. 42.

Table 4  
**National Product Accounts for Mainland PRC: 2002-2008**  
 (billions of yuan)

	2002	2003	2004	2005	2006	2007	2008
consumption	5257	5683	6383	7122	8048	9360	10839
government	1912	2062	2320	2661	3012	3519	4072
fixed investment	4363	5349	6512	7731	9015	10544	12621
inventory change	193	247	405	334	425	548	740
net exports	309	299	408	1022	1665	2338	2414
GDP	12033	13582	15988	18322	21192	25731	30067
GDP price deflator	87.9	90.1	96.4	100.0	103.6	111.3	119.3

Source: International Monetary Fund: International Financial Statistics, December 2009, p. 340.

The goals of the Chinese government in the multi-country game are not entirely clear, but must be specified for this analysis to proceed. As in the preceding section I assume its primary goal is to maximize its rate of growth. A second major goal is to secure access to scarce raw materials, such as petroleum, some metallic ores, and, before long, agricultural products.<sup>21</sup> The last reflects likely future shortages of water, as global warming depletes Himalayan glaciers, population continues to grow, and increasing desertification occurs in much of northern China. A third goal is to expand China's ability to defend itself against possible hostile international rivals as it becomes more dependent on foreign resources. This third goal is a change from the days of Chairman Mao, when China struggled to be self sufficient and thus not dependent on foreign trade.

Finally, as one of the world's most rapidly expanding markets, China appears to be attempting to structure access to its markets for consumption goods and labor so as to maximize some arbitrary welfare function that its leaders have chosen. The heavy emphasis on investment evident in Table 4 implies that its citizens today are making large sacrifices so that their heirs can live better. This emphasis on growth may or may not reflect preferences of its consumers today, which is an acknowledgement that China is not a democracy and has not adopted a free enterprise, laissez faire ideology.<sup>22</sup> It is

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<sup>21</sup> Blas, Javier, [2009], "China oil and iron ore imports surge", Financial Times, August 12, p.19 and Hoyos, Carola, [2009], "Burning ambition", Financial Times, November 4, p. 9.

<sup>22</sup> It is a gross simplification to suggest that China has a well-defined social welfare function. For an illuminating discussion of China's and the Chinese bureaucracy's goals, see Chow, op. cit., Chapter 18, which discusses the challenges of making foreign investments in China.

possible to commit too many resources to investment.<sup>23</sup> While the situation is murky, recent press reports suggest that the government is also actively working to concentrate some manufacturing and service activities in state enterprises and to use its power to control mergers by large multinational firms.<sup>24</sup> As in the cases of the European Union and the U.S., regulatory authorities in China must approve mergers among large firms, if the resulting new firm is to have access to Chinese markets.

The goals of the U.S. and other countries are also unclear, and differ among countries. Unlike the U.S., most developed countries have relatively old and rapidly aging populations. (As a result of China's "one child" policy, it too will soon face an aging population.) As a consequence, they generally need to make income-earning investments that can support these populations. They are unlikely to welcome trade deficits that leave surplus countries with funds to invest that will compete with the needs of these populations. On the other hand, poor and developing countries need capital and tend to welcome funds, even if they are a consequence of trade deficits. Economists appreciate the virtues of Ricardo's theory of comparative advantage and countries desire to acquire goods and services through trade from low cost suppliers, but the theory assumes the presence of competitive markets. No country seems to be willing to open up its borders to free competition, even if it respects and loosely complies with rules established by the WTO. Politicians everywhere are sensitive to pleas about trade-related unemployment and many are open to the temptations of graft and political contributions.

Why does China desire to amass exchange reserves in this multi-country game? First, it is likely to desire liquidity in a perceived potentially hostile world. While international currencies and sovereign debt of more developed countries are risky in terms of future value, they are likely to be readily accepted by many countries in payment for goods and services. China's currency, the yuan, may not be as convenient for making contracts in the next few years.<sup>25</sup> As it seeks to develop foreign sources of raw materials in the coming years, China's large international exchange hoard implies that it can afford

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<sup>23</sup> Phelps, Edmund S., [1961], "The golden rule of accumulation: a fable for growth men", American Economic Review, 51, September, pp. 638-43.

