Changing Comparative Advantage, Real Exchange Rate Impact and Sino-Japanese Trade Fluctuations

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Conclusion

- According to the empirical results, we get that the real exchange rates have significant positive effects on the fluctuations in Sino-Japanese overall trade and the imports from Japan to China, while its effect on the export fluctuations is not significant.
- The ratio of relative value added between China and Japan has significant negative effects on the fluctuations in Sino-Japanese overall trade, the export from China to Japan and China's import from Japan.
- The financial crisis in 2008 had significant positive effects on the fluctuations in Sino-Japanese overall trade and China's export to Japan, while the effect of it on the imports from Japan to China is not significant.
- What's more, the financial crisis in 1997 had no significant effect on the fluctuations in Sino-Japanese trade, neither do the factors such as productivity, ratio of capital and labor and trade agreements.

Outline

- **Introduction**
- **Literature Review**
- **Analysis of the stylized facts**
- **Empirical Test**
- **Conclusions and Policy Recommendations**

Introduction

- While Sino-Japanese bilateral trade trade is rapidly flourishing, there still exist some potential obstacles and risks that cannot be ignored.
  - The fluctuations in the volume of Sino-Japanese trade will undoubtedly have some influences on the long-term economic cooperation between the two countries, which will thereby affect the political mutual trust and international cooperation between the two countries.
  - China's changing comparative advantage in manufacturing industry maybe has seriously influenced Sino-Japanese bilateral trade in recent years.
- Using the technology of time-series HP filter, we studied the effect of real exchange rate on Sino-Japanese trade fluctuations and the two countries' changing comparative advantages, as well as examined industrial characteristics of the Sino-Japanese trade fluctuations.

Literature Review

- Some aspects of empirical researches on trade fluctuations:
  - Some scholars divide the factors affecting international trade fluctuations into the effects of price and income, and they conduct empirical analysis to explain the effects of price and income, such as Hooper and Marquez (1995) .
  - Other scholars laid their emphasis on the macro-level factors that may cause trade fluctuations to study the impact of macroeconomic factors such as trade reforms, FDI and economic cycles on trade volumes, such as Cerra et al. (1999) .
  - There are some scholars preferring to conduct researches on the aspects of the comparative advantages and complementarities, such as Yu Jinping (2003) .

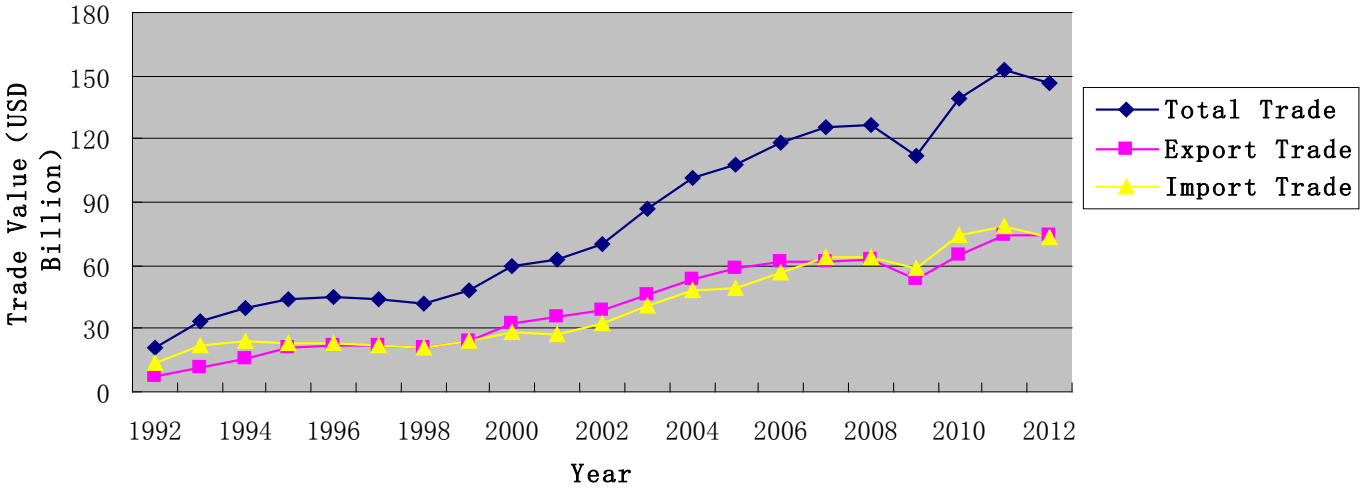
Literature Review

- For the volatility of economic variables, the method of filters is made use of to analyse economic variables fluctuation, such as the technologies of HP filter (Hodrick and Prescott, 1980, 1997) and BP filter (Baxter and King, 1999) .

