

Is China Really Running a Trade Surplus?

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Last updated: December 30, 2007

The University of Texas Inequality Project

UTIP Working Paper 45

Abstract

We examine China's macroeconomic and trade accounts for simple, tell-tale signs that capital inflows are being disguised as export earnings. We find large reported increases in a calculated unit value of Chinese manufactured exports, which do not appear to correspond to increased unit prices in the accounts of countries importing from China. We therefore suspect that the legalization of dollar accounts by firms resident in China, as well as an increase in expectation of RMB appreciation which occurred in 2003, have led to large disguised capital inflows. The magnitudes could range up to \$529 billion by 2006. If this is correct, then China is not running a \$170 billion current account surplus as officially reported in 2006, but rather a much smaller surplus, or even a deficit, obscured and financed by illicit inflows.

Introduction

One of the most basic principles of international macroeconomics is that the growth of imports depends on the domestic rate of growth, while that of exports depends on growth in external markets. For a country selling manufactured goods to the whole world, the relevant comparison is surely between the national growth rate and that of the world economy, or at least that of the OECD countries, which provide the lion's share of the global consumer market.

Thus when a developing country experiences a prolonged period of high growth of internal demand, it is normal for a trade deficit to emerge. This is especially likely if the country in question is an importer of food and fuel and commodity prices are rising. And if the country faces a finance constraint, the trade deficit will ultimately limit the growth surge. Innumerable cases can be cited, in Latin America, Africa, and even Europe. Exceptions, *per contra*, are rare, and in the modern record largely confined to countries that maintain rigorously undervalued exchange rates and repressed domestic consumption, while rapidly improving the composition and quality of their exports.

Seen from this perspective, the recent record of the People's Republic of China is simply astounding. China has been running reported internal real growth rates of eight percent or so for three decades, during which time OECD growth rates averaged less than half of that figure (WDI Online). And while during most of this period China reported small trade surpluses, in the most recent years China's current account surplus has exploded. China's reported exports nearly quadrupled from 2000 to 2006, from \$249 to \$969 billion, a rise of nearly three-quarters of a trillion dollars. Despite the fact that China's imports rose substantially in both quantity and unit prices during this period, China reported a trade surplus of over \$170 billion in 2006.

But if this feat seems improbable, there is the possibility that it didn't happen.

In this paper, we show that a very large fraction of the gains in reported Chinese exports after 2002 are apparently due to rapidly rising unit values, following a long period in which unit export values did not rise at all. Only 40 percent, at most, of the export rise can be attributed firmly to rising export quantities. The question we pose is: did the per-unit values of Chinese manufactured exports really rise at rates exceeding 20 percent for three consecutive years? Looking at import prices for Chinese goods recorded in other countries and similar evidence, we find no trace of such a transformation in unit prices, and only modest shifts in the composition of exports that might be raising measured unit values.

That being so, the possibility arises that Chinese exporters have been over-reporting export prices to the Chinese authorities, for the purpose of bringing foreign exchange into the country. The incentive to do so stems from two facts: the continued enforcement of strict controls over capital inflows *per se* in China, and the legalization, in late 2002, of unlimited foreign currency accounts held in China by Chinese firms. On the simple evidence of reported price increases, the disguised capital inflow could be very large: potentially enough to turn that reported surplus of \$170 billion in 2006 into a substantial trade deficit, and enough to explain the very large increase in the share of fixed investment in Chinese GDP that occurred after 2002.

Capital Inflows into China

Hot money has been flowing into and out of China since its emergence as a major economy. And the Chinese government, which has a long history of capital control, is concerned about the issue. Since capital controls remain in force in China while the current account was liberalized in 1996¹, it stands to reason that some efforts to evade capital control would flow through the current account.

Officials at the People's Bank of China (PBOC) have confirmed that significant hot money inflows have run through the current account² through the over-invoicing of exports, the practice of overstating export values in order to bring foreign capital into the country. Hu Xiaolian, director of the State Administration of Foreign Exchange (SAFE), and vice governor of the PBOC, and Deng Xianhong, deputy head of SAFE, recently called for audits of short-term foreign exchange accounts to check these inflows (Xin 2007)³. An anonymous governor of PBOC, associated with the National Development and Reform Commission (NDRC), has estimated that "false exports during August-December 2006 resulted in an increase of US \$17.5 billion in the favorable foreign trade balance, accounting for 17% of the total favorable balance" (Zhong 2007).⁴ It appears that the Chinese government has estimated the occurrence and extent of capital inflows in the trade account by watching short-term foreign exchange transactions, upon which the PBOC imposed further regulations in February of 2007⁵,

Scholars and bank economists have long watched Chinese hot money fluctuations, mainly via the catch-all errors and omissions category in the balance of payments (Prasad and Wei 2005). Green (2006) estimates that hot money inflows comprised US \$67 billion in 2005, although this is a very rough estimate. Some have also suspected that hot money has also flowed into the current account, taking the form of payments for fictitious exports or over-invoicing of actual exports. This phenomenon appears not to have attracted extensive scrutiny so far.⁶ Yet, it could have large implications for understanding the true trade and financial position of China today

In this paper, we investigate the extent to which capital inflows may have appeared deceptively in the trade account from 2003 to 2006. Not having access to the Chinese government's financial data, we take a simple alternative approach: we estimate the inflows using the published balance of payments data, while checking our estimates against investment, foreign import prices, and financial activity.