<sup>24</sup> Tucker, Sundeep and Patti Waldmeir, [2009], "The people's police", Financial Times, November 30, p. 9 and Pilling, David, [2009], "The state's dead hand returns to haunt China", Financial Times, October 15.

<sup>25</sup> However, China may be attempting to increase the acceptability of its currency in foreign trade. See Garnham, Peter, [2009], "Beijing seeks an escape from the dollar trap", Financial Times, July 31, p. 21.

to make long-term credible commitments to diverse suppliers. There is, however, some evidence that China has recently been shifting the composition of its reserves away from the U.S. dollar.<sup>26</sup> As noted earlier, the currency composition of its exchange reserves is not known – a state secret.

Second, the low international value of the yuan may have strategic advantages for China, because independent firms in other countries may not have adequate resources to survive a price war effected through devaluation. Chinese firms can borrow from state banks that can be funded by exchange reserves. The low yuan is inflicting enormous damage on international suppliers of goods that compete with Chinese exports.<sup>27</sup> Its low and falling value have prompted extensive criticism on the grounds that it perpetuates imbalances that threaten world trade.<sup>28</sup> Indeed some critics view its low value as effectively serving to impose a tariff barrier on imports from other countries, much in the tradition of the Smoot/Hawley U.S. tariff and related tariffs put on by other countries during the 1930s, which worsened the Great Depression. One writer has even argued that the U.S. should respond to this policy of mercantilism by imposing a ten percent tariff on imports from China.<sup>29</sup> However, others have claimed that recent surges in Chinese imports imply that the yuan is not especially undervalued.<sup>30</sup>

A different interpretation of China's low valued yuan policy is that to prevent domestic political unrest from rising unemployment and falling per capita income the government feels it must maintain a high rate of growth. Irrespective of its motives, there is little doubt that the government itself is declining to use imported goods; it has not yet

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<sup>26</sup> China has reduced its holdings of U.S. agency and corporate bonds with a maturity of more than one year in recent years and its overall holdings of U.S. government securities have been essentially unchanging between May 31, 2009 and October 31, 2009. Source: Federal Reserve Board. See also Norris, Floyd, [2010], "Debt Burden Now Rests More on U.S. Shoulders", New York Times, January 23, p. B3 and Cookson, Robert and Michael Mackenzie, [2010], "Beijing's rebalancing raises fears for Treasuries", Financial Times, February 19, p. 21.

<sup>27</sup> See Wines, Michael, [2009], "China's Growing Economic Power is Unsettling the Neighbors", New York Times, December 12, p. 1 and Brown, Kevin and Geoff Dyer, [2009], "Neighbours learn to live with faltering renminbi", Financial Times, October 16.

<sup>28</sup> See Wolf, Martin, [2009], "Grim truths Obama should have told Hu in Beijing", Financial Times, November 18, p. 9; Dyer, Geoff and Andrew Ward, [2009], "China warned on trade backlash threat", Financial Times, November 29, p. 4; and Pettis, Michael, [2009], "Protectionism is gaining currency", Financial Times, December 2, p. 9.

<sup>29</sup> Aliber, Robert, [2009], "Tariffs can persuade Beijing to free the renminbi", Financial Times, December 8, p. 11.

<sup>30</sup> See Wilder, Rebecca, [2010], "I have to Side with China on this One", February 8, a blog reachable at <http://www.newsneconomics.com>.

signed a WTO agreement in which government institutions are obliged not to favor domestic suppliers.<sup>31</sup> Of course, all countries in a serious recession are subject to the threat of political unrest, so this interpretation is fundamentally indefensible. Further, the argument fails to acknowledge that China's economy is clearly growing much more rapidly in 2009 than economies of other large nations.<sup>32</sup>

