WORKING PAPER

12 (51) 2013

BANK OF ALBANIA

THE "J-CURVE" EFFECT IN BILATERAL TRADE: THE IMPACT OF CURRENCY DEPRECIATION ON TRADE BALANCES BETWEEN ALBANIA AND ITS MAIN TRADING PARTNERS

Alban Pllaha*

* *Alban Pllaha, Research Department, Bank of Albania*
e-mail: apllaha@bankofalbania.org

The views expressed here are of the author and do not necessarily reflect the views of the Bank of Albania.

I would like to thank the Head of the Research Department at Bank of Albania, Ph.D. Altin Tanku, who initiated the idea of testing the J-curve phenomenon in Albania and supported this study with valuable ideas and suggestions. Also, I would like to thank the colleagues participating at the "6th South-Eastern European Economic Research Workshop, Tirana, November 2012" for their helpful comments and peer reviews. I am also grateful to all other colleagues at the Research Department at Bank of Albania, in particular to Mr. Gerti Shijaku, Mrs. Elona Dushku, Mr. Ilir Vika and Mr. Bledar Hoda, for their useful recommendations and for providing a supportive and excellent research environment.

CONTENTS

Abstract 5

1. Introduction 6

2. The Trade Balance Model 10

3. Empirical Results 14

4. Conclusions 19

5. References 21

6. Appendices 23

ABSTRACT

This study evaluates the effects of exchange rate on bilateral trade flows between Albania and its main trading partners namely: Euro area, China, Greece, Germany, Italy, Kosovo and Turkey. The material seeks empirical evidences on the existence of the "J – curve" phenomenon in bilateral trade for the 1998 – 2012 period. The "error – correction model" approach seems to be the appropriate econometrical model in identifying the short and long-run effects of the real depreciation of the domestic currency (Albanian Lek) on bilateral trade balances between Albania and its main trading partners. One of the main findings of this paper is that the J-curve hypothesis is only supported in the cases of trade with Italy and Turkey. Empirical results also suggest that a real depreciation of Albanian Lek positively affects bilateral trade balances in the long run, however, in the short run these effects seem to be statistically not important.

Key words: J-curve, trade balance, bilateral trade, exchange rate, Albania, currency depreciation, trading partners, cointegration.

1. INTRODUCTION

Trade balance is an important component of an economy. According to the economic theory a negative trade balance can be improved through a real exchange rate depreciation of the domestic currency, at least in the long run. A real devaluation of the domestic currency is expected to affect both trade prices and trade volumes. Thus, domestic products become cheaper, compared to foreign products, as with the same amount of foreign currency more local products can be bought (price elasticity). To the same manner, foreign products become more expensive for domestic consumers, as with the same amount of domestic currency (now depreciated) less foreign products can be bought. Such developments are expected to also affect trade volumes in the medium and long run. The above reasons show that the depreciation of local currency is expected to boost domestic export flows and lessen imports flows, resulting thus in an improved trade balance. However, the response of trade volumes (imports and exports) to the currency depreciation will not occur suddenly. International trade theory suggests that exchange rate depreciation will initially worsen trade balance in the short run. The fundamental argumentations for the initial worsening of the trade balance arise due to the following reasons: "products in transit have already been priced according to the old exchange rates, not reacting thus to changes in exchange rate" Krueger (1983). In addition, Magee (1973) suggests that the short-run deterioration of trade balance happens because trade contracts take plenty time to adjust/adopt to changes in the exchange rate. It is also argued that during times characterized by high volatility of exchange rates, traders become more sceptical in signing new trade contracts, trying to avoid risk exposure to uncertainty provided by the volatile exchange rate (see Bahmani-Oskooee and Kutan, 2008). In international trade theory such an occurrence, the initial short-run worsening of trade balance resulting then in an improved one in the long run, due to exchange rate depreciation, is known as the "J-curve" effect. The "J-curve effect" gets its name from the "J-shape" of trade balance, going downwards in the short run and then upraising in the long run, looking like the letter "J".

