The Impact of RMB Appreciation on Export-Based Enterprises in China

By

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Abstract

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As globalization and integration of international financial market has proceeded the role of exchange rates has gained in importance to both the academic literature and policy makers-both firms and government.

This paper calculated the real effective exchange rate in the period 1985-2012 based on the proportion of Chinese trade partner's bilateral trade in China's total trade. 16 countries were selected on the basis of a large bilateral trade volume with China.

The empirical analysis revealed mixed results. A relatively weak relationship was found between the RMB real effective rate and China's total exports and no long-term relationship. However, for export oriented firms, RMB appreciation was found to have some adverse results.

Contents

Chapter 1: Introduction

1.1 Purpose of the study

As globalization and integration of international financial markets have proceeded exchange rates are one of the significant parts of the international price system which has won increasing attention. They connect each country together.

In the context of China, the RMB floating exchange rate mechanism, as a result of a variety of factors has led to the increasing appreciation of the RMB. This has had multiple effects on China's export enterprises, and their apparent lack of response strategies. Firms need to accelerate the innovation of the enterprise to remain globally competitive and with the impact of RMB appreciation. With China's accession to the World Trade Organization(WTO), China should more fully participate in the international economy, in political cooperation, deepen the division of labor, and open the capital market of the country. Together these measures promote the export trade and lead to a transformation of China's economy and further RMB appreciation (Ho et al, 2009). With the gradual appreciation pressure, China's export enterprises should take the necessary measures to deal with the situation. And this is the focus of this paper.

1.2 Background: The RMB exchange rate system evolution and the current situation.

For a long time, China managed the RMB foreign exchange rate by comparing price changes in domestic and foreign countries. It also took into account China's international balance of payments, national policy requirements and other factors. The evolution of the RMB exchange rate system in China can be roughly divided into six

periods (Yang, 1996).

The first period is the national economic recovery period from September 1949 to the end of 1952. During this time, the RMB exchange rate belonged to the free market and exchange rate fluctuations were frequent and often significant in size. Shortages of foreign exchange determined the exchange rate policy objective "to promote exports, ensure the importation, reward remittances". Up to December 1952, the RMB saw a rise of about 60.5% against the U.S. dollar

The second period is the centrally planned economy period from the beginning of 1953 to February 1973 when China entered the period of socialist construction. Foreign exchange shortages became one of the main obstacles of the economic development in China during that period. Foreign trade prices were prescribed by the state commodity price department. The foreign trade profit and loss were controlled by the national finance unified accounting department. The RMB exchange rate almost had no regulatory function on the import and export trade. In addition, from 1953 to 1973, during the Bretton Woods System, the western capitalist countries maintained a regime of fixed exchange rate and the RMB exchange rate remained stable, basically kept at RMB 2.46 to the dollar.

The third period is the exchange rate regime of the transition period from February 1973 to December 1984. With the oil price shock and crisis in 1973, world price levels rose and the main western countries generally implemented a floating exchange rate regime. In order to avoid and maintain the stability of the RMB exchange rate, China set the RMB exchange rate through the principle of "a basket of currencies".

During that period, the RMB exchange rate moved against the dollar from 2.46 yuan for 1 dollar in 1973 and gradually adjusted to $1.50 in 1980.

The fourth period is the managed float period from 1985 to the end of 1993. During this period, under the dual exchange rate system, the foreign trade enterprise suffered severe losses which increased the burden of subsidies. On January 1, 1985, China canceled the trade exchange internal settlement price to restore a single exchange rate system with 1 dollar = 2.80 RMB. From January 1, 1986, the RMB gave up the practice of reference to a basket of currencies. Instead, it transferred to the managed float system.

The fifth period is the managed floating exchange rate system from 1994 to 2005. On December 28, 1993, the state council issued a notice to accelerate the reform of the foreign exchange management system. The People's Bank of China announced further reform of the foreign exchange management system. From January 1, 1994 the RMB official exchange rate and the regulation of foreign exchange markets were combined together. Besides, the system of RMB exchange rate would based on market supply and demand which was be also implemented through a single, managed floating exchange rate system.

The sixth period is the reference to a basket of currencies exchange rate regime.

Beginning from July 2005, China began to implement a market supply and demand system with reference to a basket of currencies, and a managed floating exchange rate regime. What’s more, the RMB exchange rate was no longer pegged to the dollar only, but a more flexible RMB exchange rate mechanism. Changing from 1 US dollar for

RMB 8.2765 to 1 US dollar for RMB 9.11, a rise about 2%. In 2008, the RMB had risen about 19% since the new exchange rate reform in 2005. In June 2010, the central bank of China decided to further promote the reform of RMB exchange rate formation mechanism to enhance the RMB exchange rate flexibility. The appreciation of the RMB of course is a double-edged sword, which especially in the present situation where China's products are set at lower prices to gain a competitive advantage in world trade. However, it is this author's opinion that the disadvantages outweigh the advantages. Therefore, the RMB exchange rate should comply with market rules and under the national macroeconomic regulation which are beneficial to China's economic growth.

1.3 Outline of the paper

This current chapter provides a brief introduction of the research purpose, and it outlines the background of the RMB mechanism in different periods and how the RMB appreciation will pose a challenge to the export-based enterprise. Chapter 2 provides a literature review and in this part I will discuss the various points of view of the RMB appreciation. The methodology, data and the model which are discussed in Chapter 3. Chapter 4 provides an analysis of the results and the conclusions and recommendations are coverd in Chapter 5..