Third, China's state banks have been rapidly expanding loans to its state enterprises and to its provinces, municipalities, and counties during the current recession. The latter include non-recourse loans to urban development investment corporations (UDICs).<sup>33</sup> The banks are reported to require about \$73 billion in new capital in 2010 to cover expected future losses from recent lending.<sup>34</sup> In the past, China has used exchange reserves to absorb losses the banks have sustained.<sup>35</sup> The low value of the yuan together with this recent policy of increased lending appears to have raised the rate of inflation. The Chinese domestic money supply has recently been rising at a rate of about 30% per annum.<sup>36</sup> In addition to increased lending, part of this increase in money is a consequence of its policy of pegging the yuan to the dollar; when the dollar threatens to fall China buys dollars and pays for them with its own currency. At some point, rising inflation may force China to increase the value of the yuan relative to the dollar, which would tend to exacerbate loan losses. The condition of banks is not transparent, but likely to be important for setting the future value of the yuan.

Fourth, a major reason for China's desire to accumulate reserves may be the high rate of investment evident in Table 4. Roughly 88% of China's GDP growth in the first half of 2009 was investment.<sup>37</sup> Such a rapid increase in capacity is likely to yield low rates of return and produce gluts of commodities that cannot be profitably sold, or the

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<sup>31</sup> See Bradsher, Keith, [2009], "As China Stirs Economy, Some See Protectionism", New York Times, June 24, p. B1.

<sup>32</sup> Wassener, Bettina, [2009], "China Is Thriving, Its Economic Data Shows", New York Times, December 12, p. B6.

<sup>33</sup> See Bell, Jonathan, [2010], "Infrastructure loans a possible Achilles heel to Chinese banks", Financial Times, February 23, p.20.

<sup>34</sup> Dyer, Geoff and Jamil Anderlini, [2009], "Chinese banks aim to boost capital", Financial Times, December 22, p. 1.

<sup>35</sup> See, Prasad, Eswar and Shang-Jin Wei, [2005], "The Chinese Approach to Capital Inflows: Patterns and Possible Explanations", IMF Working Paper No. 05/79, April.

<sup>36</sup> Dyer, Geoff, [2009], "Chinese stimulus measures spark inflation risk as production rises", Financial Times, December 11-12, p. 2.

<sup>37</sup> Roach, Stephen, [2009], "I've been an optimist on China. But I'm starting to worry", Financial Times, July 29, p. 22.

new capital will lie idle as excess capacity.<sup>38</sup> It is not clear who is investing in plant and equipment, but among the candidates are firms from abroad that make foreign direct investments, Chinese state firms, UDICs, and private individuals and firms in China. In 2005 the greatest amount of foreign direct investment came collectively from Hong Kong, Taiwan, Macao, and tax havens in the Caribbean and elsewhere.<sup>39</sup> The second largest group had about 40% as much; it included Japan, the U.S., and the E.U. The actual nationalities of foreign investors are unknown and their activities are not conveniently available, but they are likely to be engaged in exporting and in relocating production facilities from high-cost, offshore locations to China. Foreign direct investment was only about three percent of China's GDP in 2005 and was not more than five percent in the preceding decade;<sup>40</sup> it seems unlikely to account for much of the recent surge shown in Table 4. Data about recent investment by private firms in China are not available. Given the large increase in lending to state enterprises and UDICs, it seems likely that they are mostly responsible for the surge in investment. China's per capita consumption has been growing rapidly, but less rapidly than GDP; its own consumers are not likely to be able to absorb a large increase in output resulting from the investment surge. Foreign consumers are also unlikely to increase purchases of consumer goods dramatically unless prices fall further, which may partly explain why the yuan has remained stubbornly pegged to the dollar. Reserves can smooth shocks to an economy.