The trade balance component becomes even more important when dealing with a small open economy like the Albanian one. Similarly to most other South Eastern European (SEE) economies, the Albanian economy is import oriented, characterized by a negative trade balance throughout the period 1992 – 2011. It seems that throughout this period domestic consumption in SEE countries could not be fulfilled by domestic production, leading thus to import oriented economies (see A. Pllaha, 2011). Such a characteristic (the negative trade balance) is classical for the transition economies, shifting from centralized economies toward free market ones. Coming from a centralized economy domestic firms in Albania were characterized by inefficient infrastructure and equipment. This fact turned them practically unable to compete with more advanced enterprises, such as the European Union ones. The deficient domestic production combined with the growing domestic consumer demand drove to the widening of the trade deficit throughout most of the transition period in Albania.

In order to promote economic and trade growth, Albania similarly to other SEE countries, has signed several free trade agreements and trade integration initiatives[1]. The Stabilization Association Agreement (SAA) with the European Union and the bilateral free trade agreements with SEE countries have positively contributed in boosting trade flows between Albania and its main trading partners (See A. Pllaha, 2011)[2].

The J-curve phenomenon is attracting more and more attention in the research field of international trade. However, the J-curve phenomenon has not yet been tested for the Albanian economy. To the authors' best knowledge there are no research studies seeking for empirical evidences of the J-curve in Albania. However, there are a couple of related studies on the relationship between exchange rate and trade flows[3].

[1] In 2009 the "Stabilization Association Agreement" between Albania and the European Union was ratified. In addition, throughout the period 2000 – 2004 Albania and most SEE countries have signed bilateral free trade agreements among them.

[2] Using a panel data gravity model approach, A. Pllaha (2011) suggests that bilateral free trade agreements, among South Eastern European countries, have had a positive contribution on intensifying bilateral trade flows.

[3] Agolli (2004), Vika (2006) and Hoda (6th Economic Research in SEE; Tirana, November, 2012), undertake some comprehensive attempts seeking evidences on the contribution of exchange rate changes on trade flows.

Using quarterly data for the period 1993 – 2003, Agolli (2004) tries to seek empirical evidences on the effect that the exchange rate uncertainty has played in trade volumes. The main findings of this study suggest that, imports to Albania are more sensitive to exchange rate fluctuations in the long run, while exports are more sensitive to currency behaviour in the short run.

Vika (2006), using an Error Correction Model (ECM), applies quarterly data (1996 Q1 – 2005 Q4) seeking empirical evidences on the reaction of trade flows to changes in income, relative prices and exchange rate. This study suggests that real income is the main contributor of trade flows in the long run. Vika (2006) suggests that, in the long run, imports to Albania are mostly affected by relative prices rather than the exchange rate. On the other hand, Vika (2006) finds out that Albanian exports react less to relative prices. However, he suggests that Albanian exports in the long run are mostly determined by fluctuations in lek/euro exchange rates.

In his work, Hoda (2012), evaluates the effects of exchange rate on the international trade, seeking evidences on whether the "Marshall-Lerner condition" holds in Albania. Using the cointegration approach (applying quarterly data 1998 – 2012), Hoda (2012) finds out that trade flows in Albania are mainly driven by income. In addition, Hoda's (2012) outcomes underline that the exchange rate plays an important role in stimulating Albanian exports in the long run, thus suggesting that the exchange rate has a positive effect in improving the trade balance in Albania.

Albania's trade situation has changed quite significantly in recent years, both in import-export structure as well as its strategic trading partners[4]. Some of the main factors that may have contributed to these changes are: the bilateral free trade agreements with almost all SEE countries, the free trade agreement with the EU, the global economic crises[5].

[4] Please refer to appendix B, and written explanations in the appendices section.

[5] Albania's main trading partners (Italy and Greece) have been severely affected by the global economic crises.

To this end, it becomes very important, both in terms of policymaking, as well as in terms of academic research, to seek evidences on the J-curve.

