

The Influence of Sino-US Trade Friction on RMB Exchange Rate Fluctuation

Yanyan Wu¹ Da Yan¹, Lifeng Tu²

¹Dongwu Business School, Soochow University, ²Dongwu Business School, Soochow University; Post-Doctoral Research Center, Bank of Suzhou

INTRODUCTION

◆ After launching the section 301 investigation against China on August 18, 2017, the US government formally imposed a 25% tariff on us \$34 billion of Chinese imports on July 6, 2018, launching the largest trade friction in economic history. As the two largest economies in the world, trade frictions between the two countries affect both the trend of the RMB exchange rate and international trade.

◆ However, there is no consistent conclusion on the relationship between exchange rate fluctuations and trade in both theoretical and empirical research, nor in macro and micro research. Moreover, the existing research lacks the analysis combining the trade friction. Accordingly, the hypothesis of this paper is put forward: a change in the level of RMB exchange rate over a certain range will have a negative impact on the export of listed enterprises in China, while a small range of level change will have a positive impact.

◆ This paper first calculates the fluctuation of RMB exchange rate before and after Sino-US trade friction, and then further observes its influence. Then we analyze the influence of exchange rate fluctuation on China's import and export under Sino-US trade friction. Finally, some Suggestions are put forward for the trade enterprises.

METHODS & DATA

Generalized Autoregressive Conditional Heteroskedasticity (GARCH):

GARCH model can accurately simulate the change of volatility of time series variables, and it is widely used in empirical research of financial engineering, especially in the theory of Value at Risk. The GARCH (P, Q) model is:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \dots + \alpha_q \varepsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \dots + \beta_p \sigma_{t-p}^2$$

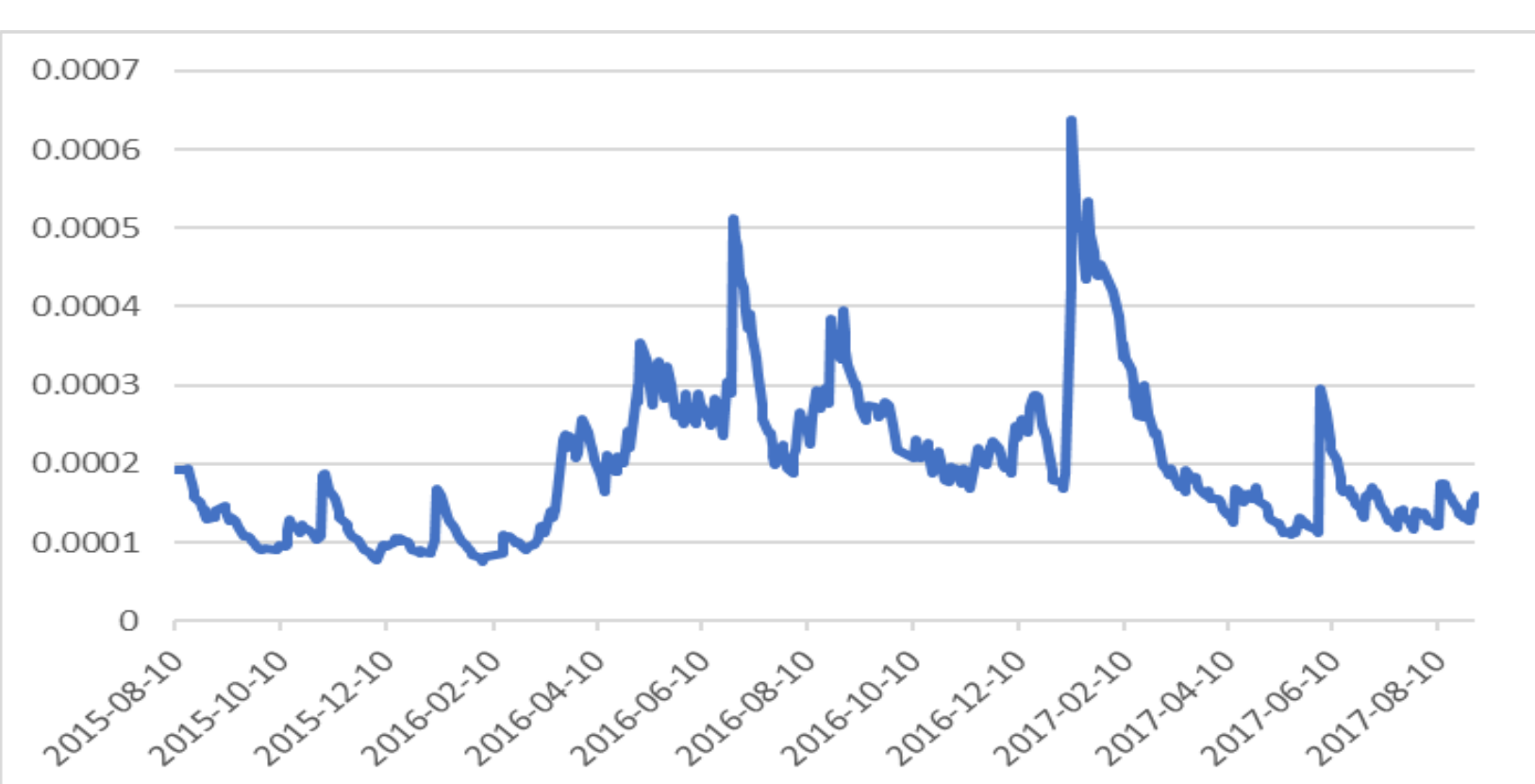
Data: The RMB central parity rate from 2015 to 2020