¹ See Li (2004). "Capital Account Liberalization in China," *The Chinese Economy*, 37(1), pp. 85-116 for a timeline of current account liberalization.

² Wei and Zhang (2007) note that a government official of an "anonymous" country admits that capital inflows have been introduced through the overbilling of exports. That the reference is to China is consistent with the context of this remark.

³ Nineteen domestic banks and ten international banks have been punished for facilitating short-term money inflows disguised as trade or investment (Anderlini, *Financial Times*, June 27, 2007).

⁴ On the other hand, Sun Mingchun, vice-president and Asia economist of Lehman Brothers Asia Ltd, stated that hot money inflows may be slowing down due to recently implemented checks on short-term capital inflows and stock market transactions (Zhang July 13, 2007).

⁵ See People's Bank of China Adjusted Foreign Exchange Administration Policy towards Individuals

⁶ Gunter (2003) makes a case for the phenomenon of capital flight from China, from 1984 to 2001, with over-invoicing of imports.

China's unlikely export values

A simple first cut at the problem involves making a large, problematic assumption: that changes in the internal composition of Chinese exports within major product categories over a short three-year period can be safely ignored. (We will examine this assumption in detail later.) If we can treat the commodity composition within the major product categories as fixed, then dividing total export values by quantities will give us a “unit value” measure of Chinese exports.

The official data available for this purpose are very erratic, but it is easy to show that this is due mainly to the influence of two highly volatile export sectors, neither of which is quantitatively very important⁷. We therefore construct a streamlined representation of export volume by removing those sectors. For the remaining sectors, we find a steady increase in export volumes over time. Dividing dollar volume by these quantities gives unit values⁸. We calculate unit values using both OECD and CEIC data, applying the growth rate in calculated unit values after 2004 to quantities given in the OECD data⁹.

Table One shows export unit values from 1996 to 2006 calculated after excluding the volatile sectors¹⁰. In manufacturing, these values are extremely stable through 2002, at around \$0.39 USD per reported unit, and then they start increasing rapidly. In 2003, the manufacturing export unit value jumps to \$0.49, and in 2004, to \$0.59. In 2005, the export unit value is \$0.72, peaking at \$0.97 in 2006, and the overall export unit value follows the same trend, which is not surprising since manufactures dominate Chinese exports.

Table One: Export Unit Value (In US Dollars)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Export Unit Value (Our Calculations)	0.51	0.47	0.47	0.46	0.46	0.45	0.46	0.56	0.66	0.79	1.00
Export Unit Value (Official Statistics)	0.05	0.06	0.07	0.08	0.10	0.08	0.60	0.70	0.76	N/A	N/A
Manufacturing Export Unit Value (Our Calculations)	0.40	0.38	0.39	0.39	0.39	0.38	0.40	0.49	0.59	0.72	0.97

⁷ See Table Five below. The volatile sectors are Beverages and Tobacco (SITC 1) and the Special Commodities and Transactions (SITC 9)

⁸ This calculation is far from precise, because quantities are organized by type of unit, such as tons, thousands of units, and so forth, depending on sector, so there is no single consistent “unit of exports.” For this first cut, we are in effect assuming the existence of a constant “composite unit,” not strongly affected by changes in the composition of exports or by quality change.

⁹ OECD data is the only data set that contains total quantities for SITC categories and for all trade, but only goes up to 2004. CEIC makes some quantities available, but not all. Therefore, we needed to use both.

¹⁰ The World Bank's WDI Online database includes information on China's export value indices. These are also shown to increase dramatically from 2003 to 2006. We choose not to use this information because data from another source, UN Comtrade, do not show the same increase.

Source: OECD and CEIC Data and authors' calculations¹¹

Now, let us suppose that Chinese exports had continued at unchanged unit values for the entire period from 1997 through 2006. What would have been the growth of total exports on that assumption? Table Two gives actual export values, export values under the counterfactual of no unit value change, and the difference, which is attributable to changing unit values. It is clear that a major part of the reported increase in Chinese exports is not due to increasing raw volumes, but rather to some combination of reported price increases and product transformation, reported as rising unit value.

Table Two: Export Volumes and Total Exports Attributable to Volume Gain
(in Billions of Current US Dollars)

	Exports of Goods and Services	Exports of Goods and Services at Unchanged Unit Values	Difference ¹²
2002	365.4	365.4	0
2003	485.0	398.4	86.6
2004	655.8	457.1	198.7
2005	836.9	490.2	346.7
2006	981.0	452.4	528.6

Source: World Bank WDI and authors' calculations

As noted, part of the increase in unit values can be attributed to actual price increases in exports, and part to shifts in the composition of Chinese manufacturing output to higher technology goods. But how much? That is the question we next examine.

Have Chinese manufactured exports increased in unit *price*, that is, in value per item holding composition and quality constant? If they had, we would expect that the unit import prices in manufactured goods reported by other countries, especially Europe, Japan and the United States, would show comparable increases. However, as Tables 16 to 18 in the appendix demonstrate,

¹¹ Rather than using given total quantities, the total of the individual commodity categories (minus the extremely volatile beverages and tobacco category) was used, since the two were not equal. Using given total quantities would result in an even more dramatic increase in value per exported unit. The OECD does not yet have data for 2005-6. We therefore estimated this using quantities and values calculated from CEIC data, adding up quantities and values for all categories that had quantities, and finding the unit value. We then looked at the growth rate of the CEIC unit values and applied this to CEIC data. The growth rate and unit value for 2004 was consistent with OECD data, providing an overlap in data sets.