Chapter 2: Literature Review.

Research on the effects of exchange rate movements on foreign trade has always been perceived an important issue in the field of international finance and international trade. One of the perceived problems of the research was based on the premise of specific economic environments. Studies for the foreign currency exchange differences and their relation to foreign trade have produced different conclusions. The reasons for this were based on the differences of the research methods and data, such as the passage of time, changes in economic environment and other determinants of change which would limit the ability of the make the preliminary research in explaining the problem.

The impact of exchange rate changes on trade of research problems in this area can be traced back to the mercantilist school. The representative figure of mercantilism is Thomas Meng and he advocated to incent exports and place restrictions on imports, and increase the inflow of currency to incense a country's total wealth. Under the gold standard priced cash-flow mechanism, David Hume provided a critique arguing that when a country's balance of payments was in surplus, the country's international reserves increased. This caused a corresponding increase in the money supply which would lead an increase in price. Exports could decrease and imports increase, so as to reduce the surplus.

In the 1940s, Mashall and Lerner put forward the Marshall-Lerner condition which identified that if a country is in the trade deficit, it will cause a devaluation. Devaluation would improve a trade deficit, but it needs the specific conditions of demand elasticity -the sum of import and export must be greater than 1.

2.1 Research in overseas countries.

In terms of expressing the aspect of the Marshall-Lerner condition. Hallwood and MacDonald(1996) use a positive hyperbolic function. Its main feature is that all the points of the line are to reflect the income / expenditure areas which are equal. Therefore, the initial export and import supply and demand curves intersect which are hyperbolic to ensure that the trade account is in balance.

In the J-curve effect studies, Meade's (1988) study suggested that the country with a more flexible exchange rate regime and a high degree of economic openness, the J-curve effect of the exchange rate changes would appear more obvious. The reason is that the country's trade balance changes will be conducted through the foreign exchange market which is fully reflected in the exchange rate formation mechanism. Also, the price changes in financial assets which reflect on the exchange rate or interest rate can also quickly affect the import and export trade. Through physical assets price adjustments ultimately the balance of payments will be affected.

Due to the relatively developed capital markets abroad, the rate of return of enterprises can fairly reflect the actual operating conditions of the enterprise. Therefore, most western scholars choose the enterprise returns, especially the effect of common stock return studies on the import and export trade. Additionally, the quantitative research about the impact of exchange rate movements has accumulated a large number of research papers. It also established a quantitative prediction of the exchange rate risk of many early regression models. For example, Dukas, et al (1996) established a linear regression model which was based on the stock market price

research center weighted index returns, the International Monetary Fund report and the corporate bond rate; Di Iorio and Fatemi (2000) established a linear regression model based on the market index reporting rate, exchange rate risk/reward in Australian dollar terms and enterprise asset or portfolio reporting rate; Allayannis and Ofek (2001) set up a market portfolio reporting rate, mobile trade-weighted index reporting rate and corporate reporting rate in there linear regression model.

2.2 Research in China.

In recent years, the Marshall-Lerner condition has also made some progress in domestic research for China. With low import and export price elasticity of demand, a currency devaluation cannot only improve the trade balance, but also lead to the deterioration of the import and export situation. Thus**,** the devaluation policy has a negative effect. For instance, Li (1991) analyzed data from 1970 to 1983 which showed that China's import and export price elasticity of demand was only about 0.6871 and 0.0506 respectively, which obviously does not meet the Marshall-Lerner condition. Xie and Chen (2002) collected data from 1978 to 2000 (the United States, Japan, the European Union) and used the bilateral analysis to identify the depreciation of the RMB exchange rate which had no significant effect on the improvement of China's trade balance. The price elasticity of imports and exports is only about 0.089 which again does not meet the Marshall-Lerner condition.

The second view was that exchange rate depreciation can improve the trade balance. Dai (1997) took China as the research object and chose two time periods. The first study time period was from 1981 to 1995 and the export price elasticity was (-1.0331).

According to the IMF (1994), and derived from statistical analysis, import demand elasticity was negative 0.3 and the sum of import and export elasticity of demand was about negative 1.3331, which indicated that the price elasticity of demand for imports and exports meet the Marshall-Lerner condition.

The second study period was from 1985 to 1995 and the export price elasticity was negative 1.1234. For the IMF (1994) import demand elasticity was negative 0.3 and the sum of the elasticity of import and export was negative 1.4331 which shows the exchange rate depreciation was conducive to improving the trade balance. Xie et al (1999) concluded that through the measure of the real exchange rate and the export elasticity of demand was about 9.2523, which is much larger than the Marshall-Lerner condition critical value of 1. It showed that China's imports and exports fully meet the Marshall-Lerner condition and exchange rate changes impact on the import and export trade. Zhu and Ningni (2002) analyzed China trade from 1981 to 2000 for the multilateral and bilateral price elasticity. The study objects were United States, Japan and Hong Kong. The sum of the export and import price elasticity was a negative 2.71 which showed depreciation of the currency can improve the trade balance.