National and classified import and export data from 2017 to 2019

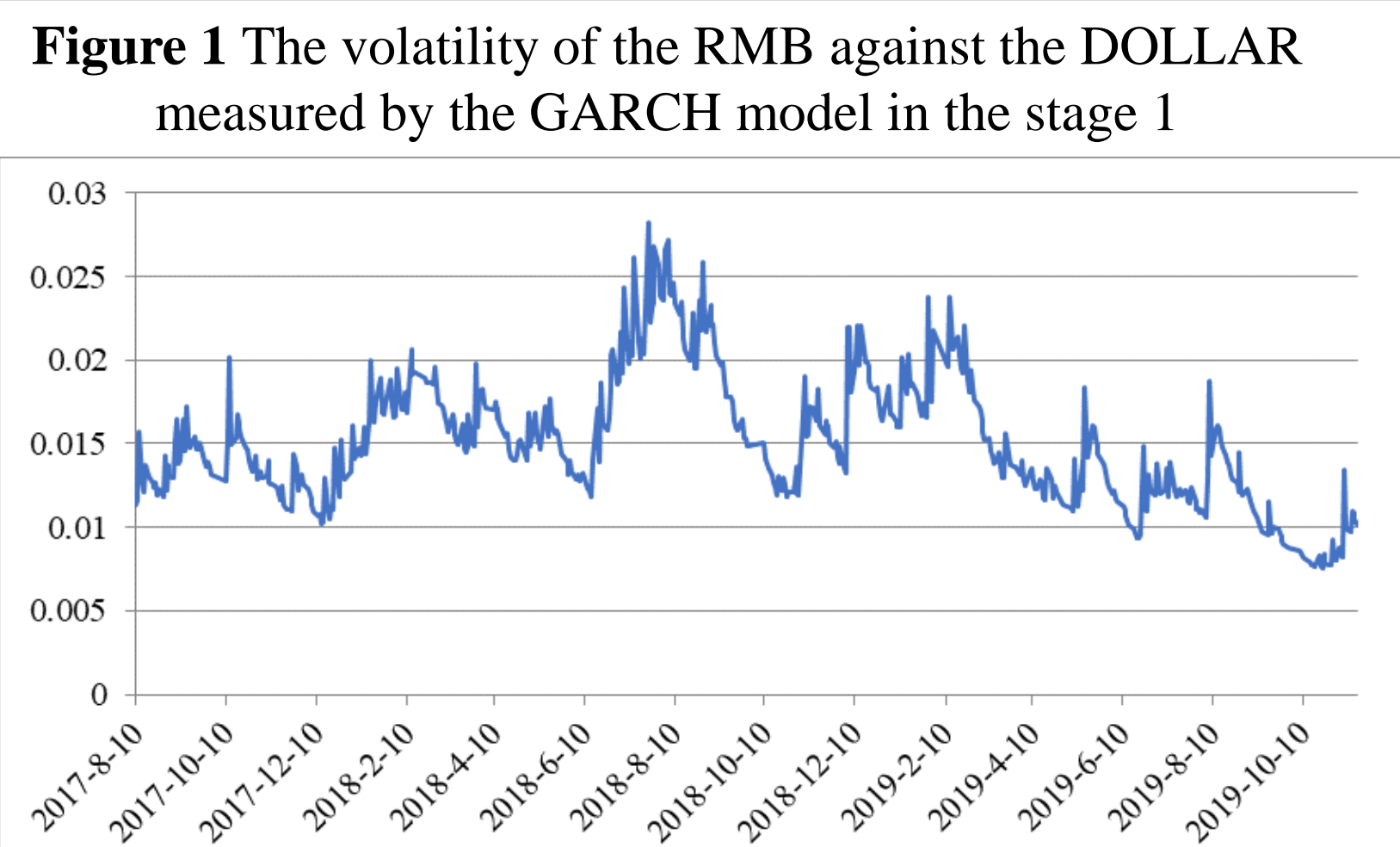
Data source: WIND database.