- These researches have theoretically and practically significant implications on reducing the Sino-Japanese trade fluctuations.

Analysis of the stylized facts

- Trade development trend between China and Japan
- Overall analysis of Sino-Japanese trade



Trade development trend between China and Japan in 1992-2012

Analysis of the stylized facts

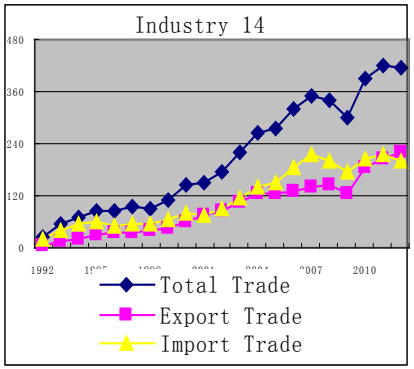
- Overall analysis of Sino-Japanese trade

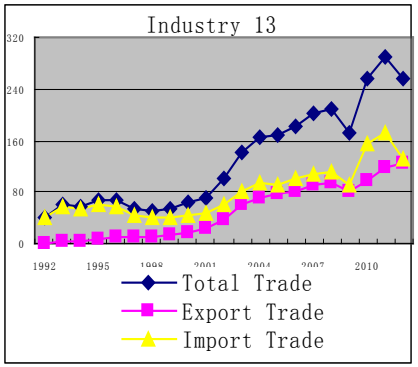
  - From the above figure, we know that from whichever import, export or overall trade , trade value between China and Japan has been growing steadily for nearly 20 years.
  - What's more, the value of China's imports and that of exports to Japan were roughly the same.
  - However, the trade value declined in 1998 and 2009, which did not follow the common trend. The main cause can be attributed to the facts that the Asian financial crisis in 1997 and the global financial crisis in 2008 have led to recession in external demand, which gave rise to the decline of trade value in the following year.
  - What else can be concluded from Figure 1 is that China's foreign trade has begun to get rid of the negative impact of the crisis in 2008.

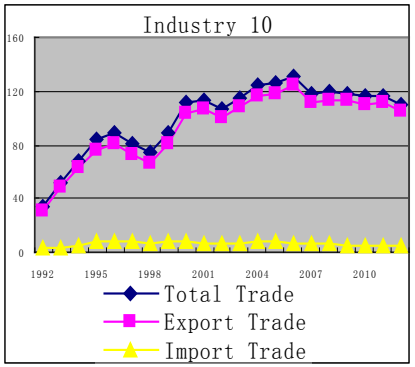
Analysis of the stylized facts

- Industry analysis of Sino-Japanese trade

- Key industries of Sino-Japanese trade
  - The top three of the largest proportion in total trade are as follows, Electrical Equipment Industry (Industry 14, 25.37%), Mechanical Products Industry (Industry 13, 15.77%), Textiles Industry (Industry 10, 12.12%) .