¹² We calculated "hot money" inflows assuming they started in 2003. Therefore, we find that the difference in 2002 is zero.

there is no sign of this at all. Every table shows stable or declining unit prices, and in some cases sharply declining unit prices, for manufactured imports. Eurostat even publishes unit price indexes specific to imports from China; these show no net change for manufacturing or machinery, the major Chinese export sectors.

Further, if Chinese exporters *had* simply raised the prices of goods sold to the world market, we would expect to see a loss of market share. Manufactured goods together total nearly 90 percent of Chinese exports by value, and it seems unlikely that their prices could rise sharply without significant losses in favor of Vietnam, Malaysia and other low-wage competitors. In fact, there were no significant losses toward competing exporters. To the contrary, the quantity measures in manufacturing show robust growth in 2003 through 2006. In the case of commodity-based exports, such as animal and vegetable oils and fats, price increases could have happened without loss of market share, insofar as overall commodity prices rose during this period. But such goods are a trivial share of total Chinese exports by both value and quantity.

Table Three shows the ASEAN share of world markets over this period: there is no sign of an increase that could be attributed to Chinese exporters pricing themselves out of the market.

Table Three: ASEAN Share in World Exports¹³

(Percentages)

	1998	1999	2000	2001	2002	2003	2004	2005
ASEAN Share in World Exports	4.8%	5.1%	5.6%	5.2%	5.2%	4.0%	5.4%	5.4%

Source: UNCTAD Statistics Database

A second possibility is that China has upgraded the actual quality of its exports, justifying higher unit values not with price increases but with better goods. This possibility is particularly relevant to the processing trade, where China could be importing increasingly high-value goods in order to finish them and export them again. But if this were the case, then unit values of Chinese *imports* in manufacturing would also be increasing. Table Four gives unit values for imports in manufactures and machinery; no unusual increase is observed, although there appears to be a steady slight progression in unit price from 2001 onward. This may account for part of the export unit price increase, but not too much of it. This share of the unit value increases could be due to an increase in the technological content of process-trade goods, which did occur starting in 2002. However, the fact that the unit value increase is not reflected in Chinese import unit value increases (Table Four) leads us to infer that changes in the composition and degree of the

¹³ Also according to the UNCTAD Statistics Database, the share in world manufacturing exports for Eastern, Southern, and Southeastern Asia excluding China was 16% in 1995, 20% in 2000 and 23% in 2005.

processing trade do not account for the entire unit value increase and perhaps not even for very much of it. Note that the report unit value for manufacturing in 2004 is only 13 percent higher than its 1998 value, while export unit value is up over 50 percent. This would suggest that around three-quarters of the excess increase in export unit value cannot have been contributed by increased unit values in semi-processed imports, even if the processing trade were all of China's manufactured exports, which it is not.

Table Four: Import Unit Values (into China)
(in USD)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Import Unit Values	0.47	0.38	0.38	0.36	0.36	0.38	0.38	0.43	0.45
Manufacturing Import Unit Values	0.74	0.52	0.54	0.47	0.43	0.52	0.55	0.59	0.61

Source: OECD Data and authors' calculations

The next issue is, to what extent did the composition of Chinese exports across broad industrial sectors change? Had the sharp rise in the per-unit value of Chinese exports been the result of a sudden shift in the composition of exports, such shifts would be observed in the data at the level of broad SITC categories. There is in fact an increase of about three percentage points per year in the export share of the machinery and transport equipment sector, but this increase has been going on for a long time, and the gains after 2003 are not out of line with past experience. Otherwise, the sectoral composition of Chinese exports over time appears substantially stable. Processing trade in particular remained steady in percentage of overall exports, at 55% per year from 2000 through 2005, according to the Ministry of Finance¹⁴.

In the reported data, the surge in dollar value per unit of exports since 2003 originates in the manufacturing sector. Of the total dollar value per unit of all exports in 2004, or \$0.66, \$0.11 is from the manufactured goods sector, \$0.30 is from the machinery and transport equipment sector, and \$0.18 is from the miscellaneous manufactured goods sector. Table Five illustrates the patterns of per unit value change across sectors.

¹⁴ <http://www.mofcom.gov.cn/tongjiziliao/tongjiziliao.html>

Table Five: Sector Unit Value Representation in Total Dollar Value per Exported Unit, by SITC Code

(in US Dollars)

	Total trade	0 Food and live animals	2 Crude materials, inedible, except fuels	3 Mineral fuels, lubricants and related materials	4 Animal and vegetable oils, fats and waxes	5 Chemicals and related products, n.e.s.	6 Manufactured goods	7 Machinery and transport equipment	8 Miscellaneous manufactured articles
1994	0.51	0.04	0.02	0.02	0.00	0.03	0.10	0.09	0.21
1995	0.52	0.04	0.02	0.02	0.00	0.03	0.11	0.11	0.19
1996	0.51	0.03	0.01	0.02	0.00	0.03	0.10	0.12	0.19
1997	0.47	0.03	0.01	0.02	0.00	0.03	0.09	0.11	0.18
1998	0.47	0.03	0.01	0.01	0.00	0.03	0.08	0.13	0.18
1999	0.46	0.02	0.01	0.01	0.00	0.02	0.08	0.14	0.17
2000	0.46	0.02	0.01	0.01	0.00	0.02	0.08	0.15	0.16
2001	0.45	0.02	0.01	0.01	0.00	0.02	0.07	0.16	0.15
2002	0.46	0.02	0.01	0.01	0.00	0.02	0.08	0.18	0.14
2003	0.56	0.02	0.01	0.01	0.00	0.03	0.09	0.24	0.16
2004	0.66	0.02	0.01	0.02	0.00	0.03	0.11	0.30	0.18

Source: OECD Data and authors' calculations

Further, the change in unit export values does not reflect or correspond to any large increase in the wage bill. This can be seen in Table Six, which illustrates wages per unit output. We do not see a marked decrease in this ratio, which would have indicated that a price increase is related to a sudden increase in wage claims. Rather, wage costs appear to hold steady from 1997 onward.

