

CHINESE EXPORTERS, EXCHANGE RATE EXPOSURE, AND THE VALUE OF THE RENMINBI*

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Abstract

This paper examines the currency exposure and exchange rate risk management at Chinese textile and apparel exporters. Chinese exporting firms have large net exposure to the US dollar. On average a 10 percent increase in the value of the renminbi against the dollar would reduce net revenues by 5.4 percent if the firms left prices unchanged. This large exposure is driven heavily by the choice of export pricing currency by the firms. The regional distribution of sales is more balanced across the major export markets of the US, EU, and Japan. However many firms are unaware of their indirect currency risk to currencies other than the dollar and most firms undertake little or no activities to hedge their foreign currency exposure, direct or indirect. The large dollar exposure of Chinese exporters may help explain the reluctance of the People's Bank of China to allow the RMB to undergo a rapid appreciation against the dollar.

Keywords: exchange rate exposure, export pricing, invoicing currency, hedging

JEL classification: F23

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1. Introduction

Since the Chinese government abandoned the strict link of its currency to the U.S. dollar in July 2005, there has been a great deal of uncertainty about the future course of the currency and the potential effects on the Chinese economy. Most analyses focus on macroeconomic variables such as the current account, foreign currency reserves and flows of foreign direct investment. This paper pursues a different approach by examining the role of exchange rates on Chinese firms. Based on an original survey of over 230 Chinese textile and apparel exporters, the research documents the exchange rate exposure of Chinese exporters, their perceptions of currency risk and the methods, if any, they are employing to manage that risk. The results shed light on the behavior of Chinese exporters and offer an alternate answer to the question of why China has moved slowly in allowing its currency to appreciate.

Chinese currency is widely perceived to be undervalued against the dollar. Estimates of the degree of undervaluation against the U.S. dollar range from 7% to 67% according to Cline and Williamson (2007).¹ U.S. government officials have consistently argued for a more rapid appreciation of the renminbi against the U.S. dollar in part to avoid more protectionist measures advocated by critics of the rising bilateral trade imbalance between the countries. While China formally changed its exchange rate setting procedure in July 2005, it has largely rebuffed or sidestepped American pressure to allow the currency to appreciate more rapidly. The appreciation of the renminbi has been slow enough that, from July 2005 to October 2007, the renminbi had actually depreciated in nominal terms against the euro and pound. The issue of the perceived weakness of the Chinese currency is not limited to the U.S.. In November 2007, European officials including Jean-Claude Trichet, president of the European Central Bank, collectively issued a statement urging China to allow its currency to appreciate more rapidly.

This paper examines the role of currency risk and exposure in Chinese textile and apparel firms. The Chinese textile and apparel sectors are particularly relevant for a study of the consequences of exchange rate policy changes on Chinese firm behavior. In 2006, these sectors employed over 9.7 million workers in China, mostly less-educated and low-skilled, and were a major source of export earnings, almost \$140 billion (UN Statistical Division 2007). Following the elimination of the quota system of the Multi-Fiber Arrangement in January 2005, Chinese textile and apparel exports are booming and are once again the subject of contentious trade negotiations and trade sanctions by

¹See Cheung, Chinn, and Fujii (2007) for an alternate view on the overvaluation of the renminbi.

both the U.S. and the European Union. Firms in these industries provide a potential bellwether for the rest of the Chinese export sector.

Using survey data for 230 exporters, this paper examines the perception of exchange rate risk as well as the actual currency exposure of the firms. Chinese firms exporting textiles and apparel receive the overwhelming majority (87%) of their foreign exchange revenues in dollars. However, the distribution of export destinations is much more evenly balanced between the U.S. (24%), Europe (30%), Japan (14%) and other destinations (32%) (see Table 3). Most firms with significant dollar receipts are able to correctly identify the potential risk of a strengthening of the renminbi against the dollar. However, this mismatch between currencies and actual destinations means that firms are much more likely to be unaware of potential problems if the Chinese currency were to appreciate against the Japanese yen or European currencies such as the euro and pound.

Even if Chinese firms correctly evaluate their exposure to currency movements, they have few options for financial risk management. Hedging instruments are not typically available or well-understood, and where available are relatively expensive. The average duration of exchange rate hedges is extremely short, suggesting that Chinese exporters are concentrating on transactional hedging of outstanding sales and are typically not engaged in offsetting longer term exposure.

Given the relatively intense competition and low margins in the textile and apparel industries, the hidden currency exposure and lack of effective risk management techniques combine to pose a substantial challenge for the firms. In the aggregate these issues may present significant difficulties for officials in charge of managing the future course of the Chinese currency. A rapid appreciation of the Chinese currency could be the source of a substantial rise in unemployment for some of the most vulnerable employees in the export sector.