The reason why the above conclusions are different is because they are based on different study periods and research methods. Comparing these conclusions, it can be seen that as time goes by, the price elasticity of China's foreign trade increased gradually, which is consistent with China's economic development and the strong importance of foreign trade in the basic macroeconomic environment.

In terms of J-curve effect, there has been relatively less domestic research. Tang (1995)

demonstrated that exchange rate changes have a long-term correlation with trade balance, namely the cumulative effect of currency devaluation. On the basis of the J curve effect, a W shaped curve effects was put forward. The W shaped curve effects showed that if a country carried out a long-term continuous currency devaluation that improves the trade balance, it could worsen the trade balance. If a country had to implement continuous currency depreciation, then the time interval between the two depreciations should be longer than at least the previous delay effect devaluation. Zhong et al (2001) used the first quarter of 1993 to the fourth quarter of 1998 data as a sample to estimate the J curve effect of RMB exchange rate changes. The results showed that the depreciation in the first quarter may affect exports which is unusual. However, in the second quarter it began to boost exports, and in the third quarter it was fully reflected with a lag of about one to two quarters.

The Xu et al (1999) study showed that the influence of the RMB exchange rate changes on the import and export effect diminished as the year progressed. The effect was the most obvious in the year when the exchange rate changes, and then decreased. This result suggested that the exchange rate change of the J curve effect did not exist in China, which is a deviation from the practice and theory. Actually, the results showed the hysteresis effect of RMB exchange rate changes within 12 months. Specifically, the lag effect was between 6 to 12 months and this conclusion was in accordance with the estimate of time lag effect to changes in the RMB exchange rate of many researchers in China. Xu et al (2002) use OLS, with an average annual rate of 1997 and 1979 which respectively over the same period. It lagged one year and two

years of foreign trade exports to fit the three uniary linear regression models, and respectively for three goodness-of-fit of the model and the F test values. The one-year exports lag had the strongest correlation to the RMB exchange rate**,** which indicated that the devaluation impact on China's exports to the time lag of about a year was reasonable.

In the process of China's reform and opening up, the RMB exchange rate movements and its connection with the trade development was increasingly close, which led to an increase in empirical research. Pei (1994) investigated the "unification of exchange rates to improve the usefulness of China’s import and export situation”. Dai (1997) argued that exchange rate pass through was complete for 1981-1995. Jin (1995) discussed China's real exchange rate management reform and Yang (1996) attacked the trade development devaluation argument. Finally, Zhao (1999) argued that the structural adjustment is more important than devaluation.

Chapter 3: Methodology and Data

Theory: This paper use the traditional theory of the exchange rate and the trade relation combined with the China's current situation and discusses the relationship between the RMB real exchange rate and the foreign trade of China.

Model: The main analytical methods are ADF unit root test and the Export-Econometric Regression Model of the C.D production function. They are used to analyze the effect of RMB real effective exchange rate on the bilateral trade of China and US, and the foreign trade of China.

3.1 ADF unit root test: To test the stationary of time series, we need to first process the variable data through the ADF unit root test. We test the variables of the real effective exchange rate (REER), GDP (within 10 different countries), and the total exports to check whether the first-order difference of these variables are stable.

3.2 Export-Econometric Regression Model: If the first-order differences of these variables are stationary, then we can use the OLS method and the regression analysis of these three variables to assess the relationship between the RMB real effective exchange rate and exports.

This paper chooses the United States as the research object to validate the bilateral real exchange rate and China's bilateral trade relations, because China-US trade has occupied a large proportion in China's foreign trade. Also, the RMB nominal exchange rate has been pegged to the dollar exchange rate during the period 1994-2005, and the United States has earlier claimed that the RMB is undervalued.

The model in this paper is based on the relationship between RMB real effective exchange rate and total exports. According to the imperfect substitutes model of Goldstcin and Khan, 1985) and the concrete form of the function, many scholars used the functions in the form of a C.D production function.(Dai,1997).

This paper is based on the function of the C.D form of our country export demand function. Equation 3.1 is given below:

$$X_t=A(e_t)^{\alpha}(GDP_t)^{\chi} \quad 3.1$$

Among them, A is constant, t is the time, which could take years for time interval. X_t is the total export in t time; e_t is the real effective rate; α is the Export exchange rate flexibility; χ is the export income elasticity; GDP_t is the income level of China and other trade countries.

Taking the logarithm of the equation above, we have Equation 3.2 below.

$$In(X_t)=In(A)+\alpha In(e_t)+\chi In(GDP_t) \quad 3.2$$

3.3 Cointegration Theory:

To illustrate the long-term dynamic relationship between the bilateral real exchange rate and the bilateral trade, this paper will use the Cointegration test (Engle&Granger,1978) to test the cointegration relationship between the actual exchange rate movements and export trend.

The Cointegration Theory posits that if the k-dimensional vector: $Y=(y_{1t,}\ y_{2t,}\ldots\ldots\ldots\ y_{kt})$, which its component vector is called d,b order cointegration, which is written as Y~CI(d,b). If it satisfies:

(1).Y_t~I(d) requires every vector of y_{it}~I(d);

(2).There exist non zero vector β, which let $\beta y_t \sim I(d-b)$, $0<b<d$

Then we can say Y_t is cointegration, and the vector is called the cointegration vector.