RESULT

◆ The volatility of the RMB against the DOLLAR measured by the GARCH model



Stage 1:
2015.08 ~ 2017.08



Stage 2:
2017.08 ~ 2019.11

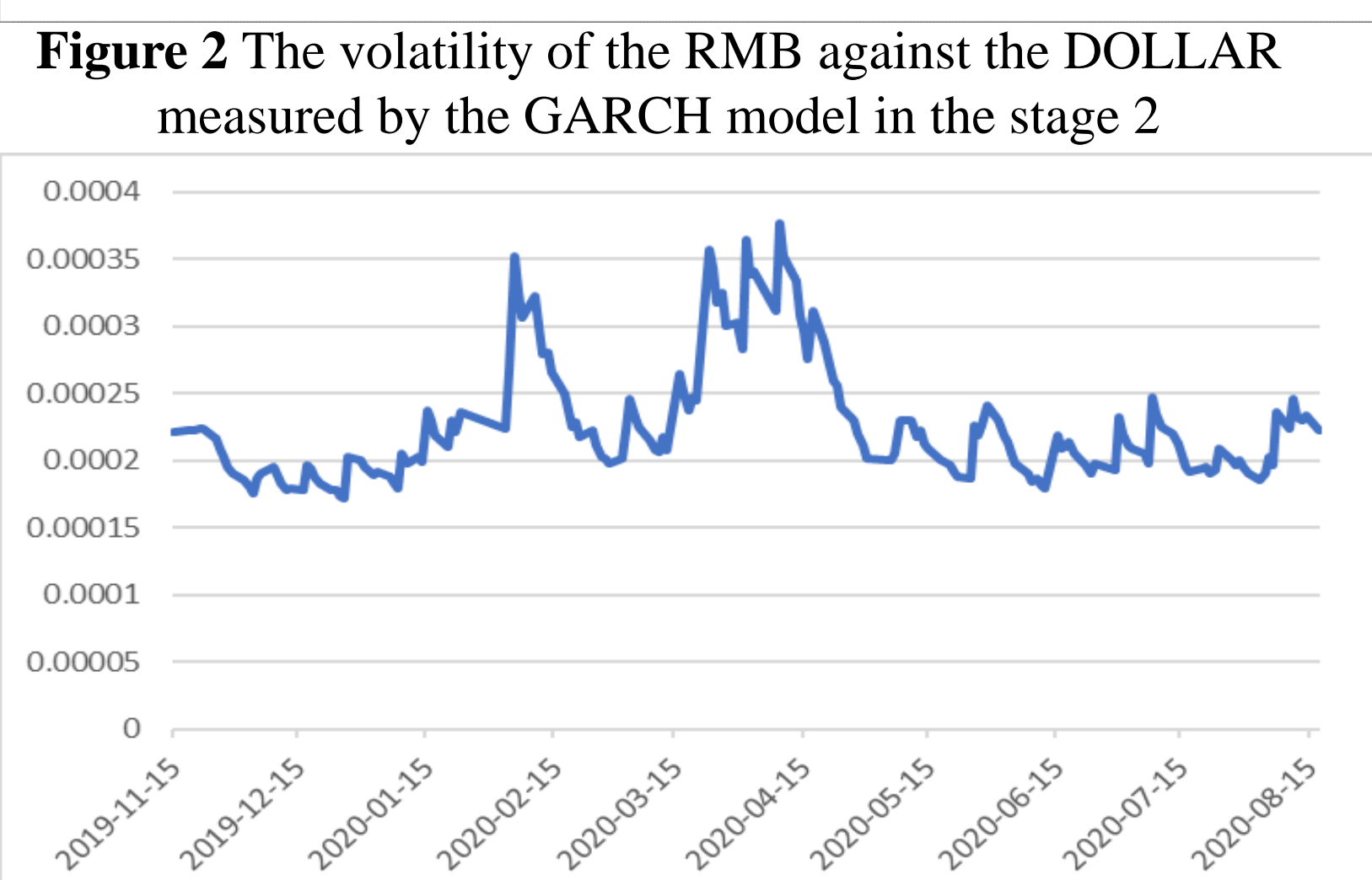


Figure 3 The volatility of the RMB against the DOLLAR measured by the GARCH model in the stage 3

◆ Volatility levels of RMB exchange rate on the press release date and 4-day-after Sino-US trade frictions

Table 1 Volatility levels of RMB exchange rate on the press release date and 4-day-after Sino-US trade frictions

time	U.S. dollar	time	U.S. dollar
2017.08.18 ~T+4	22222	2018.12.14 ~T+4	55555
2018.03.23 ~T+4	43354	2019.03.31 ~T+4	23222
2018.06.15 ~T+4	34354	2019.05.10 ~T+4	13254
2018.07.06 ~T+4	55555	2019.06.01 ~T+4	22111
2018.07.11 ~T+4	55555	2019.07.04 ~T+4	22232
2018.07.16 ~T+4	55555	2019.07.09 ~T+4	32132
2018.08.02 ~T+4	55555	2019.08.15 ~T+4	33333
2018.08.23 ~T+4	55555	2019.08.24 ~T+4	22322
2018.09.06 ~T+4	55555	2019.09.01 ~T+4	22111
2018.09.09 ~T+4	44444	2019.09.12 ~T+4	11111
2018.09.18 ~T+4	55544	2019.09.25 ~T+4	11111
2018.09.21 ~T+4	44333	2019.10.12 ~T+4	11111
2018.09.24 ~T+4	43333	2019.11.07 ~T+4	21111
2018.12.01 ~T+4	22554	2019.12.15 ~T+4	12111

◆ Every trade friction news event between China and the US in 2018 will aggravate the fluctuation of RMB dollar. In 2019, especially in the second half of the year, with the progress of China-US trade negotiations, the RMB exchange rate volatility has been relatively stable.

◆ The impact of exchange rate fluctuations on the export of Chinese enterprises under the background of trade friction