The main objective of this study is to investigate if there are empirical evidences on the existence of the J-curve phenomenon for Albania's trade balances with its main trading partners[6]? By trying to answer the above question it is also expected to get a more profound overview on the effects of exchange rate on Albania's trade balance and competitive advantage of domestic goods. This research paper has the followings structure: Section 2 introduces the model and estimation approach; Section 3 discuses empirical findings and results; whereas, Section 4 summarizes and concludes.

[6] The material analyzes the effect of real exchange rate on bilateral trade balances between Albania and its main trading partners which are in aggregated terms: the Euro area (EA) and in disaggregated terms the individual countries: China, Germany, Greece, Italy, Kosovo and Turkey. All together the six individual trading partners count for more than 65% of Albania's foreign trade.

2. THE TRADE BALANCE MODEL

The J-curve theory was initially introduced into the international trade theory during the early 1970's. Magee (1973) was the first interested in such a theory. The aim of his study was to analyse why U.S. trade balance worsened in the short run, even though US Dollar depreciated considerably in 1971, creating thus the first recorded empirical evidences of the J-curve. Krueger (1983) underlined the existence of the J-curve phenomenon in trade balance and attributed it to the fact that goods in transit are already bought, not reacting thus to the currency depreciation. It was Bahmani – Oskooee (1985) who then introduced a simplified model which related trade balance to real exchange rate as well as other explanatory variables. His model framework aimed at testing the existence of the J-curve phenomenon through applying the lag structure to the real exchange rate, assessing then the statistical importance of the estimated lagged coefficients and their expected signs. Several authors adopted this model to test the existence of the J-curve occurrence; Karunaratne (1988), Moffett (1989), Brada et al. (1997) etc.

However, this model faced some considerable opposing reviews from authors of the international trade theory. Bahmani – Oskooee's model was mainly criticized for using non-stationary data. According to Engel and Granger (1987), this might lead to spurious regressions. In order to avoid the above criticism, researchers of international trade started applying the cointegration test for evidencing the effect of exchange rate depreciation on trade balance in the long run. To observe the short-run reaction the error-correction model is used (Bahmani – Oskooee and Kutan, 2008). Rose and Yellen (1989), Bahmani – Oskooee (1991), Wilson (2001) and Bahmani – Oskooee and Kutan (2008) are some of the authors applying the above approach.

Scholars follow two main approaches in studding the J-curve phenomenon. The first group of authors study the J-curve phenomenon based on the aggregated approach, by employing the bilateral approach between the home country and the rest of the world. The second group of authors implements the disaggregated

pattern, by observing the bilateral trade balances between home country and each specific trading partner. The second group of researchers argue that the aggregated approach might neglect the J-curve phenomenon between bilateral trading partners. In other words, due to trading partners specific characteristics, trade balance of home country might improve with some trading partners, and at the same time deteriorate with some others. Thus, by applying the aggregated pattern, one trading partner might counterbalance the other, thus resulting in lost information about the J-curve phenomenon.

Findings from the above mentioned authors reveal mixed results regarding the effects of currency devaluation on trade balance. However, it seems that most authors agree on the fact that trade balance is dependent on the following key variables: domestic income, foreign income and exchange rate.

According to the traditional theory, the basic trade balance model can be specified in the following form (see Rose and Yellen, 1989):

$$logTB_{ij,t} = a_0 + a_1\, logY_{i,t} + a_2\, logY_{j,t} + a_3\, logREER + u^t \qquad (1)$$

Where $TB_{ij,t}$ stands for the trade balance ratio between home country "i" (Albania in this case) and trading partner "j" (Albania's trading partners under consideration). The trade balance ratio can be defined as Albania's imports from trading partner "j" over Albanian exports to the same country, that is, a shrink of the "TB" indicates an improvement of trade deficit[7]. $Y_{i,t}$ stands for Albania's real income, where $Y_{j,t}$ stands for the real income of partner country j. REER represents the measure of real effective exchange rate[8]. Trade balance, $Y_{i,t}$, $Y_{j,t}$ and REER are expressed in their natural logarithm form (ln).

