The Influence of the Depreciation of China's Domestic Currency on Trade Relations with the EU

Loredana Jitaru
Lorena Florentina Dumitraşciuc
"Alexandru Ioan Cuza" University of Iaşi,
Doctoral School of Economics and Business Administration
jitaru_loredana10@yahoo.com
lorena.popescul@student.uaic.ro

Abstract

Despite the fact that EU-China cooperation relations have enjoyed undeniable success, issues that affect the harmonious development of these relationships have not been delayed. One of the issues affecting EU-China trade relations is the EU's trade deficit. In this context, we want to examine the influence of the Chinese currency depreciation on trade relations with the EU. In this regard, we aim to see if there is a possible link between the EU trade deficit in relation with China and the renminbi depreciation, and for this we applied the correlation method.

Key words: depreciation of the Chinese currency, RMB exchange rate, China, trade deficit, EU
J.E.L classification: F10, F14, F31

1. Introduction

China enjoyed impressive economic growth, with a growth rate of around 9% between 1978 and 2018. This formidable growth of China has been largely attributed to the growth of exports; which has transformed China into the world's largest exporter, outpacing Germany in 2009.

In this context, this actor has recorded a huge commercial excendent with its main trading partners, namely: the EU and the USA. European and American decision makers have accused China of maintaining this surplus by depreciating the national currency. Given this, we want to provide an answer to the the following question: Does the renminbi depreciation represent a real factor in deepening the EU trade deficit in relation to China?

Given this the purpose of this paper is to examine the influence of the Chinese currency depreciation on EU-China trade relations.

This research has the following structure: Section no. 1 - Introduction, Section no. 2 - Literature review - where we analyzed the most relevant studies by numerous researchers on the influence regarding of renminbi depreciation on China's trade balance; in Section no. 3 we discuss about the Methodology; then in section no. 4 we have approached quantitative analysis of the influence of renminbi depreciation on foreign trade with the EU - where we applied the correlation; Section 5 - Conclusions.

2. Literature review

Regarding the renminbi's depreciation, it was a controversial subject of research. We have noticed in the literature about the influence of the depreciation / appreciation of the Chinese currency on the surplus of China's trade balance that they are divided into two main categories, namely: research that shows us that the renminbi depreciation has had a positive influence on China's trade surplus and research showing us that the renminbi depreciation did not have any significant influence on China's trade balance. Therefore, in the table no.1 entitled *Previous studies on the influence of the Chinese currency depreciation*, we presented the most relevant results of the research carried out by the most significant authors.

Table no.1 Previous studies on the influence of the Chinese currency depreciation

Authors	The time period under analysis	Research methodology	Influence on the appreciation of renminbi on Chinese imports / exports / trade balance
Garcia, Herrero A. and Koivu, T. (2009)	1995-2005	Co-integration technique	Reducing the level of China's trade surplus that is insignificant.
Guo, W. (2017)	2000-2012	Co-integration technique regression	It has a small influence on the trade balance.
Cardoso, A., Duarte, A.P. (2017)	1995-2011	Correction model for vector errors (VEC); Time series; Dickey-Fuller unit root test (ADF)	It has a significant impact on the trade balance (indicating that a 32% appreciation of renminbi contributes to a 20% reduction in the trade deficit for the EU-China).
Yue, C. and Hua, P. (2002)	1980-2000	Regression, Panel, LM Test OLS Test	Regarding the depreciation of renminbi, we find that this has led to increased exports.
Dees, S. (2001)	1994-2000	Test ADF	The appreciation leads to a decrease in exports.
Rossi, V. (2005)	2001-2010	Equilibrium model of the FEER exchange rate	It does not have a significant impact regarding on China's trade balance.
Zhang, Z. and Sato, K. (2011)	1987-2009	VAR	The evolution of the exchange rate on China's trade balance is too limited.
Eichengreen, B. and Tong, H. (2011)	2005 and 2010 (6000 companies from 44 countries)	Placebo test Robustness checks	Regarding the appreciation of the renminbi, it has a positive impact on the companies that export to China final products. However, there was a negative impact on firms exporting semi-processed products.
Granville, B., Mallick, S. and Zeng, N. (2011)	1987-2010	VAR	The appreciation of the renminbi has a reduced impact on the reduction of the US trade deficit.
Jiang, W. (2014)	1981-2012	ADF, the co-integration test, the associated econometric model	Over a long period of time, the fluctuation of the exchange rate has a positive impact on imports and exports.
Masih, J., Liu, D. and Pervaiz, J. (2018)	August 2005 - July 2016	ADF test VAR	there is no causal link between the exchange rate and the trade balance.