The paper is organized as follows: Section 2 examines related research; currency movements are discussed in Section 3; Section 4 introduces the survey and presents findings on direct and indirect currency exposure at the surveyed firms; Section 5 documents the gap between perceived and actual currency exposure; Section 6 examines risk management practices and firm responses to further rises in the value of the Chinese currency; and Section 7 concludes.

2. Related research

This paper is related to a number of ongoing research streams in international economics including the effects of exchange rates on firm performance, currency invoicing,

and exchange rate risk management. A growing body of research examines the choice of invoicing currency by exporting firms. Bacchetta and van Wincoop (2005) find that exporting firms will price in their own currency when they face less competition in the foreign market. Engel (2006) develops a theoretical framework that links the choice of invoicing currency to the variance of prices. Goldberg and Tille (2006) consider the choice of a third party, or vehicle, currency in the firm's export decision. They emphasize a herding effect to reduce price movements relative to one's competitors. The survey results suggest that the dollar is in widespread use as the invoicing currency for Chinese exporters with important consequences for firms' perceptions of exchange rate risk.

Firm pricing in the face of exchange rate changes is the subject of a large literature.² Exporting firms can choose to offset the effects of exchange rate movements by adjusting prices differentially across markets according to the degree of pricing power, i.e. pricing-to-market. While the survey does not offer direct evidence on pricing-to-market behavior by Chinese exporters, the results confirm that the most likely response of Chinese textile and apparel exporters in the face of an appreciating renminbi is to raise export prices. In advanced economies there are a range of alternatives for firms that would like to reduce their exchange rate exposure, see Froot, Scharstein and Stein (1993). Financial instruments for managing exchange rate exposure have only recently been introduced in China. The survey report limited use over short horizons of trade financing and financial instruments to reduce exchange rate risk.

The combination of invoicing currency choice, lack of hedging instruments and pricing responses of Chinese firms to changes in the value of the renminbi suggest a role for Chinese exporters in determining the degree of exchange rate pass-through. Marazzi et al. (2005) attribute part of the decline in exchange rate pass-through in U.S. imports in more recent years to the rise of Chinese exports. However, going forward in a period of renminbi appreciation against the dollar, any mitigation of pass-through due to rising imports from China may be lessened.

3. Currency Movements

The vast majority of articles about the value of the Chinese currency focus on the relationship to the U.S. dollar, largely due to the nature of the fixed exchange rate regime that existed until July 2005. However, Chinese exporters have been exposed to substantial exchange rate volatility against other currencies both before and after the change in regime. Figure 1 shows the nominal value of the renminbi against four major currencies.

²See Goldberg and Knetter (1997) for a survey.

From July 2005 through October 2007, the Chinese currency appreciated 10.8 percent against the dollar and 14.4 percent against the yen. In contrast the currency actually weakened 8.8 percent against the euro and 6.2 percent against the pound. Figure 2 shows real exchange rate movements, i.e. after adjusting for differences in inflation. The overall pattern of movements is similar, however, the real value of the chinese currency against the dollar is roughly unchanged between 2000 and early 2007 with the nominal appreciation largely offset by higher inflation in the U.S..

Even before the abandonment of the tight link to dollar, Chinese exporters faced moderate exchange rate movements in their destination markets. Since 2000, the average year-on-year movement of the real value of the renminbi against the euro, pound and yen has been between 6.5 and 8.1 percent. However, given the invoicing decisions discussed below, these currency movements may have been largely perceived by firms to be fluctuations in demand.

4. Chinese textile and apparel exporters

The data used in this paper come from a survey of Chinese textile and apparel exporters conducted during July and August 2006. 280 firms completed the survey of which 230 provided answers to a sufficient number of the questions to be deemed as "usable" responses. The survey was conducted with the help of a private Chinese export assistance firm and specifically targeted firms engaged in exporting. Fully 36 percent of the firms do not report any sales in the domestic market.

The responding firms are predominantly private (60 percent) or joint ventures (28 percent) with only a few firms 100 percent owned by the state (6 percent) and another small set 100 percent foreign-owned (Table 1). The typical firm exports both textiles and apparel as well as other products. Most firms own the import and export license themselves. Firms range in size from 3 employees to 10,000 with 118 at the median firm and 535 at the average.³

4.1. *Currency Exposure*

One of the main goals of the survey is to assess the exchange rate exposure of Chinese exporters and their awareness of exposure to currency movements. The survey took place one year after a major change in exchange rate policy by the Chinese government that dropped the fixed rate policy with respect to the U.S. dollar.

³Unfortunately, there is no public information on the characteristics of Chinese exporters in the textile and apparel industry to provide comparisons with the firms here.