Some investment, of course, is not intended to result in increased export capacity. For example, the massive water works infrastructure projects involving transporting water from the Yangtze River basin to the Yellow River basin are addressing severe ecological problems and shortages. The Three Gorges dam and China's reported increased defense spending on equipment are other examples. To support such massive undertakings China may need to import food and other materials in the future; such imports will require funds. If a series of additional large infrastructure projects such as introducing high speed trains and highway expansion describes the future, even with the

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<sup>38</sup> See Pettis, Michael, [2009], "China's September Data Suggest that the Long-Term Overcapacity Problem is only Intensifying," October 21, Roubini Global Economics, LLC website and Dyer, Geoff, [2010], "No one home", *Financial Times*, February 22, p. 6.

<sup>39</sup> Naughton, op. cit., p. 403.

<sup>40</sup> Naughton, op. cit., p. 422.

undervalued yuan the Chinese positive trade balance could shrink substantially in the coming years. Indeed, further devaluations of the Chinese currency might be needed.

*b. U.S. trade imbalances with other countries.* As noted above, the U.S. has large merchandise trade imbalances with other countries besides China. Its largest trading partner is Canada with which it had a trade deficit of \$112 billion in 2008. After China and Canada it had large 2008 trade deficits of \$85 billion with Mexico, \$78 billion with Japan, \$46 billion with Germany, \$42 billion with Saudi Arabia, \$38 billion with Venezuela, and \$34 billion with Nigeria. Canada and Mexico have tariff advantages because of being signatories of the North American Free Trade Agreement (NAFTA), Japan and Germany are high technology countries that supply both U.S. consumers and manufacturing firms, and the last three are oil exporters and members of the Organization of Petroleum Exporting Countries (OPEC). Indeed, 36 of the top 50 U.S. trading partners, measured by summed imports from and exports to the U.S., had surpluses with it.<sup>41</sup> The point of this enumeration is that while China's \$270 billion trade surplus with the U.S. was the largest, it was not alone; collectively Canada, Mexico, and Japan's was larger.

Why does the U.S. have such large trade deficits with so many countries? The answer can be found in a simple national income accounting identity. Specifically, a country's saving equals the sum of its domestic investment, government deficit, and trade surplus.<sup>42</sup> The personal saving rate and net private saving as a percentage of GDP in the U.S. have fallen dramatically over the past thirty years, and especially in the decade ending in 2007. Gross private domestic investment and the federal government deficit as a percentage of GDP have trended up over these periods. The only way the accounting identity can be satisfied is for the U.S. to have a large and growing aggregate balance of trade deficit. A lack of federal fiscal discipline, beginning with the tax cuts by the Reagan administration in 1981, is the root of the problem. The federal debt as a percentage of GDP has risen from 33% in 1980 to 66% in 2007 and a further increase is in progress.

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<sup>41</sup> Source: United States International Trade Commission website.  
[http://dataweb.usite.gov/scripts/cy\\_m3\\_run.asp](http://dataweb.usite.gov/scripts/cy_m3_run.asp)

<sup>42</sup> The national income accounting identity that can be found in any principles of economics textbook is that government spending plus investment plus exports must equal taxes plus saving plus imports. This equation can be manipulated to yield the equation in the text.

The deficits with China and Mexico are partly the consequence of decisions made by large multinational firms that choose to export components made in the U.S. to these countries where final products are assembled and then sold back to the U.S. Maquiladoras, an example of this practice, are facilities owned and managed by U.S. firms that are located just over the Mexican border; there are no duties or tariffs paid on their imports or exports to the U.S. To an unknown extent, similar activities exist in China's Special Enterprise Zones and elsewhere in China. These practices suggest that when analyzing U.S./China or other trade imbalances it is seriously incomplete to restrict attention only to governments. In a world where independent capitalist entities thrive there are forces beyond governments in the world – markets and firms struggling to escape rules and regulations. U.S. corporations with overseas subsidiaries, for example, have little interest in repatriating their profits earned abroad, because as noted above they are only subject to U.S. corporate income taxes when profits are returned to the U.S.