Table Six: Wage to Output Ratio
(in Percentages)

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Wage Bill	13%	12%	11%	11%	11%	11%	11%	11%	11%	11%	11%

Source: China Data Center and authors' calculations

The final issue is, to what degree could shifts in the composition of Chinese exports across narrowly defined (three-digit) industrial categories within manufacturing account for the apparent rise in unit values? Table Twenty-Two in the appendix reports the results of a disaggregation exercise, aimed at isolating those categories with the largest increase in export

share due to apparent changes in unit value. We find that compositional shifts do occur, but they do not appear to be very large in relation to the overall increase in reported unit value. And their interpretation is ambiguous. Interestingly, the largest changes are substantially concentrated in capital goods sectors such as machinery and equipment – precisely those sectors where quality changes, quantity increases and disguised capital inflows would be hardest to disentangle. We are left with no clear resolution on this topic, While it is possible that China suddenly and rapidly upgraded the quality of its machinery exports after 2002, it is also possible that those seeking to disguise capital inflow would tend to choose these same sectors as being the safest channel for such activity. Detailed forensic work, case studies of technical change in the relevant sectors, and insider accounts would appear to be necessary to resolve the issue.

We infer that China’s export figures overall, as well as in the important manufacturing sectors, are very probably overstated. By how much?

We now examine the extent to which funds may have entered China via this illicit route. A clue to the phenomenon at hand may possibly be found in the percentage change in gross capital formation (Table Seven). This figure increases sharply in the post 2002 years. This is the result of an enormous increase in the construction of fixed assets such as plant and equipment, offices and housing.

Table Seven: Gross Capital Formation
(In Current US Dollars or Percentages where indicated)

	GDP (billions of current US\$)	Gross capital formation (billions of current US\$)	Percentage change in gross capital formation	Percentage change in gross capital formation adjusted for min hot money inflows	Percentage change in gross capital formation adjusted for max hot money inflows
1996	856.1	346.2			
1997	952.7	361.5	4%	4%	4%
1998	1,019.5	378.2	5%	5%	5%
1999	1,083.3	398.0	5%	5%	5%
2000	1,198.5	420.9	6%	6%	6%
2001	1,324.8	480.5	14%	14%	14%
2002	1,453.8	550.5	15%	15%	15%
2003	1,641.0	676.1	23%	18%	7%
2004	1,931.7	835.7	24%	19%	8%
2005	2,243.9	971.0	16%	12%	-2%
2006	2,668.1	1,085.8	12%	7%	-11%

Source: WDI and authors' calculations

The increase in gross capital formation reflects, in other words, the construction boom that is everywhere visible in urban China. Gross capital formation increased by more than 60 percentage points from 2003 to 2006. What is more, to take a specific instance, the Beijing real estate industry operating income and profit moves sharply from negative to positive numbers in 2003, a dramatic increase. This is a very significant change.

Table Eight: Beijing Real Estate Statistics
(in Million Yuan)

	Real Estate Industry Operating Income	Real Estate Industry Total Profits	Investment in Office Buildings	Commercial Buildings Sold
2000	-1862	-1303	4521.9	424.84
2001	-1046	-215.3	7199.3	1245.8
2002	-1026	-587.1	9732.6	2595.3
2003	895.9	1743.3	14275	5177.9
2004	8661.1	10701	18789	5883.4
2005	6184.4	8131	19617	12085
2006	11053	14959	21674	16256

Source: CEIC

The question, then, is: how much of this increase might be accounted for by capital inflow?

We believe the answer could be: much of it. If we assume, conservatively, that 30% of the increase in export unit value is due to disguised capital inflows, we find that China is running a much smaller trade surplus. In this case, we estimate that the total disguised capital inflows into the export account were USD \$23 billion in 2003, \$54 billion in 2004, \$95 billion in 2005, and \$157 billion in 2006. This accounts for much of the rise in fixed investments as a share of GDP that had occurred up to that point. At the other extreme, based in part on unit price indices reported by importers of Chinese manufactures, it would not be unreasonable to argue that there was no increase in real unit export values after 2002. The disguised capital inflows would amount to \$87 billion in 2003, \$199 billion in 2004, \$347 billion in 2005 and \$529 billion in 2006. In that case, China's 2006 "actual" current account deficit would amount to \$425 billion, and the cumulative deficit since 2003, disguised by capital inflow, would amount to \$847 billion.