Regarding the signs expectations from equation (1), there are no preliminary expectations for a_1 and a_2. The rationale is purely economic theory. Therefore, economic theory explains that an

[7] See also Bahmani-Oskooee (1991) and Ferda (2007).

[8] Following Egert (2005) as well as other authors of the field the real effective exchange rate. based on CPI and PPI is used for the exchange rate indicator.

increase in domestic income would lead to more imports from partner country, thus resulting in a positive estimation of the a_1 coefficient. However, if the increase in domestic real income arises because of a boost in domestic production of import substitutes, it could lead to a shrink of imports (which are now being replaced by domestic products). This will result in a negative estimate of a_1. Therefore, the outcomes for a_1 could be either positive or negative depending on whether the increased domestic income affects the demand side or the supply side. By the same manner, the expected value of a_2 could be positive or negative. Finally, a real depreciation of domestic currency is expected to increase exports and decrease imports, suggesting thus a positive estimation of a_3 which also satisfies the ML condition[9]. However, the J-curve hypothesis suggests that if the short-run trade balance will initially deteriorate, thus an $a_3 < 0$ is expectable. To test the short-run cointegration, several authors use the Autoregressive Distributed Lag (ARDL) approach Pesaran et al. (2001). The popularity of the ARDL approach (also known as the bounds testing) can be mostly attributed to the fact that this method can be applied whether the fundamental variables are merely I(0), merely I(1) or a mixture of the two variables (See Ferda, 2007).

The Error Correction Model (ECM) is designed to be used with non-stationary series which are known to be integrated. The ECM possesses some admirable tools in estimating both the short and the long-run effects. However, the ECM is designed to be applied with non-stationary series or I(1). Therefore, before deciding to whether or not use the ECM approach, the series need to be pre-examined for the unit root test. To test for such a condition, the Augmented Dickey-Fuller test and the Philips-Perron test were conducted.

The tests' outcomes reveal that almost all the series at level appear to be non-stationary, or I(1) satisfying thus the unit root condition. The only exception is the trade balance series with China, which results as a I(0), hence preventing the application of the error-correction model in China's case. However, the error-correction model is appropriately applicable in estimating the trade balance equation with the rest of the partner countries, in seeking for

[9] For more details refer to Ferda (2007) pp. 6-7.

cointegration relation between the series (please refer to Table 3 in the appendix section). ECM models can be appropriately used for estimating both the short-run and long-run effects between the exchange rate and the trade balance.

By implementing the example of Ferda (2007) we adopt the error-correction model approach, suggested by Kremers et al. (1992), to determine cointegration. A general error correction model for the trade balance equation can be specified as follows:

$$\Delta \log TB_{ij,t} = \alpha 0 + \sum_{k=1}^{m} \alpha 1k \, \Delta \log TB_{ij,t-k} - \sum_{k=0}^{m} \alpha 2k \Delta \log Y_{i,t-k}$$

$$+ \sum_{k=0}^{m} \alpha 3k \Delta \log Y_{j,t-k} + \sum_{k=0}^{m} \alpha 4 \, \Delta \log REER_{t-k} + \lambda EC_{t-1} + u_t$$

where m stands for the lag length, whereas λ stands for the speed of adjustment of the "EC" error correction term. The next section of the paper discusses the conducted tests and diagnostics of the model and series, as well as the empirical results.

3. EMPIRICAL RESULTS

To test for the J-curve phenomenon seven key trading partners of Albania are taken into consideration. More specifically: the Euro Area, China, Germany, Greece, Italy, Kosovo and Turkey. Quarterly data over the period 1998 Q1 – 2012 Q2 are applied to estimate the trade balance model specified in the previous section, with the following trade partners: Euro area, Germany, Greece, Italy, and Turkey. In cases of Kosovo and China fully required time series are only available from 2004 Q1 and 2005 Q2, respectively[10]. In addition, quarterly data on Kosovo's GDP are missing. Thus, the interpolation technique using Eviews-6 was applied to convert Kosovo's GDP annual data into quarterly frequency.