This section documents the distribution of exports and imports both by currency and by market. Two forms of firm exchange rate exposure are analyzed. Direct exposure is the net position in a currency on a firm's books, i.e. the difference between revenues in the currency and costs in the currency. Indirect exposure measures the net position relative to a market, i.e. the difference between the firm's sales to a market and its purchases from a market.⁴ The measure of direct exposure corresponds to most firms' perceptions of their operating exchange rate exposure. The indirect measure is potentially a more accurate indicator of the operating exchange rate risk faced by the firm.

To illustrate the differences between direct and indirect exposure consider the case of a medium-sized (U.S.\$100m) textile and apparel exporter based in Shanghai interviewed in preparation for the survey. The firm exports almost all of its output and its revenues are 100 percent denominated in U.S. dollars while its markets are equally split between the U.S., Europe and Japan. The firm has negligible imported costs. When interviewed, the firm's general manager was acutely aware of the dollar exposure of the firm and the pressure the firm faced due to the rise of the renminbi against the dollar. As a consequence the firm was experimenting with various newly-available financial instruments to offset its dollar exposure. However, they are deemed to be expensive and difficult to manage.

More importantly, the manager did not identify any potential exposure to the euro or the yen. Given the firm's decision to price entirely in dollars, a rise in the dollar-euro rate or dollar-yen rate would effectively raise the firm's prices to two-thirds of its customers, and presumably reduce sales and revenue.⁵ Pricing decisions to European and Japanese customers are made by product-line specialists who receive no instruction on managing exchange rate changes. The general manager described a situation of asymmetry whereby European customers would likely ask for dollar price reductions as their home currency depreciated but where dollar prices would be held steady as the dollar fell.

4.2. Sales and Costs Across Currencies and Markets

Table 2 reports the distribution of revenues and costs by currency. The average firm exports 78 percent of output by value and 88 percent of those export revenues (68.6 percent of total revenues) are denominated in U.S. dollars. Almost every firm (98.6 percent) reports some revenues in dollars. Many fewer firms receive revenues in euros

⁴A more comprehensive measure of indirect exposure would include an assessment of the currency exposure of competing firms. Given the magnitude Chinese textile and apparels, it may be reasonable for these firms to assume their primary competitors are other Chinese firms.

⁵Of course, a simultaneous drop in the renminbi-dollar rate would leave the firm's position almost unchanged.

yen, or pounds, 30.6, 10.2 and 6.0 percent respectively. For the average firm, revenues in euros and yen are a much smaller share of export (and overall) revenue, 4.3 (3.4) and 2.4 (1.9) percent respectively. For firms that report positive revenues in euros, euros receipts represent 11 percent of total sales, for yen the comparable figure is 18 percent of sales.

While exports dominate sales for these firms, imported inputs are a relatively small share of costs, under 18 percent. The distribution of import costs across currencies shows a similar pattern, dollars represent the largest share (84 percent) followed by euro and yen.

The distribution of export sales and imported inputs across markets is given in Table 3.⁶ There is a more balanced distribution of exports across destination markets than across invoiced currencies. While most sales are denominated in dollars, average sales to the EU in the surveyed firms are actually greater than those to the U.S., 30.6 and 24.4 percent of export sales respectively. Sales to Japan account for 13.1 percent of exports. Similarly import costs are relatively evenly distributed, with 28.6 coming from the U.S. and 22.5 percent from the EU. The balance of sales (and costs) across markets suggest that the large positive dollar revenues shown by most firms are a result of dollar pricing rather than a disproportionately large role of the U.S. as a destination market.

There are several potential explanations for the outsized role of the dollar in revenues and costs including the size of the U.S. market and dollar-denominated invoicing by Chinese firms. In spite of trade restrictions in the form of tariffs and, especially, quotas, the U.S. has historically been a large market for Chinese textiles and apparel. However, in 2006, the share of aggregate Chinese textile and apparel exports destined for the U.S. (14%) was slightly less than the reported exports to the EU (15%) (UN Statistical Division 2007).⁷ Choosing to price in the destination currency would lead Chinese exporters to have sizable receipts in U.S. dollars but would not explain the low share of revenues in euros and pounds. A more likely explanation lies in the choice of exchange rate regimes by the Chinese government. For many years until July 2005, the renminbi had been effectively pegged to the U.S. dollar at an unchanged rate of 8.27 yuan per dollar. Under such an arrangement, pricing in U.S. dollars would be functionally the same as setting prices in the home currency. The large share of dollar revenue might be the result of historical pricing practices based on a stable dollar-renminbi link. The question remains as to whether the dollar will continue to be the invoicing currency of choice for Chinese

⁶The currencies in Table 2 and the markets in Table 3 do not exactly match, e.g. firms were asked about their sales to the EU rather than separately for euro and non-euro countries in Europe.

⁷This likely understates the share destined for both markets as it does not count re-exports of Chinese goods from Hong Kong. The recorded US imports of textile and apparel from China in 2006 was \$29.8bn.

exporters as the currency continues to change.