Table Nine: Capital inflows under varying assumptions of unit value increase

(in USD)

Percentage of Increase from 2002	2003	2004	2005	2006
30%	26.0	59.6	104.0	158.6
60%	52.0	119.2	208.0	317.2
90%	77.9	178.9	312.1	475.8
100%	86.6	198.7	346.7	528.6

Source: OECD, WDI and CEIC Data and authors' calculations

Table Ten: Effect of estimated capital inflows disguised as current account on Balance of Trade
(in Current billions of US Dollars)

	Exports of Goods and Services	Exports of Goods and Services Minus Hot Money Inflows	Difference (Max Hot Money Inflows)	Imports of Goods and Services	Balance of Trade	Balance of Trade Adjusted for Minimum Value (30%) of Hot Money Inflows	Balance of Trade Adjusted for Maximum Value (100%) of Hot Money Inflows
1998	207	207	0	164	44	44	44
1999	221	221	0	190	31	31	31
2000	280	280	0	251	29	29	29
2001	299	299	0	271	28	28	28
2002	365	365	0	328	37	37	37
2003	485	398	87	449	36	10	-51
2004	656	457	199	607	49	-10	-149
2005	837	490	347	712	125	21	-222
2006	981	452	529	878	103	-55	-425

Source: WDI and authors' calculations

Caveats and Qualifications

The assumptions used in our calculations are subject to several qualifications and reservations. First, we assumed that growth in unit value data from the CEIC database is transferable to OECD data. Since SITC category and overall quantity totals are not given in the CEIC database (only subcategory values are available), the translation may not be entirely accurate for 2005-6. When we asked the OECD statistics division why sub-category totals were smaller than SITC category and overall totals, they replied that this was due to “confidential reasons” on the part of the Chinese government. We incorporated only values and quantities for CEIC categories that had both types of data available, and believe that this may underestimate the unit value increases. Therefore, on this account, we erred on the side of understating capital inflows.

Second, there are issues with Chinese reported statistics as noted in other literature. There are problems with GDP, particularly with the overstatement of GDP for political purposes, as well as problems with trade statistics, due to Hong Kong re-exports¹⁶. Although this is problematic in determining exact numbers, the phenomenon of inflated export figures is more or less traceable since the last major shift in statistics occurred in 1998, when the National Bureau of Statistics began to use sample survey estimates of small scale industry, affecting the calculation of GDP (Naughton 2007, p. 141). A smaller shift in statistical classification has occurred in the past few years, when several export categories were broken into sub-categories, while some were discontinued. However, this did not affect trade statistics within the larger SITC categories. .

Changes in the Financial Environment

Assuming that China has, in fact, experienced major capital inflow disguised as export earnings, why did it happen? In part, we believe, because changes in China’s regulatory environment made it possible.

In 2003, there were several changes in China’s financial sector which made the environment more favorable to capital inflows. The interest rate began to look more attractive vis-à-vis the dollar, while the NDF premium began to decrease, indicating expectations of yuan appreciation against the dollar. Tables Eleven and Twelve illustrate these trends.

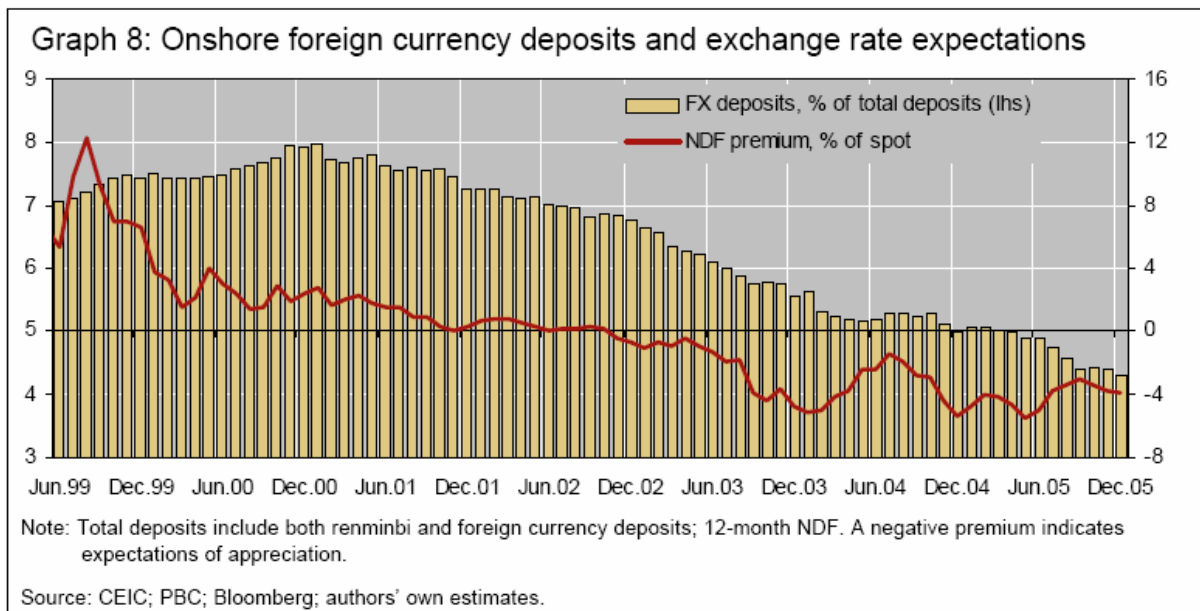
¹⁶ Green writes that the US exaggerates value-added in Hong Kong as around 25% of China’s goods value, while China tends to understate these values. He believes the US-China deficit may be the average of the two records. In any case, China’s understatement of Hong Kong re-exports has not changed over time, so does not affect the general unit value trend.

