

DO DOMESTIC CURRENCIES DEPRECIATION WORSEN THE DEFICIT OF TRADE BALANCE? EVIDENCE IN CENTRAL EAST EUROPEAN COUNTRIES

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Abstract: *Central East European Countries (CEECs) may have reliance to import commodities and barriers to export their competitive products after the integration as European Union members. CEECs may also have negative exposure to the economic crisis after their integration in the EU. Foreign Exchange Rate (FER) as a significant factor which is still argued by the previous researchers possibly will impact the trade balance. The interesting perspective in this research is to analyze the condition of FER and trade balance in CEECs after their integration in the EU. CEECs countries may use Euro or USD to trade with their international trade partner. The fluctuation of FER in term of appreciation or depreciation may have influenced foreign trade. This research purposes to examine the direction of fluctuating FER on the trade balance. Data used in this research are used secondary data namely FER, Export, and Import during 5 years from January 2014 until September 2018. The tool of analysis used in the analysis is a regression. In the last five years, Hungary, Poland, Romania have domestic depreciations denominated in Euro. On the other hand, Albania, Croatia, and Czech have domestic appreciations compared to Euro. The fluctuations of the FER in CEECs also have an influence on their balance of trade. The highest determination coefficient denoted in Croatia is 38,8 per cent referring to the variation of FER determining the trade balance. The research hypothesis is accepted in the countries case namely Albania, Croatia, Lithuania, Poland, and Romania. The coefficient result shows two paths of depreciation and appreciation. First, depreciation of domestic currencies may increase the deficit of trade balance with the inelastic price of import and elastic price of export products demand in the same moment. Second, the appreciation of FER may also increase the deficit of trade balance through the elastic price of the import and export commodities demand at a similar time. Finally, the depreciation may also lead to a surplus of trade balance through the elastic price of export and import products assumption. It entails that the countries explicitly the Czech Republic, Hungary, Poland, Slovak, and Slovenia who have a surplus in the trade balance retain and endure the export quantity.*

Keywords: *Depreciation; Appreciation; Export-Import; Trade Balance.*

JEL Classification: *F31.*

1. Introduction

In the early integration in European Union (EU), Central East European Countries (CEECs) rally alarming barriers to their foreign trade in the EU countries, as similar as the countries trade with other countries outside EU markets. These barriers are

in precisely those products of CEECs which are potentially exported to and out the EU countries. However, the import products mobility may increase because of the reliance factor of import goods. The integration runs well and promising for the CEECs (Ahmad & Yang, 1998). Furthermore, trade diversion effects are likely to be benefits to cause economic growth and to increase trade potential for CEECs (Piazolo, 1997). The CEECs may get the benefit to export their competitive products to EU countries. This is really very important as the foreign trade relations of countries positively affect the growth of the global economy and largely determine the quality and standard of living of the population (Pancencko, E., and Ivanova, T., 2018).

The current environment is characterized by high dynamism, uncertainty and unpredictability of conditions (Melnyk et al., 2017). In addition, the economic crisis hit EU countries but the CEECs may resist the negative impact of the crisis. The economic crisis emphasized the significant role of exports for several EU member countries and especially the CEECs who most of them have a strong foundation of foreign trade. The international crisis hit several EU member countries and also the CEECs (Podkaminer, 2013), as well as, the fluctuation of their foreign trade. The foreign trade of the CEECs had been aimed at the European Union countries when before and after the official integration. Furthermore, the EU-Integration had a significant effect on the mutual trade among the countries. Despite the export of the EU members may tend to decrease, but the performance of CEECs may tend to rise. Because of the resistant condition of the crisis in the EEC, this research takes the CEECs as a research object. The CEECs comprise many countries located in central and eastern European such as Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania. The other interesting reasons are the important role of foreign trade in these countries for economic growth, opened economies, and the high share of exports in GDP (Éltető, 2014; Dvorsky et al., 2018; Baloch et al., 2018). Stronger connections in terms of foreign trade, capital flows in advanced sectors and the growing interdependence between CEECs and EU markets may develop production chains and growth of exports value from the Central and Eastern Europe region passes. Consequently, foreign trade in CEECs likely increases with varying intensity (Ciešlik, 2014). The CEECs have prepared an outstanding development in terms of economic development and union from 25 years ago until now (Grela, M., Majchrowska, A., Michałek, T., Mućk, J., Stażka-Gawrysiak, A., Tchorek, G. and Wagner, M., 2017; Klietnik et al., 2018b).