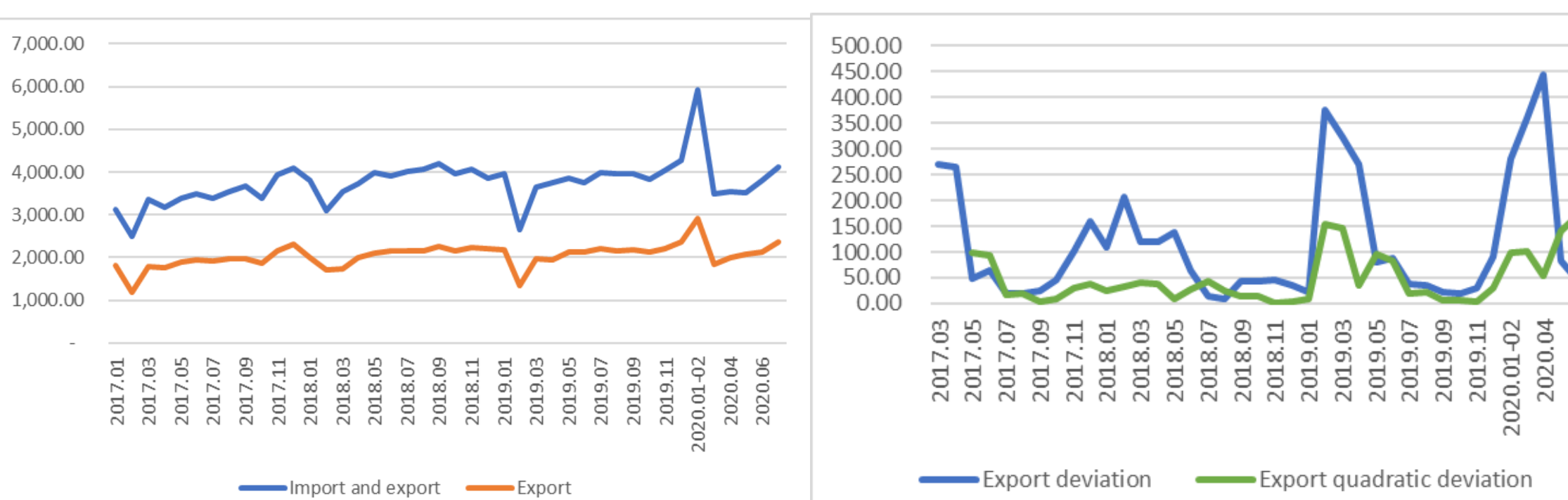


Figure 4 Monthly total value of national imports, exports and exports

Figure 5 Deviation and quadratic deviation of monthly gross national exports

◆ A small change in the exchange rate has a positive impact on trade exports.
◆ A large change in the exchange rate bring negative impact in the short term. When enterprises have expectations about the future situation, the negative impact will be reduced in the long term.