4.3. Direct and Indirect Exposure

The large share of exports in output and small share of imported costs mean that most firms are positively exposed to foreign currencies and in particular the dollar. As described above, this type of currency exposure will be referred to as direct exposure and for a given currency, direct exposure is calculated as the difference between revenues and costs denominated in the currency both given as a percent of total revenues. Table 4 shows the direct exposure for four currencies, the dollar, euro, yen and pound. In every case the average direct exposure is positive although clearly the U.S. dollar is the primary currency for both export revenues and import costs and thus dominates the direct exposure measures.

Over 95 percent of firms face exposure to the dollar with the vast majority facing positive direct exposure due to their export pricing in dollars. Average direct exposure to the dollar is 53.9 percent of total revenues while more than half the firms have direct positive exposure to the dollar greater than 62 percent of total revenues. 30 percent of firms have positive direct exposure to the euro but only 10 percent of firms have positive euro exposure greater than 10 percent of total revenues. For the average firm, all else equal, a 10 percent increase in the value of the renminbi against the dollar would result in a lost of net revenue equal to 5.4 percent of sales.⁸

Table 5 shows the indirect exposure across the three main export destinations, the U.S., EU and Japan, as well as the rest of the world. Indirect exposure is measured as the difference between sales in a destination market and costs sourced from that market both given as a percent of total revenues. Unlike direct exposure, most firms have indirect exposure to the three major markets and the rest of the world. As with direct exposure, indirect exposure is largely positive, reflecting the low level of imported inputs. More than two-thirds of firms have positive direct exposure to the U.S. and EU. The average indirect exposure to the U.S. is 15 percent of sales while indirect exposure to EU countries is more than 20 percent of sales on average. More firms have indirect exposure to the EU than to the U.S. and the level of that exposure is higher.

This disparity between the destination country and currency of the reported revenues raises the question of whether firms are aware of their exchange rate exposure. Chinese textile and apparel exporters may underestimate their exposure to currencies other than

⁸While firms did not report profit margins, interviews with several exporters suggested margins well below 10 percent and usually below 5 percent.

the dollar and overestimate their true dollar exposure to the dollar itself. This misperception is not unique to Chinese firms. Numerous firms that invoice in their domestic currency report no foreign exchange exposure.

5. Assessing Currency Exposure

The previous section documented the level of exchange rate exposure in Chinese textile and apparel exporters. This section examines information on the perception of exchange rate risk to assess the dimensions of the awareness of the firms' exposure.

More than 95 percent of the firms report that they face exchange rate exposure (Table 6). 93.0 percent report exposure to the dollar, while 27.4 percent report exposure to the euro and 9.6 percent to the yen. When asked if there would be a negative impact on the firm if the renminbi appreciated against a particular currency, 97 percent of firms responded affirmatively for the dollar, 31 percent for the euro and 12 percent for the yen.

Table 7 assesses how well the firms' assessments of their exchange rate exposure match the direct exposures calculated from the firms' reported sales and costs across currencies. A firm is deemed to have correctly assessed its direct currency exposure if it has positive direct exposure and responded that an renminbi appreciation would hurt the firm. If a firm has no exposure or negative direct exposure to a currency, a correct assessment corresponds answering no to the same question. The top panel of the table reports on firms that assess correctly while the bottom panel reports on incorrect assessments. In both case the answers are divided by the nature of the actual direct exposure faced by the firm, positive, zero or negative.

The answers of the large majority of firms correspond to their actual direct exchange rate exposure to individual currencies, More than 80 percent of firms answer correctly for every currency. However, the reasons vary substantially across currencies. For the dollar, most firms have positive direct exposure and report potential harm from a depreciation of the dollar. For the euro and other currencies, most firms that fail to see any risk from an appreciation of the renminbi report zero or negative direct exposure. Incorrect assessments of direct dollar exposure usually occur because firms have zero or negative direct dollar exposure but report harm from a dollar depreciation against the renminbi. Conversely for other currencies, firms are more likely to fail to identify positive direct exposure to the currency.

Table 8 reports whether firms' assesment of exchange rate exposure matches their observed indirect currency risk as measured by the distribution of sales and costs across markets. In general firms are far less likely to identify indirect exchange rate risk than

direct exchange rate risk. The indirect risk assessments for the U.S. dollar match for only 68 percent of firms. 25 percent of firms report that they face exchange rate risk from the dollar even though their net exposure to the U.S. market is zero. In contrast, for the yen, firms' assessment of exchange rate risk matches the observed indirect risk most often when the indirect risk is zero. However, more than one third of firms face positive indirect exposure to Japan, averaging 17 percent of sales, and fail to identify exposure to the yen. For the EU, the most important export destination for this sample of firms, fewer than 44 percent of firms have a match between their assessment of exposure to the euro (and pound) and their observed indirect exposure.⁹ More than half the firms have positive indirect exposure to the EU but fail to report a negative impact of an appreciation of the renminbi against the euro or the pound.