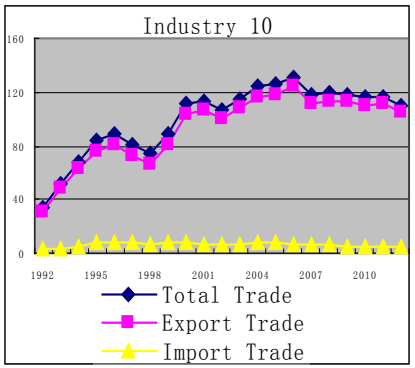


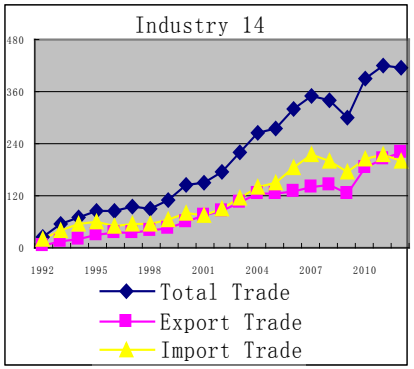


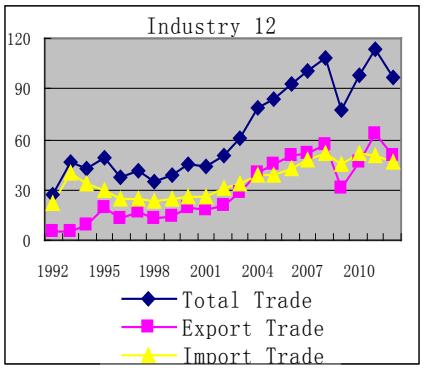


Analysis of the stylized facts

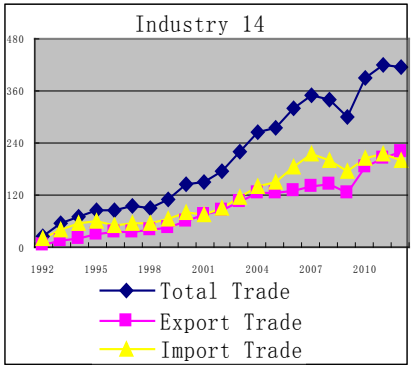
- The top three of the largest proportion in exports are Textiles Industry (Industry 10, 22.73%), Electrical Equipment Industry (Industry 14, 22.50%) and Metal Products Industry (Industry 12, 7.14%) .

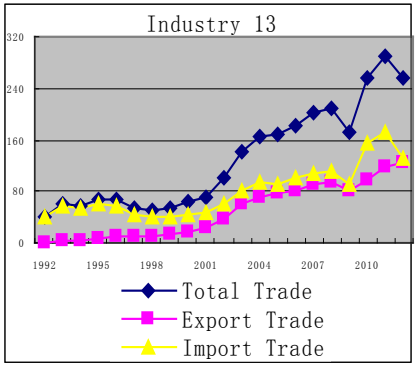


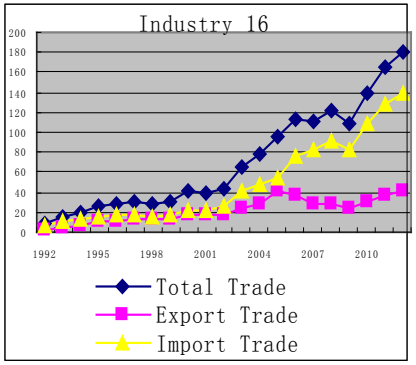




- The top three of the largest proportion in import trade are Electrical Equipment Industry (Industry 14, 28.22%), Mechanical Products Industry (Industry 13, 19.53%) and Medical and optical Equipment Industry (Industry 16, 11.99%).

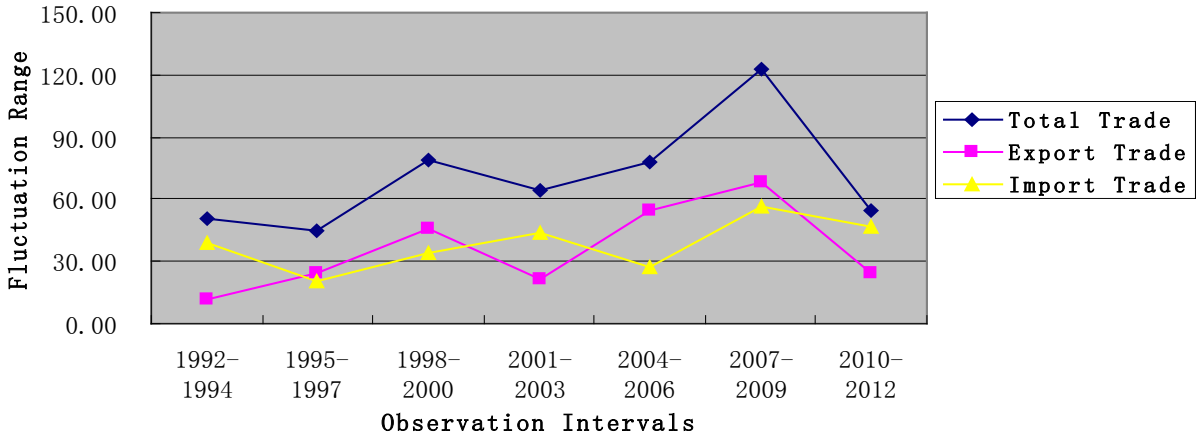






Analysis of the stylized facts

- Analysis on Sino-Japanese trade fluctuation
- Overall analysis on Sino-Japanese trade fluctuation trend