Based on the important role of CEECs in the EU, it is likely a significant analysis *to examine the balance trade* representing the dynamics of foreign trade in developed countries. However, many scholars had also examined the balance trade in developing countries. It describes the foreign trade analysis as a significant aspect in any types of countries. The theoretical analysis states the correlation in the fluctuations of Foreign Exchange Rates (FER) and the balance trade. The high fluctuation of FER may have an impact on the fluctuation of the balance trade amount. In addition, there is still a debatable effect of FER on the foreign trade balance. In one side, there is a negative direction between FER and export values (Arize, A.C., Osang, T. and Slottje, D.J., 2000; Arize, A.C., Osang, T. and Slottje, D.J., 2008). Then another result, it is supported also by Hunegnaw & Kim (2017) that depreciation in FER weakly increases trade balance in East African countries. In evidence from European countries, depreciation of FER deteriorates trade balance

in European transition countries, which could be described that it may happen high import reliance and low export capacity (Begović & Kreso, 2017; Pietrasieński & Ślusarczyk, 2015). In the long run, effective FER may have a positive effect on the balance of foreign trade. Indeed, in the short run, the FER fluctuation may have a negative impact on the trade balance. Based on the theoretical framework in international trade, a real depreciation in the countries may expand the trade balance (Arize, A.C., Malindretos, J. and Igwe, E.U., 2017). Most of the fellows examined that FER has a significant effect on the trade balance in the long run. However, other researchers also studied that FER appreciation does not have any significant effects (Bahmani-Oskooee & Halicioglu, 2017).

In this case, CEECs countries may use Euro or USD to trade with EU members or non-EU countries. The fluctuation of FER may consist of appreciation or depreciation of domestic currency to influence the foreign trade in CEECs. Based on the previous condition and the research gap, the purpose of this research is to investigate the direction of depreciation or appreciation of Foreign Exchange Rate on balance of trade in the CEECs.

2. Literature Review

According to the theoretical concept, a real depreciation of domestic currency compared to the foreign currency may create import goods more expensive and export goods more affordable and simultaneously lead to a variation in the trade balance. However, the effect of the trade balance in a country may not occur immediately at the time of depreciation (Oláh et al., 2017). It may have a lag time. On the reverse, the changes in the export-import product have an immediate effect (Arize et al., 2017). Furthermore, depreciation may reduce the trade deficit as it creates the price of export cheaper and import price more expensive. However, import reliance and lack of export performance could encourage a contrary impact of FER fluctuation in the short run (Begović & Kreso, 2017; Kliestik et al., 2018a).

Elasticity also may create an adverse effect on the trade balance. If domestic demand is inelastic to rise import price and or foreign demand is inelastic through the decrease in prices of commodities or services that are exported from the home country and or the observed country has low supply of elasticity, it means that the demand for the exported products or services get increased because of cheaper export price and not enough capacity in the country to fulfil the increasing demand. If these inelasticities are the current time, the trade balance will not get benefit from the foreign exchange depreciation since it may import the same quantity but higher prices and export as the same amount as at cheaper prices (Begović & Kreso, 2017). Currency depreciation is the decreased value of domestic currency denominated to foreign currency, generally in a floating exchange rate system. However, currency appreciation means the increase of domestic currency value denominated to foreign currency (Goodwin et al., 2015).

The trade balance is the net value of exports and import commodities in a nation excluding the nominal value namely monetary transfers, investment total, and other financial components (Sanusi, K.A., Meyer, D. and Ślusarczyk, B., 2017). A country may have a surplus if the export value surpasses import value. In reverse, a nation may obtain deficit if the import nominal goes beyond export nominal, balance trade also refers to the current account term (Goodwin, N., Harris, J.M., Nelson, J.A., Roach, B. and Torras, M.. (2015).

Price elasticity of demand is used to measure the change in the price of products demand. Inelastic price refers to the changes in price have a relatively small effect on the quantity of commodities demand. Meanwhile, elastic price describes the changes in price have a relatively large effect on the quantity of products demand (Walter, 2005; Imran, M., Haque, A.U. and Rebilas, R., 2018).

The hypothesis in this research is depreciation domestic currency to foreign currency exchange rate has positive effect on deficit of trade balance with assumption inelasticity price of import and export product demand (or in appreciation case, appreciation foreign currency to domestic currency has a positive effect on the deficit of foreign trade balance with assumption elasticity price of import and export product demand).

3. Research Method

Variables used in this research are Foreign Exchange Rate and Balance Trade. The variables are described in table 1.

Table 1. Operational Variables in Research

No	Variables	Operational Description of Variables	Measurement
1	Independent (X1): Foreign Exchange Rate (FER)	The domestic currency of each Central East Europe Country which is denominated in euro monthly	Ratio scale
2	Dependent (Y): Balance Trade	The net value between export and import monthly in the domestic currency of each Central East Europe Country	Ratio scale

Source: Arize, A.C., Malindretos, J. and Igwe, E.U. (2017).