These results point to two conclusions: most Chinese exporters are well aware of currency risk that shows up on their books, i.e. receipts and costs in a foreign currency; however, the same firms have limited awareness of exposure to destinations markets other than the U.S.. The next section examines the exchange rate risk management practices at these exporters.

6. Risk Management

There are relatively few options for Chinese firms that would like to manage their currency exposure. The two major options are trade financing and a limited set of financial instruments. 59 percent of the firms report using trade financing to reduce exchange rate exposure, covering 29 percent of their foreign sales and purchases (Table 9). However, even for firms that use trade financing, the duration of the coverage is quite short, three months or less for more than three quarters of these firms.

48 percent of firms report using financial instruments to reduce exchange rate risk; two thirds of those using trade financing also use financial instruments. Typically these instruments are obtained from domestic financial institutions with the most common being a foreign exchange rate forward - used by 61 percent of the firms employing a financial exchange rate instrument. On average 27 percent of exports are covered by financial instruments.

More than three quarters of the firms have no long term exchange rate risk management activities. These firms are particularly vulnerable to the typical year-to-year fluctuations in exchange rates

⁹Answers for the euro and pound are combined in evaluating the indirect exposure to the EU.

Only 45.5 percent of firms have a senior manager or independent department that is responsible for foreign exchange rate risk management. Use of both trade financing and financial instruments is substantially higher at firms with such a senior manager or independent department, 69 versus 49 and 62 versus 36 percent respectively. Similarly, firms with foreign exchange risk assessment procedures for new export or import business are more likely to be using measures to reduce exchange rate exposure.

6.1. Responses to a rising renminbi

In the first year after the exchange rate regime change, firms report changing their behavior in a variety of ways. The most common responses included increasing export prices, 81 percent, and decreasing operating costs, 78 percent (Table 10). Selling more to the domestic market and new product introductions were reported by just over a quarter of the firms. A quarter of firms report no sales to the U.S. market, however, these firms showed the same responses to the rise of the renminbi as firms with sales to the U.S.. In particular, few firms decided to price in other currencies.

The expected responses to a future 10 percent appreciation of the renminbi also show a similar pattern. The dominant response is an expected increase in export prices, however, firms report a high willingness to try a wider variety of responses. Increased domestic sales, changes in product mix, and changes in invoicing currency are all more likely going forward.

7. Conclusions

This paper offers an alternate, firm-based perspective on the conduct of exchange rate policy by the Chinese government. Instead of focusing on the flows of capital and goods in the aggregate, this study details the exchange rate exposure, perceptions, and risk management policies of Chinese textile and apparel exporting firms. Such firms face significant exposure to changes in the value of the renminbi that they are either unable or unwilling to reduce through risk management practices. The typical exporting firm continues to disproportionately invoice in U.S. dollars. These large dollar revenues exaggerate the risk of a dollar depreciation for the firm. At the same time, the dollar revenues mask the underlying exposure of most firms to an appreciation of the renminbi against the euro, yen or pound.

The People's Bank of China is aware of the problems facing Chinese exporters as they conducted a similar survey of their own in the summer of 2006. The results presented here suggest an explanation for the slow appreciation of the currency and for the increasing

pressure by the Central Bank on financial institutions to offer more sophisticated and less expensive financial instruments for exchange rate risk reduction. Given the state of development of the financial sector it is unlikely that the "go-slow" policy of the Bank will change in the near future. A major worry is that Chinese firms will not correctly assess their currency exposure due to the continued weakness of the dollar since July 2005. A reversal of this trend would appear to pose substantial risks to Chinese exporters and the Chinese economy more generally.

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Ownership Structure			
	% Firms	Average	
100% State-Owned	7%	--	
100% Private	60%	--	
100% Foreign Investment	6%	--	
<i>Joint Venture</i>			
% State Investment	10%	58%	
% Private Investment	23%	70%	
% Foreign Investment	11%	50%	

Note: Based on a set of 230 firms.

Employees	
Percentile	
Mean	535
90th	1500
50th	118
10th	10

Note: Based on a set of 229 firms.

Major Products			
	% Firms (> 0)	% of Sales (> 0)	% of Sales (all)
Textile	73%	59%	43%
Apparel	60%	53%	32%
Other	54%	46%	25%

Note: Based on a set of 227 firms.