Sino-Japanese trade fluctuation trend in 1992-2012

Analysis of the stylized facts

- Overall analysis on Sino-Japanese trade fluctuation trend

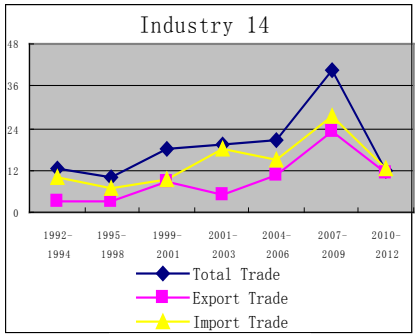
  - From last figure, we find the total trade fluctuation between China and Japan showed a trend of increase, with the degrees of export and import trade fluctuation trends basically consistent with the corresponding overall levels.

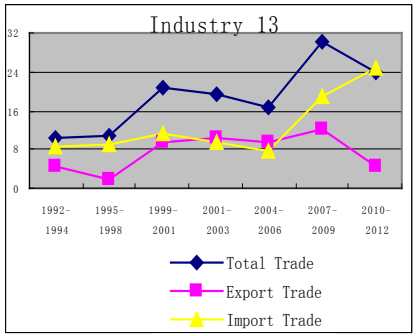
  - The last figure reflects the impacts of Asian financial crisis in 1998 and global financial crisis caused by US subprime mortgage crisis in 2008 on Sino-Japanese trade. The corresponding window periods after the two crises, are respectively 1998-2010 and 2007-2010, whose fluctuation amplitudes are bigger compared to the adjacent ones.

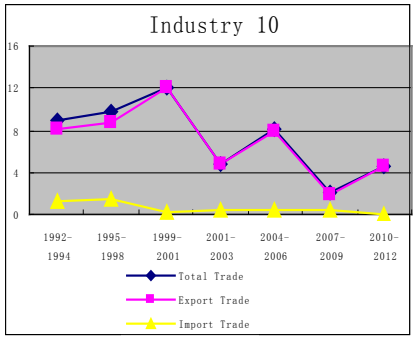
Analysis of the stylized facts

- Industry analysis of Sino-Japanese trade fluctuations

- Key industries of Sino-Japanese trade fluctuations
  - The top three largest proportion of industries in total trade: Electrical Equipment Industry (Industry 14, 25.37%), Mechanical Products Industry (Industry 13, 15.77%), Textiles Industry (Industry 10, 12.12%) .







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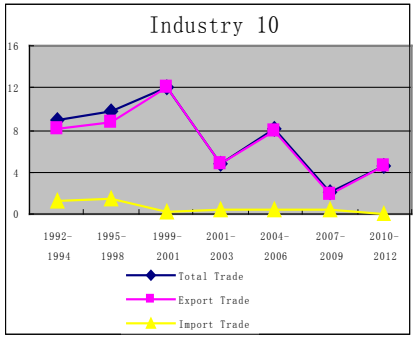

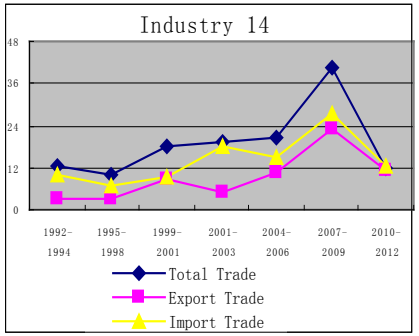

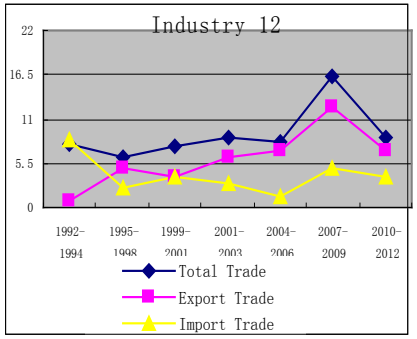

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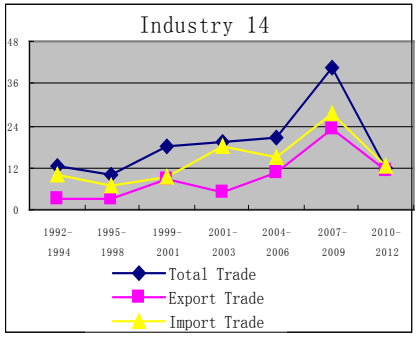