To determine the optimum lag structure, the Akaike's Information Criterion is applied. The following table shows the outcomes from the error-correction model and the statistical diagnostics. Table 1 shows the proposed optimum lag structure for all five trading partners in consideration.

Table 1 Lag structure results based on the AIC lag suggestion Criterion

	Country:					
	Euro area	Germany	Greece	Italy	Kosovo	Turkey
Number of Lags	4 Lags	1 Lag	3 Lags	4 Lags	3 Lags	5 Lags

The next required diagnostic in properly applying the Error Correction Model is the Johansen test for cointegrating variables. This test is successfully passed for five out of six Albania's trading partners. Results from the Johansen test suggest that in the cases of Euro area, Germany, Greece Italy and Turkey there exists one cointegrating relationship among variables. Whereas, the Johansen test for Kosovo indicates two cointegrating relations among the variables (please refer to Table 4 in the appendix section).

[10] Trade balance between Albania and Kosovo are not available for the period 1998 Q1 –2003 Q4. Similarly trade balance data between Albania and China are missing from the 1998 Q1 – 2005 Q1.

Once the required diagnostics are satisfied, it may be preceded with the ECM outcomes. Table 2 shows the results from the Error Correction Model, both the short and long-run coefficients.

Table 2 Short-run and Long-run estimations based on the AIC lag suggestion Criterion

Short-run Results						
Variable\Country:	Euro area	Germany	Greece	Italy	Kosovo	Turkey
$\Delta logREER_{t-1}$	-0.6246 (-0.73)	1.6877 (1.06)	-0.8002 (-0.81)	-2.4490** (-2.90)	5.1744 (0.81)	-5.0676 (-1.17)
$\Delta logREER_{t-2}$	0.4430 (0.54)		-0.8419 (-0.85)	-0.9431 (-1.06)	3.1842 (0.51)	-5.2671 (-1.30)
$\Delta logREER_{t-3}$	0.1873 (0.21)		0.9223 (0.94)	-0.5819 (-0.70)	-10.838 (-1.72)	-6.5285* (-1.94)
$\Delta logREER_{t-4}$	-0.9519 (-1.19)			0.2472 (0.36)		-0.7198 (-0.17)
$\Delta logREER_{t-5}$						3.8454** (3.38)
Long-run Results						
Constant	16.75	97.08	36.64	-48.23	-106.75	57.09
$logY_{it}$	-0.6806** (6.74)	2.4723** (-5.69)	-1.7742** (5.53)	-1.4002* (1.76)	5.378 (-0.51)	0.7952 (-0.39)
$logY_{jt}$	3.0767 (-1.57)	-8.5380** (4.01)	2.6497 (-1.39)	0.2043 (0.03)	-11.204 (0.59)	-3.4015 (1.09)
$logREER_t$	1.5209** (-3.07)	2.6451** (-2.97)	2.7812** (-2.82)	6.0559** (-3.37)	1.14 (-0.32)	6.4057** (-3.57)
Diagnostics						
Stat-F	4.087	7.224	2.554	3.282	3.913	3.956
EC_{t-1}	-0.5320 (-2.48)	-0.6926 (-4.66)	-0.2322 (-3.29)	-0.288692 (-3.14)	-0.8529 (-4.78)	-0.7218 (-4.33)
LM	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied
Adj. R^2	0.559	0.408	0.279	0.486	0.583	0.547

REER = Real Effective Exchange Rate, Y_i = Albanian GDP, Y_j = Trading partner's GDP, EC = error-correction term, t = current quarter, t-statistics are in ().*indicates statistical significances at 10 %, ** indicates statistical significances at 5 %.