Engle and Granger put forward the method to test for cointegration, It uses the unit root test to test the residual error of the regression equation. The purpose is to examine whether there exists a co-integration relationship between dependent and independent variables.

The dependent variables which cannot be explained by the independent variables constitute a part of residuals and the residuals should be stable. Therefore, to test whether there exist a co-integration relationship between the variables, this is equivalent to test the residual error of the regression equation. Then we use the ADF unit root test to test whether the residual errors are stable or not. If the residual errors are stable, then we can say there exists a cointegration relationship between the variables in the regression equation. The converse would apply.

Data:

The data used in this paper are the annual data and the bilateral real exchange rate's impact on bilateral trade are selected in the period 1985 to 2012. The time period was paper chosen because the official exchange rate is the coexistence of foreign exchange settlement price and the official exchange rate before 1985. On January 1, 1985, China canceled its foreign trade exchange internal settlement price, and a restored single exchange rate system with 1 dollar = 2.8 RMB. Prior to 1985, RMB against the U.S. dollar exchange rate could not adjust the trade balance. Therefore, in later chapters, we use the data between 1985 to 2012 to calculate the effect of the real

effective exchange rate on China's foreign trade.

Chapter 4: Analysis of Results.

4.1 The analysis of how RMB real effect exchange rate impact on the exports

In China, the valuation was based on the period of 1985 to 2012. After the logarithmic of the real effective exchange rate, import and export data, the real effective exchange rates were calculated in accordance with the above years, 1985-2007 with 2000 as the base year for the real effective exchange rate basis.

The foreign income related to export model is calculated based on the real effective exchange rate of China's 16 major trading partners' weighted average national income, where the weighting is trade-weighted. China's total exports from year 1985 to 2012 are also included in Table 4.1.

Table 4.1 Key economic indicators, 1985-2012.

Year	lnREER	lnGDP16	lnGDPc	lnEx
1985	4.1031	6.8400	5.7212	3.3087
1986	4.5346	6.9217	5.6886	3.4321
1987	4.7077	6.9743	5.7727	3.6748
1988	4.5215	7.0842	5.9941	3.8612
1989	4.4666	7.1878	6.1073	3.9616
1990	4.7006	7.0805	5.9604	4.1286
1991	4.7935	7.1747	6.0066	4.2744
1992	4.6666	7.2667	6.1801	4.4419
1993	4.6023	7.6045	6.4187	4.5190
1994	4.7333	7.7103	6.3266	4.7959

1995	4.5891	7.7833	6.5902	5.0025
1996	4.4608	7.7646	6.7523	5.0176
1997	4.4497	7.7281	6.8592	5.2083
1998	4.5303	7.7828	6.9270	5.2134
1999	4.6339	7.8686	6.9878	5.2726
2000	4.6052	7.8533	7.0888	5.5183
2001	4.5803	7.8322	7.1890	5.5839
2002	4.6176	7.7771	7.2820	5.7857
2003	4.6330	7.8500	7.4030	6.0827
2004	4.6584	7.8992	7.5661	6.3857
2005	4.7079	7.9243	7.7159	6.6359
2006	4.7561	7.9555	7.8803	6.8762
2007	4.7415	7.9350	8.0867	7.1050
2008	4.6878	8.0001	8.2084	4.7110
2009	4.6300	7.9852	8.2363	4.8731
2010	4.6052	8.0001	8.2848	5.0379
2011	4.6123	8.0202	8.3442	5.1632
2012	4.5698	8.0243	8.3770	5.2940

Note: GDP, total export unit for billions of dollars, REER is the RMB real effect rate with 2000 as the base year. The Ex represent China’s total exports. GDP16 means the weighted average GDP of 16 countries. GDP is the China’s gross domestic product.