Table 1: Firm Characteristics

	Currencies					
	RMB	USD	Euro	Yen	Pound	Other
<i>Revenues</i>						
% Firms (> 0)	64%	99%	31%	10%	6%	27%
Average Revenues (> 0)	34%	69%	12%	18%	8%	13%
Average Revenues (all)	22%	68%	4%	2%	0%	4%
<i>Costs</i>						
% Firms (> 0)	--	62%	13%	6%	3%	23%
Average Costs (> 0)	--	23%	6%	8%	7%	7%
Average Costs (all)	--	15%	1%	0%	0%	2%

Note: Based on a set of 218 firms.

1. Other includes HKD.

2. Costs are calculated as % of total sales which are costs payable in a foreign currency times % of costs in that currency.

Table 2: Distribution of Sales by Currency

	Markets				
	China	US	Europe	Japan	Other
<i>Exports</i>					
% Firms (> 0)	58%	74%	81%	47%	83%
Average Revenues (> 0)	33%	27%	31%	23%	31%
Average Revenues (all)	19%	20%	25%	11%	26%
<i>Imports</i>					
% Firms (> 0)	--	36%	38%	23%	51%
Average Costs (> 0)	--	13%	9%	8%	12%
Average Costs (all)	--	5%	4%	2%	6%

Note: Based on a set of 218 firms.

1. Imports are calculated as % of total sales which are costs payable in a foreign currency times % of imports from a market.

Table 3: Distribution of Sales by Market

Direct Exposure					
Percentile	USD	Euro	Yen	Pound	Other
Mean	0.539	0.028	0.014	0.003	0.020
90th	1.000	0.100	0.005	0.000	0.083
50th	0.620	0.000	0.000	0.000	0.000
10th	0.000	0.000	0.000	0.000	-0.001
% exposure > 0	88%	31%	10%	6%	24%
% exposure = 0	4%	66%	88%	94%	66%
% exposure < 0	8%	4%	2%	0%	10%

Note: Based on a set of 218 firms.

1. Other includes HKD.

2. Direct exposure is calculated by % of revenues less % of sales which are costs payable in foreign exchanges times % of cost in a currency.

Table 4: Exchange Rate Exposure - Sales Currency

Indirect Exposure				
Percentile	USD	Euro and Pound	Yen	Other
Mean	0.152	0.212	0.088	0.198
90th	0.498	0.600	0.360	0.600
50th	0.100	0.134	0.000	0.100
10th	0.000	0.000	0.000	-0.010
% exposure > 0	68%	77%	44%	72%
% exposure = 0	26%	20%	51%	17%
% exposure < 0	6%	3%	5%	11%

Note: Based on a set of 218 firms.

1. Indirect exposure is calculated by % of sales to a market less (% of total sales which are costs payable in foreign exchange times % of imports from a market).

Table 5: Exchange Rate Exposure - Sales Market

Perception of Exchange Exposure						
% firms	USD	Euro	Yen	Pound	HKD	Other
Risk	93%	27%	10%	3%	11%	2%
Negative Impact	97%	33%	12%	6%	12%	3%

Note: Based on a set of 230 firms.

1. Risk = 1 if the firm identified the currency as having exposure risk.
2. Negative Impact = 1 if the firms identified the currency as having a negative impact if the RMB appreciated against that currency.

Table 6: Reported Exchange Rate Exposure

Direct Exposure							
Correct	Total % Firms	Positive		Negative		Zero	
		% Firms	Exposure	% Firms	Exposure	% Firms	Exposure
USD	87%	86%	63%	1%	-4%	--	--
Euro	81%	22%	11%	2%	-6%	57%	0%
Yen	89%	6%	23%	2%	-5%	81%	0%
Pound	94%	3%	7%	0%	-5%	90%	0%
HKD	83%	7%	20%	5%	-5%	72%	0%
Other	89%	1%	10%	6%	-6%	82%	0%
Incorrect	Total % Firms	Positive		Negative		Zero	
		% Firms	Exposure	% Firms	Exposure	% Firms	Exposure
USD	13%	1%	44%	7%	-14%	4%	0%
Euro	19%	9%	6%	1%	-6%	9%	0%
Yen	11%	5%	5%	--	--	6%	0%
Pound	6%	3%	3%	--	--	3%	0%
HKD	17%	12%	6%	2%	-4%	3%	0%
Other	11%	9%	6%	1%	-9%	1%	0%

Note: Based on a set of 218 firms.

1. Correctness is defined as when a firm correctly identified currency exchange risk as having a negative impact if the RMB appreciated against that currency. (question 2)

Table 7: Perception and Actual Direct Exposure

Indirect Exposure							
Correct		Positive		Negative		Zero	
	Total % Firms	% Firms	Exposure	% Firms	Exposure	% Firms	Exposure
US	68%	67%	24%	0%	-2%	1%	0%
Europe	44%	27%	33%	1%	-5%	16%	0%
Japan	64%	11%	32%	4%	-10%	50%	0%
Other	33%	9%	29%	9%	-11%	15%	0%
Incorrect		Positive		Negative		Zero	
	Total % Firms	% Firms	Exposure	% Firms	Exposure	% Firms	Exposure
US	32%	1%	6%	6%	-14%	25%	0%
Europe	56%	50%	25%	2%	-3%	4%	0%
Japan	36%	33%	17%	1%	-11%	1%	0%
Other	67%	63%	30%	3%	-20%	2%	0%

Note: Based on a set of 218 firms.