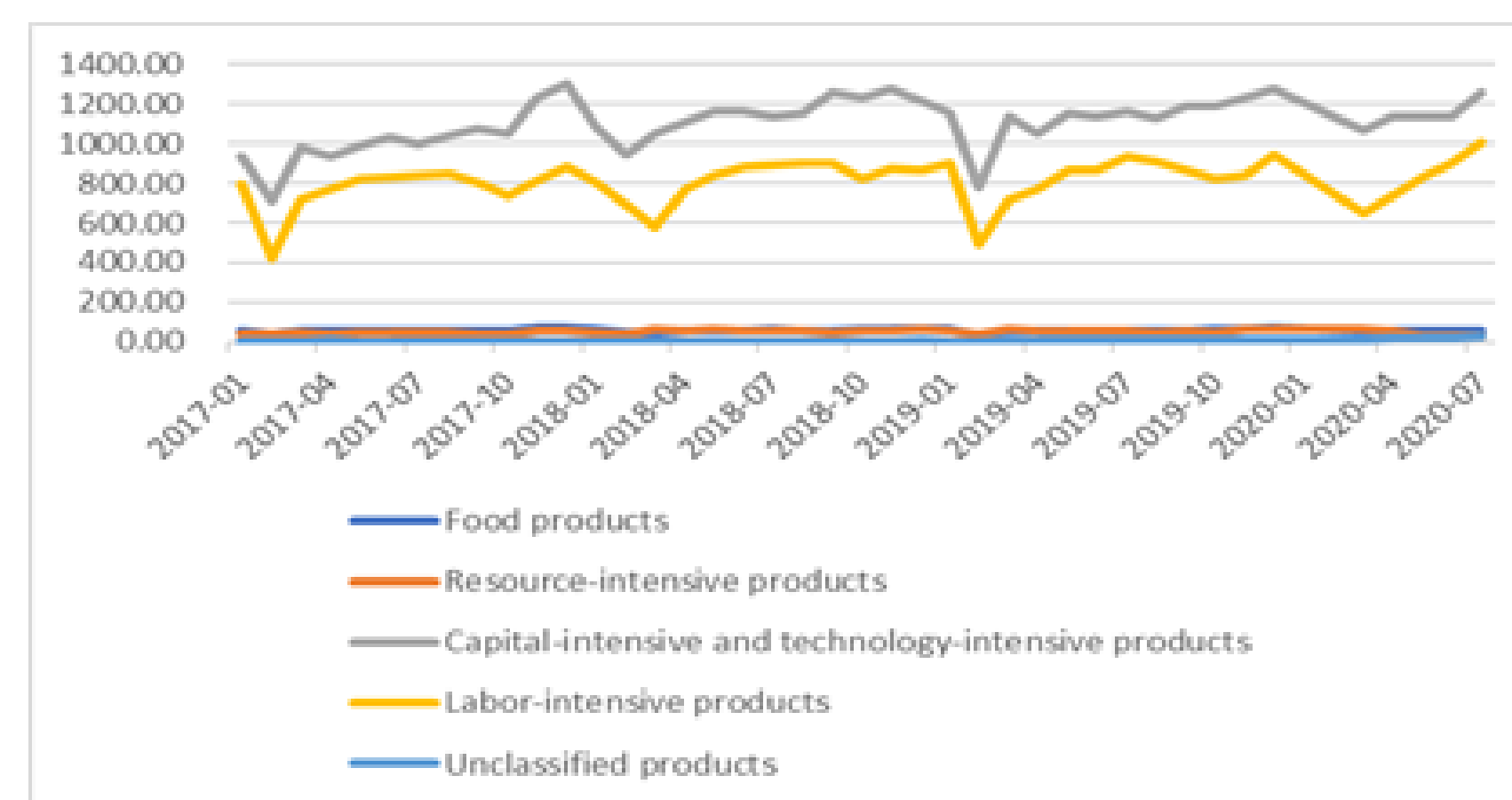


Figure 6 Monthly gross export value for different export types

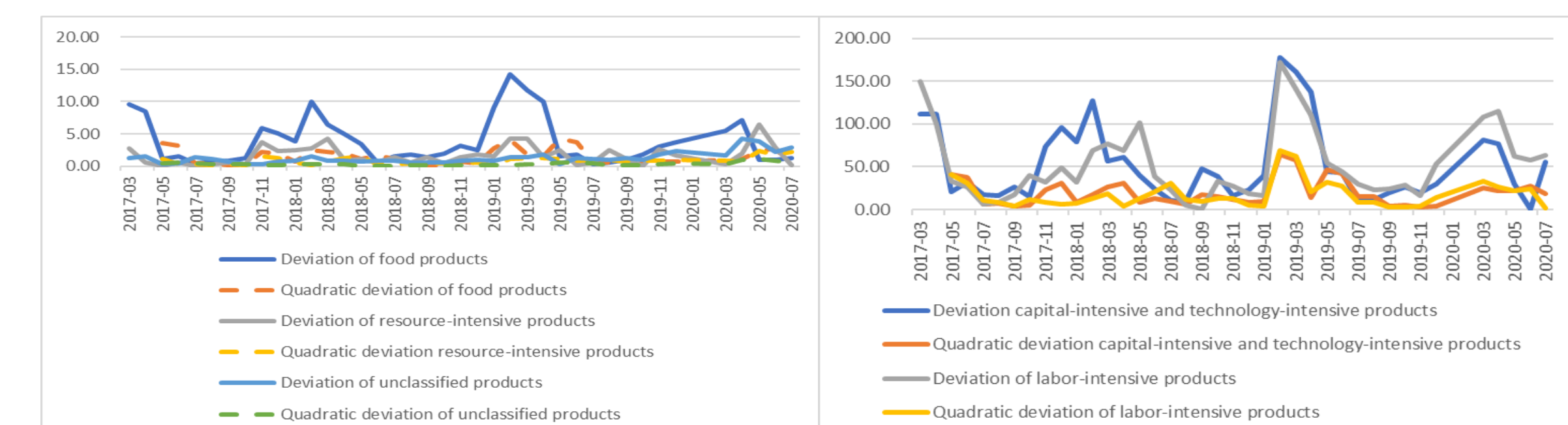


Figure 7 The deviation and quadratic deviation of the monthly total value of the smaller export classification

Figure 8 The deviation and quadratic deviation of the monthly total value of the larger export classification

◆ The effects of exchange rate fluctuations on Food export products, capital and technology-intensive products and labor-intensive products are similar to those on total exports.
◆ Resource-intensive products and unclassified products are basically stable, less affected.

CONCLUSIONS & SUGGESTIONS

◆ **Conclusions:** Every trade friction news event between China and the US in 2018 will aggravate the fluctuation of RMB dollar. However, in 2019, the RMB exchange rate volatility is relatively stable. In this case, a small change in the exchange rate has a positive impact on trade exports, while a large change in the exchange rate will only have a negative impact in the short term, because in the long term, enterprises will have expectations of the future situation and will take appropriate tools to disperse future risks. On the micro level, it is mainly food products, capital and technology-intensive products and labor-intensive products that are greatly affected by exchange rate fluctuations.

◆ Suggestions:

◆ Exporters, especially export enterprises of capital - and technology-intensive food products and labor-intensive products should actively deploy financial instruments to avoid exchange rate risks, such as adapting to multi-currency transactions and settling existing foreign currencies on the spot.
◆ Enterprises should diversify their choice of export regions and seize the opportunities provided by "The Belt and Road Initiative". By diversifying their choice of export regions, they can reduce their dependence on the United States.