Table Eleven: RMB Less Dollar Yields
(In Basis Points)

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Avg 3-month Chinese Repo less US Treasury	1.96	-1.17	-3.4	-0.83	0.54	1.59	1.35	-1.44	-2.41
Avg 3-month CHIBOR less USD LIBOR	2.23	0.95	-2.46	0.03	1.6	1.66	1.71	-0.77	-2.57

Source: CEIC, US Treasury Statistics, British Bankers Association

Table Twelve: Non-Deliverable Forward Premium
(Percentage of Spot)



Source: Ma and McCauley (2007, p. 16)

The rise in unit export values also occurred in conjunction with an important change in the rules governing the holding of dollars inside China. In October 2002, the central government gave permission for all companies to hold foreign exchange accounts. Controls over foreign exchange purchases were relaxed for many businesses, including exporters, while the ability to open foreign exchange accounts was extended to firms outside bonded zones (Lehmanbrown.com, 2002). The goal of this measure was to liberalize the current account, facilitating trade and reducing the state presence in credit markets. Not surprisingly, we see, in Table Thirteen, that foreign exchange transactions within China increased tremendously beginning in 2003.

Table Thirteen: Foreign Exchange Transactions within China
(in 100 Million Units)

	Overall Turnover (in USD)	USD Trading Volume	HKD Trading Volume	JPY Trading Volume	EURO Trading Volume
2001	750.3	741.3	30.6	613.9	N/A
2002	971.9	951.1	108.8	730.8	1.1
2003	1511.3	1478.2	186.3	761.6	3.0
2004	2090.4	2044.1	244.9	1349.6	1.9

Source: People's Bank of China

Thus, the regulatory and investment environment was ripe for injecting capital inflows into China. Using the trade account to bring in capital was relatively simple over this period. Exporting companies simply had to overbill exports, and foreign exchange could be transferred into the companies' bank accounts.

The recent crackdown on short-term foreign exchange accounts, and the punishment of both foreign and domestic banks for the violation of exchanging currency outside of controls, has revealed how loose controls over foreign exchange accounts had become. Further evidence comes from the recent exposure and punishment of a large underground bank headquartered in Shenzhen, which exchanged foreign currency and maintained foreign exchange accounts. All of these measures are attempts by the central government to curb hot money inflows and illegal foreign exchange transactions, in order to maintain better control over the current account¹⁷. Based on CEIC data available thus far this year, the unit value of exports has virtually ended its upward movement, and perhaps the disguised inflow of capital has now come to an end.

Part of the increase, too, may stem from over-billing exports to receive additional Value-Added Tax¹⁸ (VAT) rebates after the January 2002 legislation loosened restrictions over VAT rebates. However, in our calculation, we do not see a large unit price increase for the year 2002, which would indicate that VAT abuses due to the legislation have not been very large.

¹⁷ In addition, the real appreciation of the renminbi in terms of the dollar in December 2006 signals a change in the desirability of purchasing RMB with dollars.

¹⁸ VAT rates range from 5-17%. The standard VAT rate is 17%.

What is more, accession to the World Trade Organization affected the trade climate after 2001, but the process of trade and capital control reform continued to be gradual. We believe, then, that much of the export unit price increase is due to overstated values that hide hot money inflows into China's real estate and other asset markets.

Implications of capital inflow via China's trade account

It appears that China ran a true current account surplus much smaller than reported, and may have actually run a trade deficit from 2003 to 2006. This conclusion depends in part on an assumption that China's import statistics are accurate. Though in the past the over-invoicing of imports may have served to mask capital outflow from China, we have seen no evidence to suggest similar distortions in China's import accounts at the present time. Indeed there would be little reason for it: hot money flows where markets are hot, as they unquestionably have been in China, and where a currency is widely expected to appreciate. This too was the Chinese case.

There are several implications of large net capital inflows disguised as exports. At a glance, trade statistics, and any calculations which use export or net export values, will require correction¹⁹. This includes both GDP and the growth rate, figures envied by most other developed and developing nations alike. Also suspect are the recent large profit increases reported by many Chinese firms, which could be an artifact of laundering exaggerated export earnings.

Given that we find a much smaller current account surplus, or even a deficit, repeated calls by the United States for appreciation of the RMB based on evidence of an exploding trade surplus lose force. An appreciation of the RMB would increase the exchange value of the hot money invested in China from 2003 to 2006, and the most interested parties may be speculators – including some with political connections in the United States -- who have engaged in illicit investment in China through fictitious trade. This reduces much of the demand for RMB appreciation to an interest in validating a currency speculation.

The nature of China's external financial balance would also change. As an investment on behalf of foreign interests, capital inflow places foreign claims on domestic assets. Although Chinese domestic savings and investment are high relative to other countries, domestic savings and investment will be seen as much lower than they have seemed, while foreign investment will be seen as much higher, once capital inflows through trade are correctly accounted for,

Conclusion

We believe that simple macroeconomic evidence points quite strongly to a significant overstatement of China's exports, masking an equivalent capital inflow. This inflow is potentially large enough to put China's actual current account into deficit, greatly weakening the case for appreciation of the RMB. It also suggests that other aspects of the widely-held view of recent Chinese economic performance, including the profits boom in Chinese enterprises and the growth rate of the economy overall, should perhaps be re-examined for evidence of the role of capital inflow in distorting both the statistics and the underlying economy.

¹⁹ Some studies have shown that China's GDP statistics are overstated for reasons other than errors in the trade account. The overstatement has taken place because some firm managers exaggerate output.