Table 2 shows both the short-run and long-run effects projected by the error-correction model. As mentioned earlier, the main focus of this paper is to seek evidences for the J-curve phenomenon, so for brevity reasons the short-run section of the above table shows only the results of the real effective exchange rate. As stated earlier, in order for the J-curve theory to hold, negative significant coefficient are to be expected in the short-run followed then by positive

coefficients in the long-run. Short-run results from the above table reveal some interesting outcomes. At least in three countries, negative coefficients are followed by a positive one in the short run (in the case of Greece, Italy and Turkey). However, these short-run coefficients are statistically insignificant in the case of Greece. The above results suggest that the effect of exchange rate depreciation does not have statistically important effects on the trade balance, at least in the short-run. Only in the cases of Italy and Turkey the short-run effects seem to be statistically significant and with the expected negative sign. To seek for the J-curve evidences, the long-run effects need also to be considered. Table 2 provides some interesting results regarding the long-run effects of the exchange rate on the trade balance. In five out of six trading partners taken into consideration the real depreciation of exchange rate seems to have a long-run effect. The exchange rate coefficients of all six trading partners have a positive sign in the long-run. However, the long-run coefficient of exchange rate effect on trade balance with Kosovo seems to be statistically insignificant. On the other hand, currency depreciation in Albania seems to positively affect trade balance with Euro area, Germany, Greece, Italy and Turkey in the long run. The Johansen Cointegration test technique was used to examine the existence of a cointegration relation between the variables in the error-correction model.

The LM condition is also satisfied for all six trading partners revealing no serial correlation evidences. Theory on error – correction models suggests that a statistically significant coefficient outcome of the ECt-1 smaller than "1" and with a negative sign supports the existence of cointegration. Results shown in the diagnostics section of Table 2 confirm that such a condition is satisfied for all six trading partners.

The satisfied condition of cointegretion authorizes further diagnostics steps toward the aimed objective of evidencing the J-curve phenomenon. As stated earlier in the paper the J-curve phenomenon needs to be characterized by negative coefficients in the lagged short-run period followed by positive ones in the long run. After running the above mentioned diagnostics and analyses, it is clear that the J-curve phenomenon seems to only hold in cases

of Italy and Turkey. Real depreciation of Albanian Lek seems to negatively affect bilateral trade balances between Albania and Italy, and between Albania and Turkey in the short-run followed then by an improvement of the trade balances in the long run.

The impulse response technique (using Eviews 6 software) is used to examine the reaction of trade balance on currency depreciation. The impulse response technique permits the overtime observation of the reaction of trade balance to an exchange rate shock.

Chart 1: Accumulated Response of LOG(TB_TR) to Cholesky One S. D. LOG(REER) Innovation

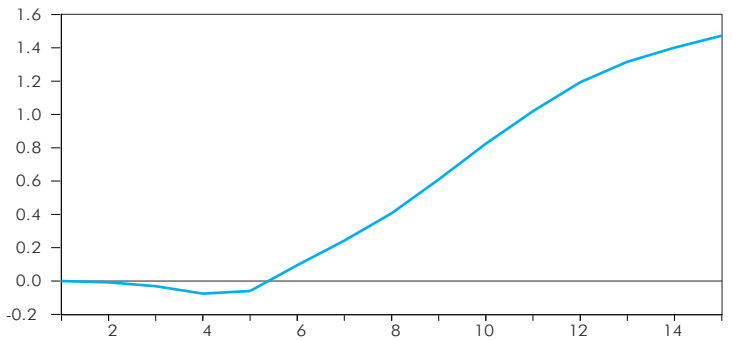
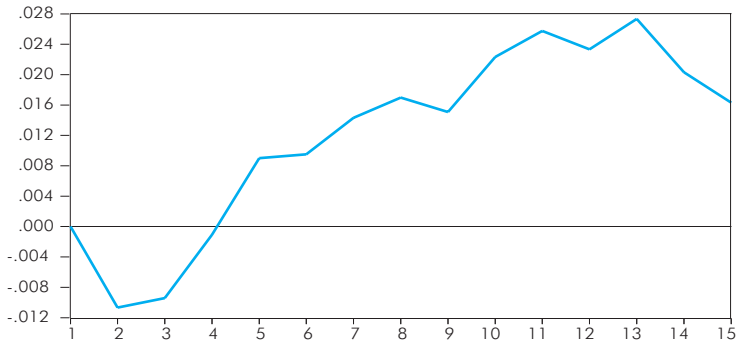