Data used in this research are secondary data which is downloaded from EMIS. The data is in time series from January 2014 until September 2018. The period is used starting from 2014 because the year refers to the time after the crisis and time of Central East European Countries integration as EU members.

The tool of analysis used in this study is a regression. Regression analysis used to analyse the causal effect relationship between the influence of the independent variable on the dependent variable. The regression model explains the coefficient of determination analysis, t-test, and the interpretation of the regression coefficient.

4. Results and Discussion

The term Central and Eastern European Countries (CEECs) refers to the set of countries including namely Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania. The term CEECs has substituted the initial term for East-Central Europe (ECE). In this research, the case studies have examined the 12 nations in term of CEEC. The results are presented in two systematic order. First, it starts examining the balance trade condition and the fluctuation trend of FER. Second, it observes the direction of FER fluctuations on the foreign trade balance.

The description of their domestic currencies and its fluctuations are depicted in table 2.

Table 2. Currencies and Balance of Trade Between January 2014 and September 2018 in CEECs

CEE Countries	Domestic Currency Denominated in Euro/USD	Fluctuation Trend
Albania	Lek – Euro	Appreciation
Bulgaria	Lev- Euro	Fixed
Croatia	Kuna – Euro	Appreciation
Czech Republic	Koruna – Euro	Appreciation
Estonia	Euro – USD	Depreciation
Hungary	Forint – Euro	Depreciation
Latvia	Euro- USD	Depreciation
Lithuania	Euro- USD	Depreciation
Poland	Zloty – Euro	Depreciation
Romania	Leu – Euro	Depreciation
Slovak	Euro – USD	Depreciation
Slovenia	Euro – USD	Depreciation

Source: EMIS, 2018

The CEECs use euro and domestic currencies namely Albania, Bulgaria, Croatia, Czech, Hungary, Poland, and Romania. The other countries in CEECs such as Estonia, Latvia, Lithuania, Slovak and Slovenia may consider applying euro. Based on the fluctuation trend for 5 years, the domestic currencies in Hungary, Poland, Romania tended to get in depreciation denominated in Euro. However, domestic currencies in Albania, Croatia, and Czech had a tendency in appreciation.

Table 3. Balance of Trade from January 2014 until September 2018

CEE Countries	Export Average Value (in Millions)	Import Average (in Millions)	Balance of Trade Average Value (In Millions)	Trade Balance Condition
Albania	21,727.74	48,357.48	-26,629.57	Deficit
Bulgaria	4,030.93	4,548.08	-224.57	Deficit
Croatia	7,752,718.96	12,488,041.39	-4,735,322.50	Deficit
Czech Republic	332,245.55	296,195.87	36,049.67	Surplus
Estonia	1,034.18	1,178.75	-144.56	Deficit
Hungary	2,439.51	2,234.64	204.86	Surplus
Latvia	904,015.50	1,103,074.00	-199,058.50	Deficit
Lithuania	2,051,896.25	2,232,527.40	-180,631.16	Deficit
Poland	66,947.72	66,833.80	113.92	Surplus
Romania	4,859.31	5,686.61	-827.31	Deficit
Slovak	5,646.23	5,328.77	317.46	Surplus
Slovenia	2,159,017.38	2,106,084.28	52,933.10	Surplus

Source: EMIS, 2018.

Based on the average value of trade balance in CEECs illustrated in table 3, it may conclude that the trade balance of CEECs are grouped into two categories namely deficit and surplus. The first group countries who have a surplus of trade balance are the Czech Republic, Hungary, Poland, Slovak, and Slovenia. The second group of nations who have a deficit in trade balance are Albania, Bulgaria, Croatia, Estonia, Latvia, Lithuania, and Romania.

Results of regression analysis to examine coefficient determination and the effect of domestic **currency on** the trade balance in table 4.

Table 4. Hypothesis Testing

CEE Countries	R²	Sig	Hypothesis
Albania	0.108	0.015	Supported(*)
Bulgaria	NA	NA	NA (FER is constant)
Croatia	0.388	0.000	Supported (*)
Czech Republic	0.010	0.452	Not Supported
Estonia	0.000	0.990	Not Supported
Hungary	0.011	0.436	Not Supported
Latvia	0.011	0.441	Not Supported
Lithuania	0.053	0.085	Supported(**)
Poland	0.122	0.008	Supported (*)
Romania	0.222	0.000	Supported(*)
Slovak	0.004	0.642	Not Supported
Slovenia	0.017	0.339	Not Supported

Source: EMIS, 2018.(*) with alpha 5%, (**) with alpha 10%.