Figure 4.1. InGDP16 trends from 1985 to 2010

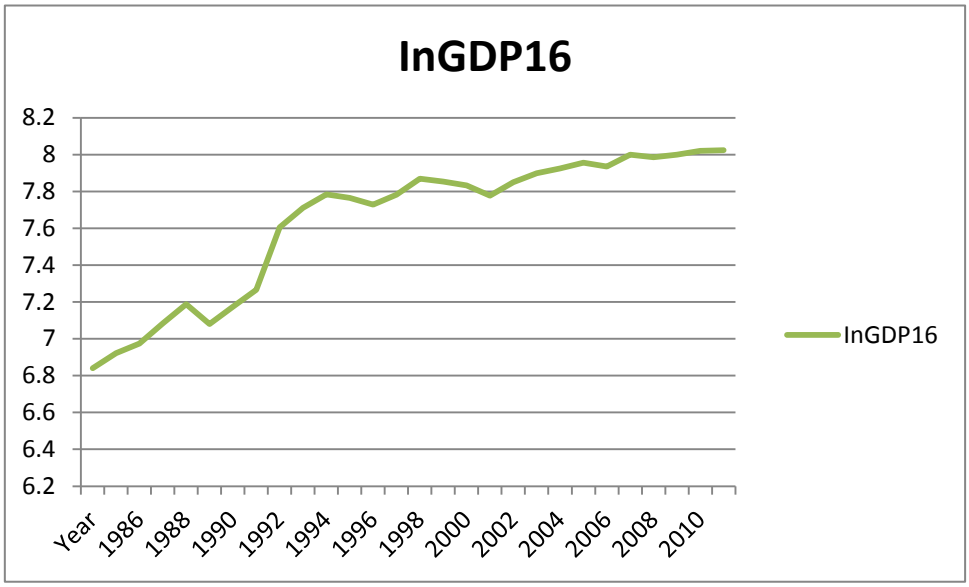


Figure 4.2. InGDPc trends from 1985 to 2010

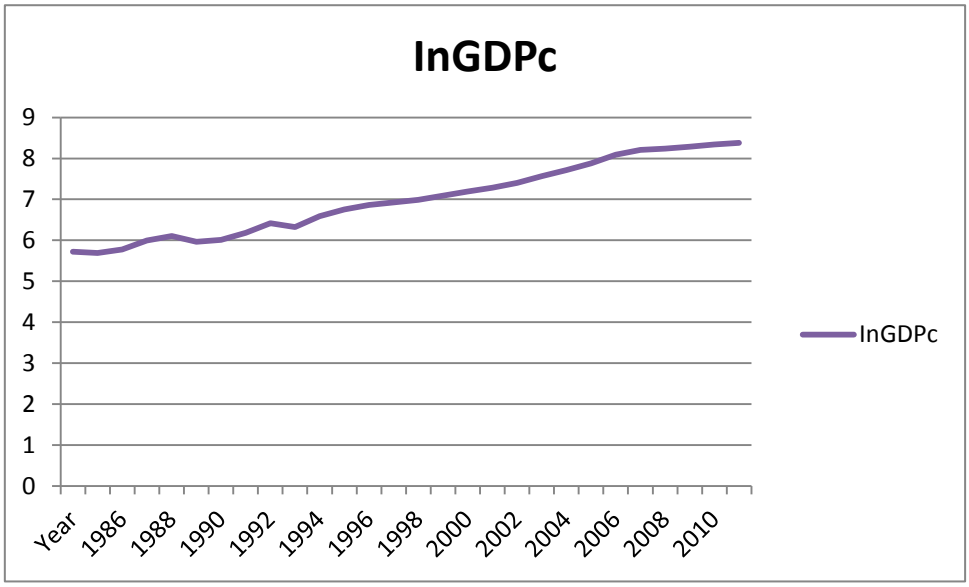


Figure 4.3. lnEx trends from 1985 to 2010

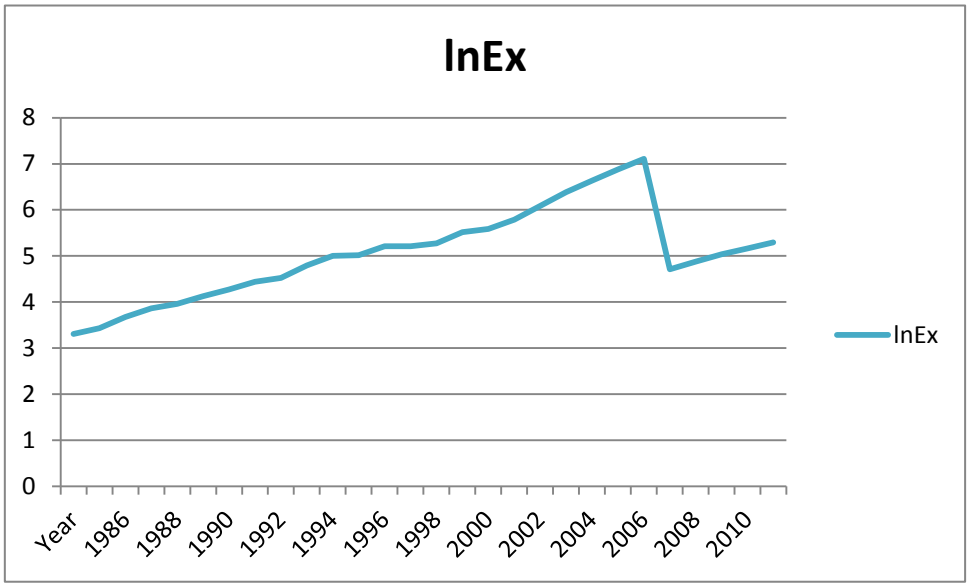
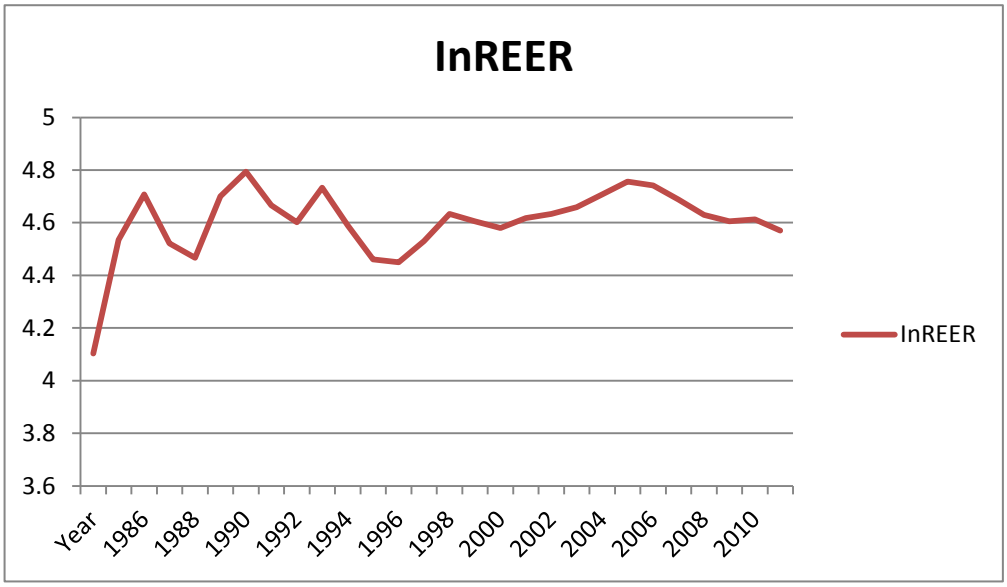