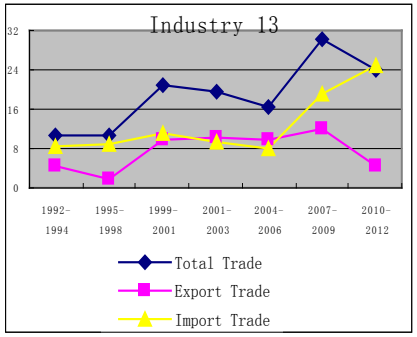

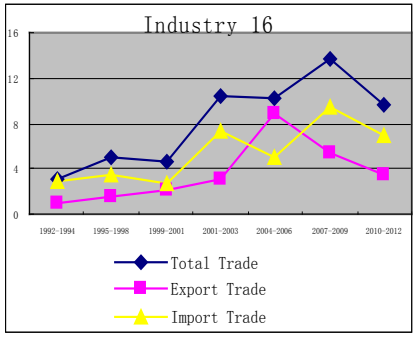

Empirical Test

- Econometric specification

$$Fluct_{i,t} = \beta_0 + \beta_1 REER_{i,t} + \beta_2 productivity_{i,t} + \beta_3 pcapital_{i,t} + \beta_4 treaty_t + \beta_5 valueadded_{i,t} + \upsilon$$

Variables	Description	Data Source
Fluct	Trade fluctuation	the COMTRADE database
REER	The industrial real effective exchange rates	"China Statistics Yearbook", "China's General Administration of Customs" and Japan Bank
productivity	The productivity	"China Industrial Economy Statistical Yearbook"
pcapital	The ratio of capital and labor	"China Statistics Yearbook"
treaty	The trade agreements and documents affecting Sino-Japanese trade fluctuations	Collected by the authors
valueadded	The ratio of value added in trade	OECD-WTO International value added database

Empirical Test

- Testing results and Analysis

  Based on the Econometric model above, we use the trade data of Sino-Japanese trade in 17 industries from 1992 to 2012 for empirical tests.

  - The overall regressions
  - The export trade regressions
  - The import trade regressions

Table 1: Regression Results of the Overall Trade Fluctuation

Variables	TRADE		
	GLS-RE	OLS	GLS
REER	0.1296*	0.1296**	0.4837***
	(0.0781)	(0.0781)	(0.0535)
Pcapital	0.0236	0.0236	-0.083
	(0.0276)	(0.0276)	(0.0388)
Productivity	-0.0212	-0.0212	0.2129
	(0.0921)	(0.0921)	(0.1085)
Treaty	-0.005	-0.005	0.0303
	(0.0323)	(0.0323)	(0.0571)
Valueadded	-3.2792*	-3.2792**	-1.9702*
	(1.0507)	(1.0507)	(1.1368)
1997 financial crisis	0.1081	0.1081	0.4057
	(0.3733)	(0.3733)	(0.5531)
2008 financial crisis	0.5237*	0.5237***	0.9989***
	(0.1968)	(0.1968)	(0.3461)
Industry	yes	yes	no
Observations	100	100	100

The Overall Regressions Results

- The three kinds of regression results are highly consistent, which indicates that the regression is reliant.

- The real effective exchange rate has a significant positive effect on the overall trade fluctuations. This result is in consistent with that of Hooper and Marquez (1995).

- The ratio of value added rate between the two countries has a negative effect on Sino-Japanese trade fluctuations, which provide us with a good explanation for the changing comparative advantages between China and Japan.

- After controlling for the industrial fixed effects, the financial crisis in 2008 has increased the trade fluctuations in Sino-Japanese trade by 0.5237%. The financial crisis did cause the recession of world economy, and as one of the critical parts in it, the Sino-Japanese trade also dropped a lot.

- The financial crisis in 1997 didn’t have a significant effect. The reasons: the linkage of trade between China and Japan is not as close as it was in 2008; as the technological differences between China and Japan in 1997 was too large, trade between the countries was not as profound as it was in 2008.

Table 2: Regression Results of the Export Trade Fluctuation

Variables	EXPORT		
	GLS-RE	OLS	GLS
REER	0.052	0.052	0.1197
	(-0.0798)	(-0.0798)	(-0.0829)
Pcapital	-0.0128	-0.0128	-0.0225
	(-0.0282)	(-0.0282)	(-0.0449)
Productivity	0.0063	0.0063	0.2918
	(0.0941)	(0.0941)	(0.1252)
Treaty	0.0481	0.0481	0.0756
	(0.0331)	(0.0331)	(0.0343)
Valueadded	-3.9887***	-3.9887***	-1.167***
	(1.0737)	(1.0737)	(1.1153)
1997 financial crisis	0.8335	0.8335	0.262
	(0.3815)	(0.3815)	(0.3963)
2008 financial crisis	0.8485***	0.8485***	0.8222*
	(0.2011)	(0.2011)	(0.2089)
Industry	yes	yes	no
Observations	100	100	100

The Export trade Regressions Results

- The regression results from various regression methods are highly consistent and the impact of real exchange rate on export fluctuation is not statistically significant. The reason: the majority of Japan's imports from China are necessities with low unit value and low price elasticity of product.