1. Correctness is defined as when a firm correctly identified currency exchange risk as having a negative impact if the RMB appreciated against that currency. (question 2)

Table 8: Perception and Actual Indirect Exposure

	Trade Financing	Financial Instruments
Used to reduce exchange rate exposure (% of firms)	59	48
Coverage for 3 months or less (% of firms)	45	29
Foreign sales covered (%)	29	27

Table 9: Reducing Exchange Rate Exposure

	Past Response to Renminbi Appreciation 7/2005 - 7/2006	Likely Response to Further 10% Renminbi Appreciation
Increase export prices	81%	75%
Decrease operating cost	78%	60%
Sell more in domestic market	28%	43%
Introduce new products	27%	39%
Invest in new machinery	11%	15%
Drop all/some previous products	8%	26%
Price in other currencies	7%	22%
Move capacity to lower cost countries/regions	6%	24%
Conduct merger & acquisition	5%	15%
Lay off employees	3%	17%
No changes	0%	5%

Note: Likely future response corresponds to firms that answered 6 or 7 on a 7 point scale with 1 being the least likely and 7 the most.

Table 10: Responses to An Appreciation of the Renminbi

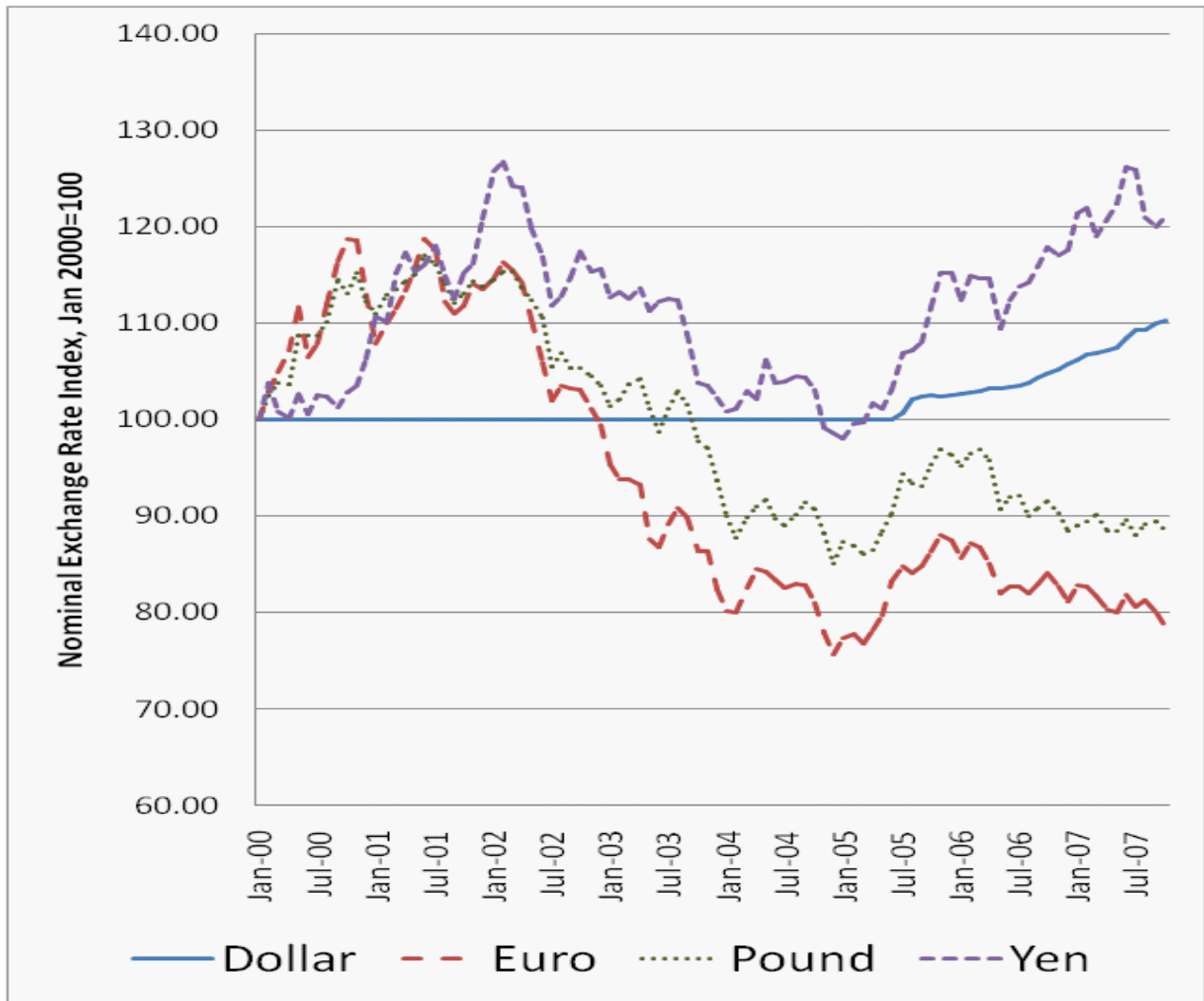


Figure 1: Nominal Value of the Renminbi, 2000-2007

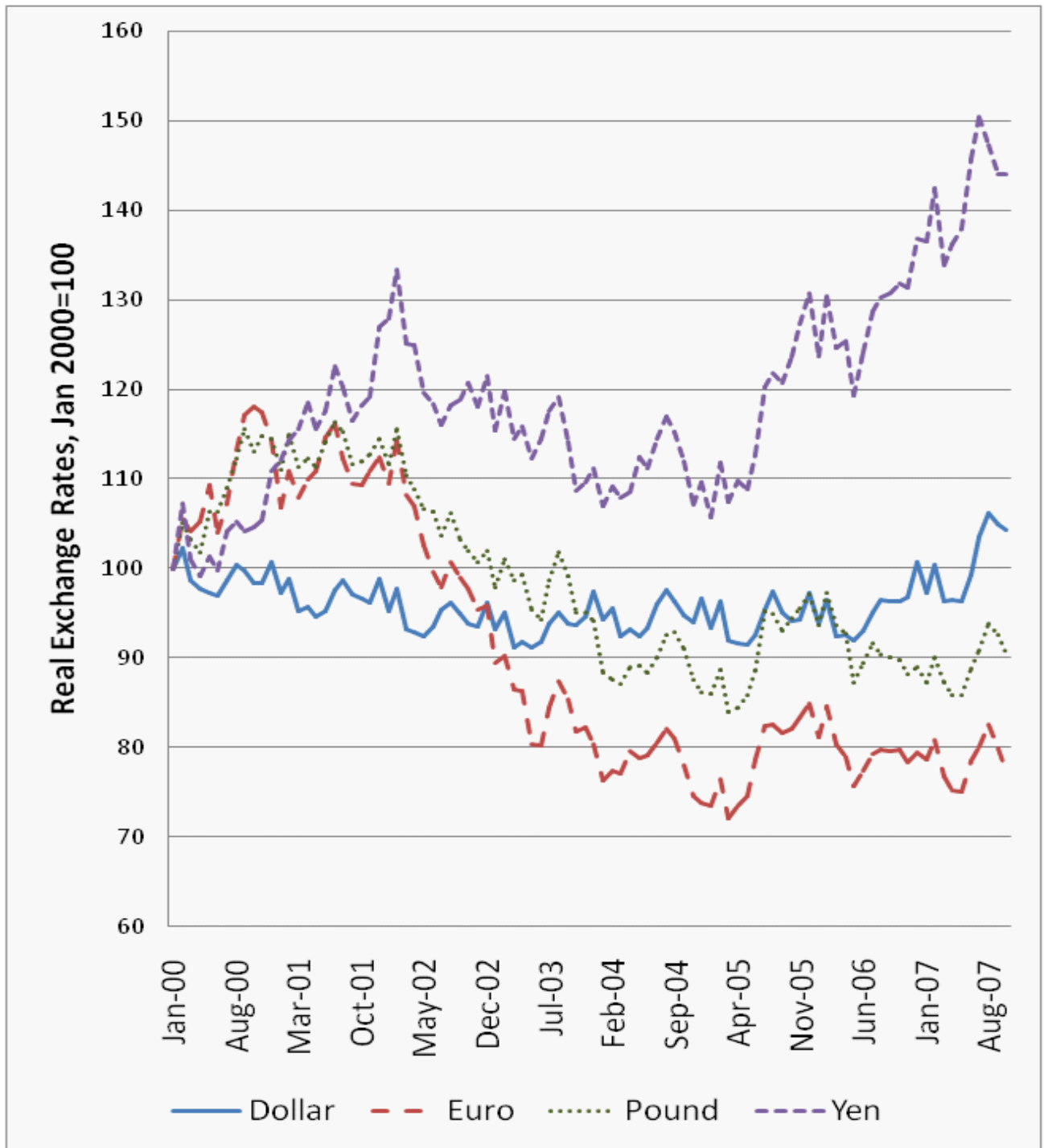


Figure 2: Real Value of the Renmini, 2000-2007