Figure 4.4. lnREER trends from to 1985 to 2010



4.2 The ADF Test of three variables of Ex, GDO16 and GDPc.

Table 4.2

(a)

```
. dfgls  lnex

DF-GLS for lnex                                              Number of obs =    19
Maxlag = 8 chosen by Schwert criterion

                     DF-GLS tau      1% Critical       5% Critical      10% Critical
  [lags]          Test Statistic        Value             Value            Value
------------------------------------------------------------------------------------
     8                -0.460           -3.770            -3.000           -2.482
     7                -0.456           -3.770            -2.898           -2.449
     6                -0.192           -3.770            -2.888           -2.485
     5                -0.444           -3.770            -2.950           -2.574
     4                -1.583           -3.770            -3.060           -2.698
     3                -1.567           -3.770            -3.198           -2.838
     2                -1.506           -3.770            -3.343           -2.977
     1                -1.510           -3.770            -3.472           -3.098
```

(b)

```
. dfgls reer

DF-GLS for reer                                              Number of obs =    19
Maxlag = 8 chosen by Schwert criterion

                     DF-GLS tau      1% Critical       5% Critical      10% Critical
  [lags]          Test Statistic        Value             Value            Value
------------------------------------------------------------------------------------
     8                -2.256           -3.770            -3.000           -2.482
     7                -1.789           -3.770            -2.898           -2.449
     6                -1.775           -3.770            -2.888           -2.485
     5                -1.924           -3.770            -2.950           -2.574
     4                -2.367           -3.770            -3.060           -2.698
     3                -2.020           -3.770            -3.198           -2.838
     2                -1.715           -3.770            -3.343           -2.977
     1                -2.053           -3.770            -3.472           -3.098

Opt Lag (Ng-Perron seq t) = 0 [use maxlag(0)]
Min SC   = -5.252412 at lag  1 with RMSE  .0619656
Min MAIC = -4.884834 at lag  2 with RMSE  .0594975
```

(c)

```
DF-GLS for hgdpc                                             Number of obs =    19
Maxlag = 8 chosen by Schwert criterion

                     DF-GLS tau      1% Critical       5% Critical      10% Critical
  [lags]          Test Statistic        Value             Value            Value
------------------------------------------------------------------------------------
     8                -0.636           -3.770            -3.000           -2.482
     7                -0.649           -3.770            -2.898           -2.449
     6                -1.042           -3.770            -2.888           -2.485
     5                -2.056           -3.770            -2.950           -2.574
     4                -2.810           -3.770            -3.060           -2.698
     3                -1.733           -3.770            -3.198           -2.838
     2                -1.439           -3.770            -3.343           -2.977
     1                -1.453           -3.770            -3.472           -3.098

Opt Lag (Ng-Perron seq t) =  4 with RMSE  .0554971
Min SC   = -5.032275 at lag  1 with RMSE  .0691756
Min MAIC = -5.056458 at lag  7 with RMSE  .0472324
```

As can be seen from the test results in Table 4.2, all the variables in the model of ADF test results are greater than the critical value at a significance level of 10%

Under the 90% confidence level we can accept the existence of unit root null hypothesis, that is to say, all variables are unit root, and all sequences are smooth.

All the variables in the model of first order difference of ADF test results are less than 95% under the confidence level of the critical value. In addition to lnGDPl6, ADF test results of first order difference are less than the 5% significance level, the critical value. The rest of the variables of first order difference of ADF test results under the significance level are less than l % of the critical value, can under the confidence level of 99%. Therefore, these variables of first-order difference are smooth.

4.3 The regression model of three variables of REER, GDP16 and Ex.

Table 4.3

Source	SS	df	MS		Number of obs =	28
					F(2, 25) =	24.74
Model	17.6682097	2	8.83410486		Prob > F =	0.0000
Residual	8.92825577	25	.357130231		R-squared =	0.6643
					Adj R-squared =	0.6375
Total	26.5964655	27	.985054278		Root MSE =	.5976

lnex	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
reer	1.431945	.9191174	1.56	0.132	-.4610129	3.324902
gdpl6	1.872755	.3146694	5.95	0.000	1.224681	2.520829
_cons	-15.85211	4.114949	-3.85	0.001	-24.327	-7.377209

Durbin-Watson d-statistic(3, 28) = .8433463

From the regression results, the equation is as follows:

LnEx=1.431945LnREER+1.872755GDP16-15.85211

(1.56) (5.95) (4.114949)

R^2=0.6643 D.W=0.8433463 F-statistic=24.74

An ADF unit root test was carried out on the residual error sequence. When containing the constant term and trend term and the lag order number is 1, ADF test results are shown in Table 4.2 (a)-(c) above.