Source: Authors' contribution

In this context, it is found that a significant factor contributing to China's surplus, and implicitly to the deficit in respect of the main trading partners of this actor, is the understatement of the renminbi (Guo, 2017, p.817, Zhang and Soto, 2011, p.3 Cline, 2010, p.1; Darvas and Pisani-Ferry, 2010).

Also, following the statistical analysis, Cardosa and Duarte (2017, p.891) conclude that undermining renminbi is considering providing an incentive for the European investment part in China. As a result, many companies from the EU member countries have transferred their businesses to the Chinese territory, which has resulted in the increase in the quality of Chinese goods through the incorporation of high-tech European technology.

This has resulted in increased competitiveness of Chinese companies compared to European ones. In addition, the two researchers argued that „an appreciation of the Chinese currency by 32% would lead to a 20% reduction in the EU trade deficit in relation to China". Similarly, Dadush and Ali (2010) said that „a gradual revaluation of the Chinese currency will lead to a more balanced,

more sustainable growth in China", and this benefits everyone. However, renminbi revaluation are countries that will record losses (eg Italy, USA, etc.).

Instead, Corden (2009, p.431) said that, „on the part of China's trade surplus relative to its own partners is not determined by the depreciation of the renminbi. Instead, as far as the current account imbalances are concerned, they have been associated with all foreign exchange regimes".

Similarly, Zhang and Soto (2011, p.15) argued that „the trade balance for China is determined mainly by world demand and its commercial performance, which means that it is supported by the maintenance of the comparative advantage", rather than depreciation and Masih et al. (2018, p.44) said: „the words of critics who claim that RMB has been highly underestimated, which allowed China to get unfair commercial rewards, do not make sense".

This aspect is also supported by Rossi (2005, p.31), underlining the idea that „a forced appreciation of renminbi could lead to a decrease in international trade. The researcher has estimated that a renminbi appreciation of more than 50% could have some negative effects, and this would not only affect China's economy, but even the world economy". In this context, we propose in Section no. 4 to analyze the influence regarding of the renminbi depreciation on EU-China trade.

3. Methodology

The present research is a fundamental one that is based on both qualitative and quantitative methods. In the first two sections, we used the document analysis. In selecting and analyzing the documents we took into consideration the keywords, which were mentioned above.

Therefore, for the fourth section, we used the statistical analysis, namely the correlation.

We have used this method to show the direct and significant link between the variables defined in Section 4, in Table 3. The data used in the present research is derived from the documentary analysis based on documents produced by the European Parliament, statistics, specialist articles and other documents (Jitaru și Popescul, 2017) .

4. Quantitative analysis of the influence of renminbi depreciation on foreign trade with the EU

Although the EU and China have the most significant trade relations in the world, they are still faced with a number of problems. The most significant issue behind the harmonious development of mutual relations is the EU's trade deficit with China. The EU has a chronic and quasi-continuous trade deficit. Regarding the European Commission, the two powers trade more than „one billion euros a day, and the EU's trade deficit with China increases by 17 million euros each hour".

The chart no. 1 shows the evolution of the RMB / EUR exchange rate. We can see that in 2001-2005 there was a 31.19% depreciation of the Chinese currency. As for the EU trade deficit, it doubled over the same period. In 2005, China moved to a free course against the dollar. During this period, the renminbi appreciated by 26.75%, but the trade deficit did not diminish, but on the contrary it increased, amounting to 184.94 billion euros.

Chart no. 1 The evolution of the RMB/EUR exchange rate and the EU trade deficit (billions of euros) in the period 2001-2018
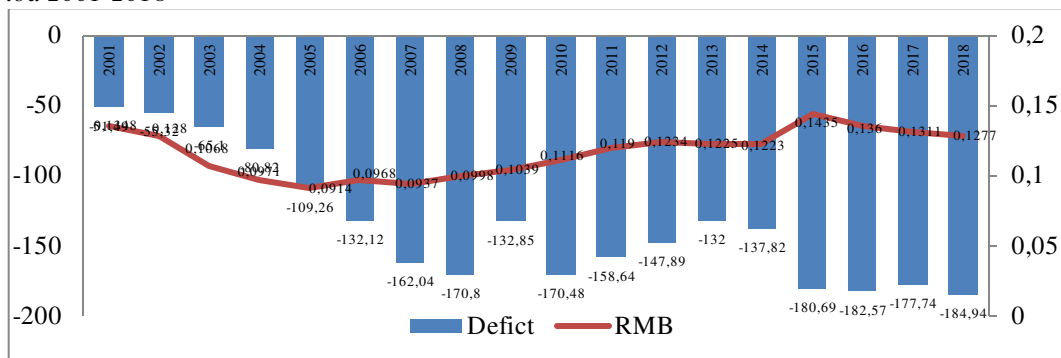
Source: made by authors based on data from Eurostat and Oanda