- The value added rate of China and Japan has an negative effect on the export fluctuation, which also suggests the comparative advantages between China and Japan is changing.

- The 2008 financial crisis has a positive effect on export fluctuations, the financial crisis in 2008 has expanded the fluctuation range by 0.84. The reasons: as the "World Workshop", China is obviously influenced by external demand change.

- The financial crisis in 1997 had no significant effects on Sino-Japanese export fluctuations. In 1997, the technological gap between China and Japan is still so large that there were no effective trade corporations between these two countries.

Table 3: Regression Results of the Import Trade Fluctuation

Variables	Import		
	GLS-RE	OLS	GLS
REER	0.2197*	0.2197**	0.7754*
	(0.0829)	(0.0829)	(0.0431)
Pcapital	0.0123	0.0123	-0.0954
	(0.0293)	(0.0293)	(0.0313)
Productivity	-0.0978	-0.0978	-0.0771
	(0.0977)	(0.0977)	(0.0873)
Trade Agreements	-0.0756**	-0.0756**	-0.0783*
	(0.0343)	(0.0343)	(0.046)
Valueadded	-3.157***	-3.157***	-4.9484***
	(1.1153)	(1.1153)	(0.9151)
1997 financial crisis	-0.262	-0.262	0.2139
	(0.3963)	(0.3963)	(0.4452)
2008 financial crisis	-0.0788	-0.0788	0.1744
	(0.2089)	(0.2089)	(0.2785)
Industry	yes	yes	no
Observations	100	100	100

The Import trade Regressions Results

- The regression results from various regression methods are highly consistent. The real exchange rate fluctuations have significantly positive effect on China's imports from Japan. In consideration of the practices, the reason is that intermediate products with high price elasticity and are sensitive to exchange rate changes.

- The ratio of value added rate has a negative effect on the China's import fluctuations. The rapidly advanced technology in China has gradually narrowed the gap between China and Japan, which facilitates better corporations and less trade fluctuations between the two countries in the global net of production.

- The impact of 2008 financial crisis on the fluctuations of China's imports from Japan is not significant. The reasons: the "Four Trillion Yuan Stimulus Package"; a good economic foundation in China

- The financial crisis in 1997 didn't cause any significant trade fluctuations in Sino-Japanese trade. The reasons may be the less developed trade corporations between China and Japan.

Conclusions and Implications

- According to the empirical results, we get that the real exchange rates have significant positive effects on the fluctuations in Sino-Japanese overall trade and the imports from Japan to China, while its effect on the export fluctuations is not significant.

- The ratio of relative value added between China and Japan has significant negative effects on the fluctuations in Sino-Japanese overall trade, the export from China to Japan and China's import from Japan.

- The financial crisis in 2008 had significant positive effects on the fluctuations in Sino-Japanese overall trade and China's export to Japan, while the effect of it on the imports from Japan to China is not significant.

- What's more, the financial crisis in 1997 had no significant effect on the fluctuations in Sino-Japanese trade, neither do the factors such as productivity, ratio of capital and labor and trade agreements.

Conclusions and Implications

- The results suggest that the fluctuation of real exchange rates is the main factor affecting Sino-Japanese trade. So how to stabilize the fluctuations of real exchange rates so as to control the fluctuation of the Sino-Japanese trade is the main aspect to focus on. Implications: developing financial markets, launching a variety of financial products in exchange maket.

- The changing comparative advantages between China and Japan can also decrease the fluctuations in Sino-Japanese trade. China and Japan should learn from each other, strengthen the technical exchanges, conduct technical cooperation in all aspects, and enhance their links in the global production network.

- In addition, one country should adhere to the improvement of economic structures and promote domestic demand as well as stabilize external demand. China’s stimulus plans have imposed a right control on the entire economic fluctuations to some extent, so as to reduce the drastic fluctuations in the overall foreign trade system.

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Thanks!