Foreign direct investment in the United States is another part of the story.<sup>43</sup> Firms based in Canada, Japan, and Western Europe make about 75% of all foreign direct investment in the U.S., which amounted to \$237 billion in 2007 and \$325 billion in 2008.<sup>44</sup> Foreign direct investment allows countries with large trade surpluses to avoid accumulating large amounts of dollar-denominated financial assets. Instead they acquire productive physical assets in the U.S. Foreign direct investment from China in 2008 was only about \$373 million. The U.S. government has discouraged or prevented a number of Chinese attempts to buy banks, oil companies, and other firms in the U.S. The U.S. government's actions are sometimes defended on national security grounds. Without this channel for disposing of its trade surpluses, China has little choice but to accumulate foreign exchange balances or to let the yuan appreciate against the dollar. Its recent efforts to purchase Volvo from Ford show another route by which China can avoid holding dollars.

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<sup>43</sup> “The United States defines foreign direct investment as the ownership or control, directly or indirectly, by one foreign person (individual, branch, partnership, association, government, etc.) of 10% or more of the voting securities of an incorporated U.S. business or an equivalent interest in an unincorporated U.S. business enterprise.” Source: Jackson, James K., [2008], “Foreign Direct Investment in the United States: An Economic Analysis”, Congressional Research Service, August 15, p. 1.

<sup>44</sup> Organization for International Investment, [2009], “Foreign Direct Investment in the United States”, March 18.

#### **IV. Conclusion.**

The recent growth in Chinese foreign exchange reserves is mostly a consequence of the large continuing balance of trade surplus that China has had with the U.S. As the preceding discussion suggests, there are several interdependent reasons for the surplus. The saving rate in the U.S. has been very low and the saving rate in China has been high. Other things being equal, a low saving rate will tend to be associated with a trade deficit and vice versa.

The low value of the yuan relative to the dollar has made Chinese goods relatively inexpensive for U.S. consumers. If exchange rates were flexible and set in markets, a glut of dollars would drive the value of the dollar down relative to the yuan. Except for a brief period between the end of 2005 and the middle of 2008, the Chinese government has pegged the yuan/dollar exchange rate. Between 2005 and 2008, however, the yuan was allowed to appreciate about 21% against the dollar.

China, of course, is a totalitarian state and its ruling communist party makes decisions that are designed to achieve the party's goals. From the investment data in Table 4 it is clear that it has a very ambitious set of goals. Using the accounting identity in the preceding section, its very high and rising domestic investment and trade surplus imply that it has had a large government budget surplus and/or a high personal saving rate. (The distinction between public and private saving is somewhat blurry in a socialist economy.) Domestic investment inevitably involves sacrifices by the present generation so that future generations can live better. The continuing high rate of investment is designed to maintain an almost unprecedented high rate of growth of the Chinese economy, but it exacts a high price in foregone current consumption.<sup>45</sup> To be sure per capita consumption is rising, but at a much slower rate than might be expected.<sup>46</sup> One could interpret high investment as providing for a soon to be aging Chinese population.

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<sup>45</sup> In Table 4 it can be seen that consumption is falling as a percentage of GDP and the share of GDP that is consumption is below that observed in wartime economies. During World War II, U.S. consumption as a fraction of GNP was never below 50%. China's 2008 consumption as a fraction of GDP was 36%.

<sup>46</sup> Foreign firms are responsible for part of the reported domestic investment. To the extent that their investment is funded from offshore saving, there is no contemporaneous sacrifice by Chinese citizens. Foreign firms gain by employing labor in China (and in other developing countries) that is inexpensive relative to the cost of labor in their home countries. They also gain access to China's huge potential markets, which may be promising in the future because of China's rapid rate of growth.

By way of contrast, in the United States the federal surplus and private saving have been very low after 1980, and especially so after 2000. This democratic society has adopted an impatient, hedonistic demeanor, much in the tradition of the late Roman Empire. The GDP growth rate was reasonably stable between 1980 and 2000 because households and the federal government were funding their spending by increased borrowing. GDP growth in the most recent decade has been anemic, in part because of its rising trade deficit with the rest of the world. Further, the government has under funded its social programs like Medicare, and greatly expanded its overseas military activities, without accounting for future financial burdens that these activities will entail. The federal government has borrowed large amounts from the Social Security Trust Funds, which it must begin to pay back in the near future – perhaps starting in 2017. Private borrowing, a form of dissaving, has been abetted by a lack of government regulation of U.S. financial institutions and, in the last decade, by low lending interest rates that were caused by Federal Reserve policies. Consumption as a percentage of GDP was close to 63% in the years between 1959 and 1980, after which it rather steadily trended up to about 70% in the years 2005-2007.