However, European leaders believe that the Chinese currency is still under-valued, resulting in a deepening of the trade deficit. In this context, we considered a real need to study the link between trade deficit and RMB/EUR exchange rate, of the export and the RMB / EUR exchange rate, between the import and the RMB / EUR exchange rate.

Therefore, to see if there is a significant link between the above variables, we will apply the correlation method.

Entry data were provided by Oanda and Eurostat. The structure of the SPSS database contains 18 records, the analysis period being 2001-2018 and is presented in table no. 2 SPSS screen. Of the software packages dedicated to this type of analysis, we chose to use the SPSS software.

Table no. 2 SPSS screen

Years	Exchange_rate	Trade_defict	Import	Export
2001	.1348	-51.49	82.16	30.67
2002	.1280	-55.32	90.42	35.10
2003	.1068	-65.10	106.58	41.48
2004	.0971	-80.82	129.20	48.38
2005	.0914	-109.26	161.01	51.75
2006	.0968	-132.12	195.82	63.70
2007	.0937	-162.04	233.86	71.82
2008	.0998	-170.80	249.10	78.30
2009	.1039	-132.85	215.27	82.42
2010	.1116	-170.48	283.93	113.45
2011	.1190	-158.64	295.06	136.41
2012	.1234	-147.89	292.12	144.23
2013	.1225	-132.00	280.12	148.12
2014	.1223	-137.82	302.50	164.68
2015	.1435	-180.69	351.04	170.36
2016	.1360	-182.57	352.28	169.70
2017	.1311	-177.74	375.37	197.63
2018	.1277	-184.94	394.82	209.87

Source: Authors' contribution

In this case, the following variables were considered:

Table no. 3 Description of variables

Variables	Source	Observations
Exchange rate	Oanda	RMB / EUR exchange rate
Trade deficit	Eurostat	The EU trade deficit with China in the period 2001-2017
Import	Eurostat	Trade between EU and China are between 2001 and 2018
Export	Eurostat	

Source: Authors' contribution

We can observe in the correlation matrix that some coefficients obtained for some variables record higher values, and for others, lower values. Following the analysis, we find that there is a strong and direct correlation between import and export (0.959); a strong negative correlation between deficit and exports (-0.785), deficit and imports (-0.928). It can also be observed that we obtained a moderate direct correlation between the exchange rate variable and the export variable with a level of 0.587.

Instead, we found that there is a direct correlation between the exchange rate variable and the import variable at a level of 0.431. On the other hand, we have noticed that there is no relation between the exchange rate and the deficit variable.

Therefore, we have noticed that in terms of sub-valuation of the exchange rate of the Chinese currency, it may offer an unfair advantage to companies exporting to the EU, with the note that it did not have any significant impact on the deficit trade between the EU and China.

Table no. 4 Matrix of correlation

		Exchange_ rate	Trade deficit	Import	Export
Exchange_ rate	Pearson Correlation	1	-.170	.431	.587*
	Sig. (2-tailed)		.500	.074	.010
	N	18	18	18	18
Trade deficit	Pearson Correlation	-.170	1	-.928**	-.785**
	Sig. (2-tailed)	.500		.000	.000
	N	18	18	18	18
import	Pearson Correlation	.431	-.928**	1	.959**
	Sig. (2-tailed)	.074	.000		.000
	N	18	18	18	18
export	Pearson Correlation	.587*	-.785**	.959*	1
	Sig. (2-tailed)	.010	.000	.000	
	N	18	18	18	18

*. Correlation between variables is significant at the 0.05 level (2-tailed).