Based on the determination coefficient (R^2), the value of R^2 ranges from 0.053 until 0.388. The highest R^2 is about 38,8% in Croatia. It means 38.8 % of the variation in a deficit of trade balance is explained by the depreciation of domestic currency based on the assumption that both the inelasticity price of import and export commodities. The other R^2 meaning depends on its value as similar in the previous explanation.

According to the significant test compared to alpha 5% and 10%, the hypothesis is accepted in case of countries namely Albania, Croatia, Lithuania, Poland, and Romania. It refers that depreciation domestic currency has a positive effect on the deficit of trade balance with assumption inelasticity price of import and export product demand. It describes 2 pathways in export and import commodities flow. The first path, if the domestic currency depreciates so it has an impact on the increase of import products price and the decrease of export commodities with assumption inelastic price at the same time. Consequently, the aggregate demand quantities of import products still increase and the aggregate demand numbers of export commodities decrease so the deficit of trade balance may increase.

The direction of fluctuation foreign exchange rate on the trade balance is illustrated in table 5. According to the negative coefficient in the regression for Lithuania and Romania case, the conditions are depreciation of domestic currency and deficit of trade balance. The high depreciation of domestic currencies may lead to aggregate import price more expensive and aggregate export price more affordable, then the aggregate demand of the import products may still increase with the inelastic import price assumption and the aggregate demand of export commodities may rise with the elastic export price assumption. These conditions simultaneously may reduce the deficit of trade balance.

Furthermore, based on the positive coefficient in the regression for Albania and Croatia evidence, the circumstances are an appreciation of domestic currency and deficit of trade balance. The high appreciation of the home country's currency may cause deteriorating the deficit of trade balance through the assumption that the elastic price of the import and export commodities aggregate demand at the same time. Referring to the previous assumption, if the domestic currency appreciates so

the import price aggregate will decrease and the import demand will increase. In the export condition, appreciation of domestic currency may lead to a decrease in the aggregate of export demand. On consequence, the deficit of trade balance may rise significantly. This result supports previous results of research namely Arize et al. (2017) and Bahmani-Oskooee & Halicioglu (2017).

Table 5. Foreign Exchange Rate Direction of Trade Balance Summary

CEE Countries	B	Hypothesis	Fluctuation Domestic Currency	Trade Balance	Assumption and Justification
Albania	453.75	S	Appreciation	Deficit	Elastic price aggregate of import and export products aggregate demand
Croatia	5,816, 230.795	S	Appreciation	Deficit	Elastic price aggregate of import and export products aggregate demand
Lithuania	-293, 404.24	S	Depreciation	Deficit	Inelastic price aggregate of import products aggregate demand and elastic price of export products aggregate demand
Poland	6834.5	S	Depreciation	Surplus	Elastic price aggregate of import and export products aggregate demand
Romania	-493.96	S	Depreciation	Deficit	Inelastic price aggregate of import aggregate demand and elastic price of export products demand

Source: EMIS, 2018. S = Supported

Finally, the meaning of positive coefficient in the regression model for Poland analysis, the conditions are depreciation of domestic currency and surplus in the trade balance. The depreciation may also lead to a surplus of trade balance through assumption elastic price aggregate of export and import products aggregate demand. If the domestic currency rises so the import aggregate price will increase then the higher import price may reduce the aggregate demand for import goods. On the export side, the depreciation of domestic currency may have an effect on the lower export price so the demand of export demand may increase. On consequence, the surplus of trade balance may likely increase.

5. Conclusions

Most of the domestic currencies of CEECs tended to depreciate denominated to Euro. It may lead to the deficit of trade balance. The value of R^2 in this research

arrays between 0.053 and 0.388. The highest R^2 value is about 38,8% meaning 38.8 per cent of the variation in a deficit of trade balance is explained by the depreciation of domestic currency with the assumption that inelasticity price of import and export commodities. The Hypothesis tested in this research is supported in cases of countries namely Albania, Croatia, Lithuania, Poland, and Romania. The depreciation of domestic currency compared to the Euro may create import goods more expensive and export goods more affordable and simultaneously lead to a deficit of trade balance. Furthermore, the appreciation of domestic currency denominated to the Euro may make import goods more affordable and export commodities more expensive than these simultaneously increase the deficit of trade balance with the assumption both of import and export price are elastic. Finally, the depreciation of domestic currency may cause the import price more expensive and the export price cheaper than these concurrently may lead to a surplus of trade balance with the assumption inelastic price of import and export products.

It implies that the countries namely the Czech Republic, Hungary, Poland, Slovak, and Slovenia which have a surplus in the trade balance maintain and sustain the export quantity more competitive. It is suggested to investigate the competitive export products and the inelasticity values of export and import commodities.

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