These diverse trends in China and the U.S. have set the stage for the growing dispute about whether the yuan should continue to be pegged to the dollar. Both countries have contributed to the problem as the preceding paragraphs argue and no one knows at this point in time how the dispute will be resolved. China's premier, Wen Jiabao, has recently said: "We will not yield to any pressure of any form forcing us to appreciate. As I have told my foreign friends: on the one hand, you are asking for the renminbi to appreciate; and on the other hand you are taking all kinds of protectionist measures."<sup>47</sup> American politicians and a host of economists have argued that the yuan must be allowed to resume its appreciation against the dollar. Both countries have undertaken vigorous monetary and fiscal policy actions to combat the "great recession", but both continue to experience disruptions. The actions appear to be working in both countries; China's GDP rose at a rate of 8.7% in 2009 because of its very large investments in infrastructure and the U.S. GDP grew at an annualized rate of 2.2% in the third quarter of 2009 and about 5.9% in the fourth quarter.

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<sup>47</sup> Source: Dyer, Geoff, [2009], "China dismisses currency pressure", Financial Times, December 28, p. 1.

While it is too early to draw confident conclusions, there are some indications that the imbalance between China and the U.S. is beginning to weaken. China's 2009 exports to the U.S. appear to be much lower than in previous years, which may partly explain its hesitancy to allow the yuan to appreciate at this time. If its trade surplus is actually shrinking, it will accumulate reserves more slowly. China's inflation rate is apparently beginning to accelerate, which may prompt it to let the value of the yuan rise.<sup>48</sup> There is some evidence that labor shortages are developing in China, so the reserve army of impoverished employable workers may be shrinking.<sup>49</sup> Further, there are reports that China is using its reserves at an increasing rate to arrange mergers with foreign firms, a form of foreign direct investment. The estimated amounts of outgoing funds were \$9.6 billion in 2005, \$25.4 billion in 2007, \$50 billion in 2008, and \$46 billion in 2009.<sup>50</sup> In the U.S. the personal saving rate has begun to rise, which is partly a consequence of diminished access to credit at banks and a welcome reaction to excessive spending by households in the past decade. China is beginning to export more to other countries, especially ASEAN countries.

However, these modest adjustments may not be enough to deter countries from raising tariff barriers against Chinese exports. The IMF predicts large continuing imbalances through 2014.<sup>51</sup> It would be a tragic development if trade imbalances were resolved through tariff increases, as occurred in the 1930s, but it cannot be ruled out.<sup>52</sup> All countries would suffer from disrupted supplies of goods and global productivity would be seriously diminished. One can only hope that cooler heads will prevail and that both China and the U.S. can make adjustments to avoid such a calamity.

Madison, WI

March 8, 2010

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<sup>48</sup> Mitchell, Tom and Geoff Dyer, [2010], "China inflation spurs wage rise fears", Financial Times, February 10, p. 2 and Wassener, Bettina, [2010], "China to Slow lending to Fight Inflation", New York Times, January 21, p. B2.

<sup>49</sup> Bradsher, Keith, [2010], "Chinese Plants Starting to Feel Labor Shortage", New York Times, February 22, p. 1.

<sup>50</sup> Tucker, Sundeep, [2009], "China's hunger for mergers outweighs fears over crisis", Financial Times, December 31, p. 13.

<sup>51</sup> Blanchard, Olivier and Gian Maria Milesi Ferretti, [2009], "Global Imbalances in Midstream", IMF Staff Position Note 09/29, December 22.

<sup>52</sup> See Pettis, Michael, [2010], "Why a trade war is likely to break out this year", Financial Times, January 27, p. 11.

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