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Appendix

Table Fourteen: Change in Unit Price, Year on Year, by Sector
(in Percentages)

	Total trade	0 Food and live animals	2 Crude materials, inedible, except fuels	3 Mineral fuels, lubricants and related materials	4 Animal and vegetable oils, fats and waxes	5 Chemicals and related products, n.e.s.	6 Manufactured goods	7 Machinery and transport equipment	8 Miscellaneous manufactured articles
1995	3%	-17%	-11%	10%	-23%	22%	17%	20%	-8%
1996	-3%	-2%	-12%	6%	-21%	-7%	-16%	7%	-1%
1997	-7%	-17%	-20%	-10%	32%	-12%	-7%	-5%	-4%
1998	1%	-4%	-16%	-26%	-52%	1%	-5%	15%	0%
1999	-2%	-9%	2%	-17%	-61%	-8%	-6%	8%	-5%
2000	0%	-8%	-11%	32%	-31%	-9%	0%	10%	-7%
2001	-3%	-5%	-15%	-2%	-13%	1%	-6%	5%	-8%
2002	3%	-4%	-12%	-16%	-26%	-4%	1%	12%	-3%
2003	21%	8%	3%	18%	6%	15%	17%	33%	12%
2004	18%	-6%	2%	14%	12%	18%	28%	25%	9%

Source: OECD Data and authors' calculations

Table Fifteen: Export Unit Values of ASEAN Countries²⁰
(in US Dollars)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Indonesia	109	104	81	65	100	90	96	103	120	81
Philippines	146	134	105	121	100	84	77	79	77	N/A
Singapore	120	112	97	96	100	93	91	90	93	96
Thailand	127	122	107	102	100	102	97	105	118	130

Source: UN Comtrade Yearbook 2005

²⁰ We show all available values for ASEAN countries.

Table Sixteen: U.S Import Price Indices (from World²¹) by Commodity Category

	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Chemicals and related products, n.e.s.	Manufactured goods	Machinery and transport equipment	Misc. manufactured articles	Commodities and transactions, n.e.s.
1991	96	86	82	63	96	91	105	98	
1992	93	87	86	60	97	90	106	100	122
1993	95	87	91	48	96	90	108	101	136
1994	111	88	102	56	104	98	110	102	137
1995	105	91	111	59	106	104	112	104	138
1996	103	93	106	80	105	98	110	103	133
1997	108	97	103	61	101	99	105	103	110
1998	103	98	92	38	97	94	102	101	105
1999	103	100	101	83	98	97	100	101	104
2000	100	101	97	106	101	100	99	100	95
2001	95	103	90	61	97	92	98	99	99
2002	99	103	95	95	98	94	96	99	114
2003	101	104	108	108	101	98	95	100	139
2004	112	107	126	141	110	110	95	101	157
2005	117	109	134	202	115	114	94	101	171

Source: BLS Data²²

²¹ Statistics on US imports from China exist (they are collected by BLS) but begin only in 2004, which is insufficient for our purposes, but even then they show that since 2004, the import price index from China to the US has held steady or is slightly declining.

²² Category 4 was not available, and Category 971 out of 9 was the only available category. Also, some months were missing, so we used data from month 12.

Table Seventeen: EU15 Unit Value Index (2000 = 100), Imports from China (excl HK)

	Food and live animals chiefly for food	Beverages and tobacco	Crude materials, inedible except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils, fats and waxes	Chemicals and related products, n.e.s.	Manufactured goods	Machinery and transport equipment	Misc. manufactured articles	Total - All products
1995	88	67	81	87	82	99	87	92	77	83
1996	92	75	85	96	99	101	89	92	81	86
1997	97	94	93	103	119	103	95	95	89	93
1998	96	97	94	102	125	98	92	91	88	90
1999	96	96	90	92	105	94	89	90	88	89
2000	100	100	100	100	100	100	100	100	100	100
2001	100	100	103	127	98	99	101	100	99	100
2002	98	92	91	112	83	91	94	97	93	95
2003	87	83	84	127	78	82	84	88	82	85
2004	82	75	90	261	84	78	83	88	78	84
2005	85	75	97	217	94	82	85	88	79	84
2006	94	77	97	187	90	83	89	89	85	88

Source: Eurostat Online and authors' calculations²³

²³ Yearly data was calculated by averaging monthly data

Table Eighteen: Japanese Imports from World, Unit Price Index on Yen Basis,
(2000 average=100)

	All com- modities	Foodstuffs & feedstuffs	Textiles	Metals & related products	Wood, lumber & related products	Petroleum, coal & natural gas	Chemicals & related products	Machinery & equipment	Other goods
1991	118	122	116	125	110	99	103	143	116
1992	111	120	110	114	115	88	94	139	110
1993	100	109	98	93	141	73	90	125	100
1994	94	107	99	95	125	62	95	117	97
1995	94	106	98	100	117	63	104	110	100
1996	103	119	106	102	131	80	102	115	107
1997	111	123	113	112	133	92	111	119	113
1998	105	123	118	108	111	73	108	122	117
1999	96	108	107	94	107	71	98	108	105
2000	100	100	100	100	100	100	100	100	100
2001	102	110	103	101	104	107	105	97	106
2002	101	113	103	100	107	105	105	93	107
2003	100	116	100	102	104	112	110	85	103
2004	104	124	99	125	111	124	115	80	104
2005	118	127	100	153	113	172	124	78	109
2006	137	135	105	216	132	216	139	81	120