ACKNOWLEDGMENT

This paper is supported by Undergraduate Training Program for Innovation and Entrepreneurship, Soochow University (Research on the Fluctuation of RMB Exchange Rate Under Sino-US Trade Friction and Countermeasures of Suzhou Import and Export Enterprises).

REFERENCES

- [1] W. Cao, J.Q. Luo, "The Influence of RMB Exchange Rate Fluctuation on Import Trade -- Based on the Trade Panel Data of Different Industries between China and One Belt And One Road countries," International Business, 2020, pp.64-79.
- [2] H.Y. Pan, "Exchange Rate Volatility and Exports from China to its Main Trading Partners," The Journal of Quantitative & Technical Economics, 2007, pp.73-81.
- [3] P.L. Li, J. Tang, "An Empirical Study on the Correlation between RMB Exchange Rate Fluctuations and China-US Merchandise Trade -- based on Empirical Data of China-US Merchandise Trade from 2006 to 2018," Review of Investment Studies, 2018, pp.21-30.
- [4] J.L. Ma, B. Wang, X.M. Yang, "A Study on the Influence of RMB Exchange Rate Fluctuations on China's Export Trade Structure -- An empirical Analysis based on SITC Standard Industry Data," Studies of International Finance, 2010, pp.21-48.
- [5] B.W. Zhang, S. Tian, "Nonlinear Effects of Exchange Rate Fluctuations on Export Trade -- A Study based on Country Panel Data," Journal of International Trade, 2014, pp.131-139.
- [6] T.D. Zhang, J.Q. Lv, "Research on the Influence of RMB Exchange Rate Change and Fluctuation on Export Trade of Listed Enterprises in China," Review of Economy and Management, 2020, pp.113-123.
- [7] G.H. He, Z.R. Hu, "The Empirical Analysis of the Relationship Between RMB Exchange Rate Fluctuation and China's Export Trade," Statistics & Decision, 2018, pp.166-168.
- [8] Y. Zhang, "Research on the Influence of RMB Exchange Rate Fluctuation on China's International Trade". Reformation & Strategy, 2017, pp.141-143.