**. Correlation between variables is significant at the 0.01 level (2-tailed).

Legend:

🟥	Strong relationship r = (0,75, 1)∪(-0,75 to -1)
🟩	Moderate relationship r= (0.5, 0.75]∪(-0,5 to -0,75]
🟦	Poor relationship r = (0,25, 0.5]∪(-0,25 to -0,5]
⬜	There is no relationship r= [-0,25, 0,25]

Source: Authors' calculations based on data processed with SPSS program

5. Conclusions

In the framework of this research, we intend to analyze the influence of the Chinese currency depreciation on the trade deficit between the EU and China.

Following a simple correlation test, we noticed that there is no link between the EU trade deficit variable and the renminbi depreciation variable. Which means that the EU's trade deficit is not due to renminbi depreciation, as suggested by many researchers and European leaders.

The trade deficit is determined by a series of factors that act together, determining its deepening. In this context, to decrease the trade deficit with China, the EU should increase its imports into China. For this growth to take place, China must respect WTO commitments and remove barriers to market access for EU firms.

6. References

- Cline, W., 2010. Renminbi Undervaluation, China's Surplus, and the US Trade Deficit, *Policy Brief, Peterson Institute for International Economics*, Nr. PB10-20, pp.1-7.
- Corden, M., 2009. China's Exchange Rate Policy, Its Current Account Surplus and the Global Imbalances, *The Economic Journal*, Vol. 119, No. 541, ppF430-F441.
- Cardoso, A., Duarte, A.P. , 2017. The impact of the Chinese exchange policy on foreign trade with the European Union, *Brazilian Journal of Political Economy,* Vol.37, NR.4, pp.870-893.
- Dadush, U., Ali, S., 2010. Who gains from a renminbi revaluation?, *VoxEU*, [online], Available at: < https://voxeu.org/article/who-gains-revaluation-china-s-currency>, [Accessed 1 April 2019].

- Darvas, Z., Pisani-Ferry, J., 2010, The threat of 'currency wars': A European perspective, *Directorate General for Internal Policies Policy Department a: Economic And Scientific Policies, European Parliament, IP/A/ECON/FWC/2009_040/C1*.
- Dees, S., 2001. The real exchange rate and types of trade. Heterogeneity of trade behaviours in China Paper Presented at the Workshop on China's Economy Organised by the *CEPII* in December 2001.
- Eichengreen, B., Tong, H., 2011. The External Impact of China's Exchange Rate Policy: Evidence from Firm Level Data, *IMF Working Paper*, WP/11/155.
- Garcia-Herreri, A., Koivu, T., 2009. China's exchange rate policy and Asian trade, *BIS Working Papers*, No 282, pp.1-27.
- Granville, B., Mallick, S., Zeng, N., 2011. Chinese exchange rate and price effects on G3 import prices, *Journal of Asian Economics*, 22, pp.427-440.
- Guo, W., 2017. Impact of Renminbi Appreciation on China's Trade Balance: From Empirical Evidence, *American Journal of Industrial and Business Management*, **7**, 816-831.
- Jiang, W., 2014. The Effect of RMB Exchange Rate Volatility on Import and Export Trade in China, *International Journal of Academic Research in Business and Social Sciences*, Vol. 4, No. 1, pp.615-625.
- Jitaru, L., Popescul, L.F., 2017. Economic relations EU-China - the mechanism that the European Union outlines the position of the economic actor, CES Working Papers, Vol.9,Nr.3, pp.225-271.
- Masih,J., Liu,D., Pervaiz, J., 2018. The Relationship between RMB Exchange Rate and Chinese Trade Balance: Evidence from a Bootstrap Rolling Window Approach, *International Journal of Economics and Finance*; Vol. 10, No. 2, pp.35-47.
- Rossi, V., 2005. Is revaluation of the renminbi good news? *CESifo Forum*, 3, pp.29-36.
- Uddin, A., Baddou, M., Gulzar, R., 2016. Implications of Chinese Yuan on China's competitiveness, *MPRA*, No.70144, pp.1-42.
- Yue, C., Hua, P., 2002. Does comparative advantage explains export patterns in China? *China Economic Review*, 13, pp. 276–296.
- Zhang Z., Sato, K., 2011.The RMB Exchange Rate and its Impact on the Trade Balance, [online], Available at: <http://www.business.uwa.edu.au/__data/assets/pdf_file/0003/2283807/ZHANG-and-SATO-Chinese-RMB-and-Trade-Balance.pdf>, [Accessed 1 April 2019].