Source: Statistics Bureau, Ministry of Internal Affairs, Japan and authors' calculations²⁴

²⁴ Yearly data was calculated by averaging monthly data

Table Nineteen: Change in Unit Quantity, Year on Year, by Sector
(in Percentages)

	Total trade	0 Food and live animals	2 Crude materials, inedible, except fuels	3 Mineral fuels, lubricants and related materials	4 Animal and vegetable oils, fats and waxes	5 Chemicals and related products, n.e.s.	6 Manufactured goods	7 Machinery and transport equipment	8 Miscellaneous manufactured articles
1995	19%	-56%	0%	22%	-20%	26%	79%	25%	13%
1996	5%	8%	-7%	-1%	-7%	0%	-15%	13%	53%
1997	30%	65%	17%	18%	71%	19%	17%	26%	70%
1998	0%	3%	-9%	-3%	-58%	-4%	-22%	17%	2%
1999	9%	-2%	-7%	-1%	-63%	16%	-9%	29%	8%
2000	27%	45%	30%	35%	9%	19%	32%	31%	11%
2001	10%	-16%	35%	35%	15%	16%	-1%	2%	2%
2002	19%	40%	46%	-5%	-19%	10%	14%	30%	17%
2003	11%	29%	-31%	10%	-29%	32%	19%	18%	16%
2004	14%	-42%	-1%	-10%	15%	22%	37%	32%	9%

Source: OECD Data and authors' calculations

Table Twenty: Change in Total Reported Value by Sector
(in Percentages)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total trade	2%	21%	1%	6%	28%	7%	22%	35%	35%
0 Food and live animals	3%	8%	-4%	-1%	17%	4%	14%	20%	8%
1 Beverages and tobacco	-2%	-22%	-7%	-21%	-3%	17%	13%	4%	19%
2 Crude materials, inedible, except fuels	-7%	4%	-16%	11%	14%	-6%	6%	14%	16%
3 Mineral fuels, lubricants and related materials	11%	18%	-26%	-10%	69%	7%	0%	32%	30%
4 Animal and vegetable oils, fats and waxes	-17%	72%	-53%	-57%	-12%	-4%	-12%	18%	29%
5 Chemicals and related products, n.e.s.	-2%	15%	1%	1%	17%	10%	15%	28%	35%
6 Manufactured goods	-12%	21%	-6%	2%	28%	3%	21%	30%	46%
7 Machinery and transport equipment	12%	24%	15%	17%	40%	15%	34%	48%	43%
8 Misc manufactured articles	4%	25%	0%	3%	19%	1%	16%	25%	24%
9 Commodities and transactions, n.e.s.	-46%	93%	-98%	3022%	154%	18%	15%	49%	-14%

Source: OECD Data and authors' calculations

Table Twenty-One: Share in Value of Total Trade, by Sector
(in Percentages)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
0 Food and live animals	7%	6%	6%	5%	5%	5%	4%	4%	3%
1 Beverages and tobacco	1%	1%	1%	0%	0%	0%	0%	0%	0%
2 Crude materials, inedible, except fuels	3%	2%	2%	2%	2%	2%	1%	1%	1%
3 Mineral fuels, lubricants and related materials	4%	4%	3%	2%	3%	3%	3%	3%	2%
4 Animal and vegetable oils, fats and waxes	0%	0%	0%	0%	0%	0%	0%	0%	0%
5 Chemicals and related products, n.e.s.	6%	6%	6%	5%	5%	5%	5%	4%	4%
6 Manufactured goods	19%	19%	18%	17%	17%	16%	16%	16%	17%
7 Machinery and transport equipment	23%	24%	27%	30%	33%	36%	39%	43%	45%
8 Miscellaneous manufactured articles	37%	38%	38%	37%	35%	33%	31%	29%	26%
9 Commodities and transactions, n.e.s.	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: OECD Data and authors' calculations

Table Twenty-Two: Top Twenty Subcategories (within SITC 6 through 8) for Change in Share due to Value Change²⁵

SITC 6 through 8, 3-digit level category	Change in Share due to Value Change, 2002-4
752 Automatic data processing machines, n.e.s.	11%
764 Telecommunication equipment, n.e.s.; & parts, n.e.s.	8%
759 Parts, accessories for machines of groups 751, 752	5%
845 Articles of apparel, of textile fabrics, n.e.s.	3%
894 Baby carriages, toys, games & sporting goods	3%
776 Cathode valves & tubes; diodes; integrated circuits	3%
763 Sound recorders or reproducers; television record.	3%
851 Footwear	3%
778 Electrical machinery & apparatus, n.e.s.	3%
842 Women's clothing, of textile fabrics	2%
821 Furniture & parts; bedding & similar stuffed furni.	2%
841 Men's clothing of textile fabrics, not knitted	2%
893 Articles, n.e.s., of plastics	2%
772 Apparatus for electrical circuits; board, panels	2%
658 Made-up articles, of textile materials, n.e.s.	1%
699 Manufactures of base metal, n.e.s.	1%
848 Articles of apparel, clothing access., excluding textile	1%
653 Fabrics, woven, of man-made fabrics	1%
871 Optical instruments & apparatus, n.e.s.	1%
771 Electric power machinery, and parts thereof	1%

Source: OECD Data and authors' calculations

²⁵ To calculate this, we look at the change in the unit value, relative to the average, from 2002-4 relative to the original percentage of total value in 2002. This gave us a percentage that presents the unit-value change component of the shift in share toward the sector.