As this paper mainly studies the RMB exchange rate and the influence of foreign trade in China, so after stripping out the foreign cases of GDP, we will do a linear regression to the two variables which are real effective exchange rate of RMB and exports.

4.4 The regression model of two variables of REER and Ex.

Table 4.4

```
. reg  export reer
```

Source	SS	df	MS	Number of obs =	28
				F(1, 26) =	6.05
Model	5.01853944	1	5.01853944	Prob > F =	0.0209
Residual	21.5779303	26	.829920394	R-squared =	0.1887
				Adj R-squared =	0.1575
Total	26.5964697	27	.985054433	Root MSE =	.911

export	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
reer	3.249663	1.321502	2.46	0.021	.5332764	5.966049
_cons	-9.918285	6.085998	-1.63	0.115	-22.42823	2.591663

Durbin-Watson d-statistic(2, 28) = .4462872

With the regression, results can be obtained between the two variables as follows:

lnEx=3.249663lnREER-9.918285

(2.46) (-1.63)

R^2=0.1887 D.W.=0.4462872

From R^2=0.1887 we can see that the fit from the regression equation is very low. An ADF unit root test was carried out on the residual error sequence, including the

constant term and trend term, and the lag order is 2.

Once more, the ADF test results are shown in Table 4.2 (a)-(c).

Empirical analysis conclusion:

From the above analysis, the RMB real effective exchange rate can promote the exports of China and the United States to some extent. But a stable equilibrium relationship of exports does not exist. Obviously, the exchange rate is not the main factor that affects China's foreign trade.

Chapter 5: Conclusions

5.1 The overall valuation of the impact of RMB exchanges rates on export enterprises.

In the third chapter, we used the real effective exchange rate of 1985-2012 and the total export to analyze China's foreign trade. We found that:

Conclusion 1: A relatively weak relationship existed between the bilateral real exchange rate and bilateral exports.

Conclusion 2: There was no long-term equilibrium relationship between the RMB real effective rate and China's total export.

Although the analysis showed that the RMB appreciation on China's export promotion is not obvious, but for export-oriented enterprises it has had some adverse effects. Especially after the 2005 reform of the exchange rate mechanism, the RMB saw presence of further appreciation. As this will continue, we need to take appropriate measures to mitigate the adversely affect on RMB appreciation on China's export-enterprises.

5.2 The effect of RMB appreciation on the export enterprises.

The impact of RMB appreciation on China's industries in terms of pros and cons of each are not identical. Some present opportunities and offers challenges. RMB appreciation will be dependent on foreign purchases of raw materials, equipment, or industries which have high liquidity RMB assets; while export-oriented sectors in international pricing and product industry greater impact. It has the large impact on the export- enterprise and the international pricing of products.

5.3 The effect of international competitiveness of export commodities.

Although "made in China" has become a major world market products, Chinese products have a fatal weakness as they have limited branding. The market share is mainly dependent on the price of cheap products. Most of the companies believe that the RMB exchange rate changes has an impact on the business activities. However, the RMB appreciation will push the export commodity prices upwards and accordingly; it will have a direct result of declining competitiveness. Some other companies believe that if the RMB appreciates, China's international status may improve, but global competitiveness of its manufacturing industry will gradually lose out.

5.4 The instability of exchange rate increased the trade disputes in export enterprises.

The gradual appreciation of RMB makes the export enterprises take appropriate adjustments in export prices to avoid suffering from losses. At present, many small and medium export enterprises take the safe way through the negotiations with foreign clients, and try to reduce losses by means of adjusting loan costs. However, the foreign trader order is usually a one year period, and the order is in fixed price, so the enterprise unilaterally proposed an increase in the price of export products which foreign customers won't accept. This will lead to some small and medium-sized export enterprises for their own benefit to take two measures: one is to replace the raw materials to reduce the product cost for make up for the appreciation of RMB. Although in the short-term, this may reduce the enterprise cost temporarily to make up for the loss of the appreciation of RMB. But is likely to lead to trade disputes.

Another reason is due to the price rise of raw material at the same time and causing the cost of production to rise sharply. Enterprise will be faced with the unprofitable businesses. Therefore, exporters may refuse to supply orders and this will causes international lawsuits and lead the enterprise’s reputation being reduced.

5.5 A decline in investment benefit.

A decline in export profits will seriously affect the enthusiasm of export enterprise; so they may reduce exports or put the products into the domestic market. The foreign sales channel of export enterprises and foreign markets has taken long-term efforts to build up, and in the process, it usually require a certain investment. For instance, to establish the linkages with foreign retailers by establishing the specialty stores or foreign sales companies and to do product promotion. If companies reduce the exports, this will let the benefits of these investments decline.

5.6 Decline in export enterprise profits.

After the appreciation of RMB, if China's export products marked in foreign currencies prices remain unchanged, then the export products marked in RMB goes down. In this way, China's exports will not be affected, but the profits of Chinese export companies will decline. If China's export products marked in domestic currencies prices which remain unchanged, then the export products marked in foreign currency will rise. The Chinese export products will be less competitive in foreign markets and market share of China's exports will fall. Also, the export enterprise's profit will be damaged. Due to fact that China's export enterprises have been long relied on the cheap labor, through the low price to occupy the international market, and the export profit was very low. Thus, the appreciation of the RMB will

lead to the low technology content, low added value, high cost and low efficiency of export enterprise losses and make the excellent enterprise gain more international market share and better environment for international trade. Because of the special situation of China, the vast majorities of export enterprises mostly adopt the long-term contract pricing model and then settled in dollars. However, the appreciation of RMB to dollar leads to the export enterprise's profit being swallowed. Although it can through the way of decreasing the loss of profits by rising prices, such as our country's textile and clothing, electrical appliances, machinery, and other products. But the Export commodities elasticity of demand is large, so it still eventually lead to a drop in export earnings.

With the changing exchange rate, export enterprises need to actively face the various challenges; master a variety of foreign exchange hedging instruments; enhance their own capacity to respond to the resilience of exchange rate changes. There is a need to accelerate the introduction of new products, improve competitiveness in the international market by strengthening the internal management of enterprises and carry out the technological transformation of enterprises. By exploiting the potential use of their own brands, export enterprises can enhance the international competitiveness of their products which in conjunction with some effective marketing strategies and financial measures can be a good way of to avoid the adverse effects of the RMB appreciation. RMB appreciation has been irreversible, but is has been a gradual appreciation, the resulting exchange rate risk is controllable.

Firms can use specific measures of exchange rate risk management and the

government can regulate to slow RMB appreciation. Therefore, China's foreign trade enterprises in the coming days need to be fully aware of the importance of the exchange rate risk and at the same time improve their operating procedures. They also need to pay close attention to the relevant national policy and the development of risk management products and services of commercial banks to reduce exchange rate risk.

References

Allayannis, G. & Ofek, E. (2001). Exchange Rate Exposure, Hedgine and the Use of Foreign Currency Derivatives [J]. Journal of International Money and Finance, Vol. 20, pp. 273-296.

Dukas, S. P., Fatemi, A. M. & Tavakkol, A. (1996). Foreign Exchange Exposure and the Pricing of Exchange Rate Risk [J]. *Global Finance Journal*, Vol. 7, No.2.

Dilorio, A. & Faff, R. (2000). An analysis of Asymmetry in Foreign Currency Exposure of the Australian Equities Market [J]. *Journal of Multinational Financial Management*, 10(2), 133-159.

Dai, Z. X. (1997). The Elastic Analysis of Chinese Trade Balance: 1981-1995 [J]. *Economic Study*, 7.

Goldstein & Khan, M. (1985): "Income and Price Elasticises in Foreign Trade", Handbook of International Trade, Vol.2, Amsterdam: North-holland.

Granger, C., Robins, P.P., Engle, R.F., (1986). Wholesale and retail prices: Bivariate time-series modeling with forecast able error variance. In: Belsley, D.A., Kuh, E.(Eds.), Model Reliability. MIT Press, Cambridge, pp. 1-77.

Hallwood, P. & MacDonald, R.. (1996). *International Currency and Finance* [M]. *Beijing: Beijing Normal University Publisher,* 39-43.

Ho, J. X. (2009). The Strategic Research of Currency Fluctuations in Export-oriented enterprise [J]. *China Economy,* 2.

International Financial Statistics, IMF.

Jin, Z. X. (1995). Lun Zhong Guo Shi Ji Hui Lv Guan Li Gai Ge [J]. *Economic Study*,

3.

Li, Y. N. (1991). The Keynesian and the Chinese Economy [M]. Hei Long Jiang: Hei Long Jiang People's Publisher,106-127.

Meade, E. (1988). "Exchange Rates, Adjustment, and the J-Curve," *Federal Reserve Bulletin,* vol. 74, no. 10, pp. 633-644.

Pei P. (1994). The Unification of Exchange Rate to Improve the Effectiveness of China's Import and Export Situation [J]. *Economic Study*: 11.

Tang, H. Y. (1995). The Theory of Modern International Trade Innovation [J]. *World Economy*, 5.

Xie, J. G. & Chen, L. G. (2002). The RMB Exchange Rate and Trade Balance [J]. *Beijing: Global Economy*, 27-34.

Xie, Z. Y., Tong, Y., & Yang M. (1999). The Analysis of the Relationship between the RMB Exchange Rate and Export Trade Growth since the Asian Financial Crisis [J]. *Beijing: International Financial Study*, 7: 64-68.

Xu, Z. Y., Liu, T. A., & Fan, Z. T., (1999). Analysis of the Chinese Exchange Rate Changes and the Relationship between Import and Export Trade Growth [J]. *Journal of North-Western University*,4.

Xu, K. N., & Shi, H. Y., (2002). Analysis of the RMB market value of China's Import and Export Trade [J]. *Journal of North-eastern University*, 3.

Yang, F., (1996). The Theoretical Misunderstandings of RMB Depreciation [J]. *Economic Study*, 9.

Zhu, Z. L., & Ning, N. (2002). Chinese Trade Balance Elasticity [J]. *Beijing: Global*

Economics, 9: 26-31.

Zhong, W., Hu, S. M., & Dai, H. J. (2001). Analysis of RMB J-curve Effect [J]. *World Economy*,1.

Zhao, W. (1999). The Foreign Trade Structure Adjustment Strategy [J]. *Economy News*, 2.