Chart 2: Accumulated Response of LOG(TB_IT_SA) to Cholesky One S. D. LOG(REER)*-1 Innovation



Charts 1 and 2 show the reactions of bilateral trade balance between Albania and Turkey (Chart 1), and between Albania and

Italy (Chart 2) as a reaction to real depreciation of Albanian Lek. Both reactions of trade balances show a clear J-curve shape.

The impulse response technique provides also the graphical visualization of the response of trade balance to real depreciation of the Albanian Lek. As the path of the curved lines shows, the trade balances deteriorates in the short run, and after few quarters (five quarters in case of Turkey and four quarters in case of Italy) trade balances start recovering towards a new improved trade balance levels. The curved lines in both charts show a clear J-shape pattern of the reaction of the trade balances to shocks on the Albanian Lek.

4. CONCLUSIONS

The main objective of this paper was to test the J-curve hypothesis between Albania and its six main trading partners (Euro area, China, Germany, Greece, Italy, Kosovo and Turkey). Using an error-correction model approach, data from 1998 Q1 – 2012 Q2 (2004 Q1 – 2012 Q2 in case of Kosovo) were applied to test the J-curve phenomenon. After running the required statistical tests and diagnostics the outcomes reveal some interesting results. The J-curve hypothesis is only supported in the cases of trade with Italy and Turkey. The results suggest that the real depreciation of Albanian Lek does not have a significant effect on trade balance at least in the short run (apart from cases of Italy and Turkey, all other four trading partners coefficients are statistically insignificant in the short run). In the case of Greece the short – run coefficients have the expected negative sign followed by a positive one supporting thus the J-curve hypothesis. However, the short – run coefficients are statistically insignificant. On the other hand, real depreciation of Albanian Lek seems to positively affect trade balance in the long run. Error – correction model results suggest that in five out of six trading partners (long – run coefficients for Kosovo[11] are statistically unimportant) the real depreciation of Albanian Lek has a statistically significant positive effect on the long – run trade balance.

The empirical results of this study propose that real depreciation of local currency in Albania does have an effect on bilateral trade balance, at least in the long run. However, the results reveal that the effects of real depreciation of Albanian Lek on trade balance are not immediate. They also show that exchange rate can be considered by policymakers as an instrument in promoting exports and economic growth. However, the efficiency of such a tool is not instant. Empirical outcomes also indicate that real depreciation of Albanian Lek might have contributed to the recent improvement of Albania's trade balance (since 2008 Albania's trade balance has shown improvements signs), albeit, further studies are required on empirically proving such a matter.

[11] As stated earlier the trade balance equation with Kosovo uses only a short period time series (2004 Q1 – 2012 Q2), thus the outcome results from the error-correction model might have some handicaps due to the time series brevity.

The author proposes the need to carry out further studies related to the services' trade balance. In addition, the "J-curve" phenomenon needs also be tested in sectorial as well as import/export composition of products and services, seeking for more detailed evidences on comparative advantages due to currency depreciation.

5. REFERENCES

Agolli, M.(2004), "Exchange Rate Volatility Effect on Trade variations," Albanian Centre for international Trade, Research Papers, May 2004.

Bahmani-Oskooee and Kutan. (2008) "The J-Curve in the Emerging Economies of Eastern Europe" The Center for Research on International Economics and Department of Economics The University of Wisconsin-Milwaukee Milwaukee, WI 53201.

Bahmani-Oskooee, M. (1985), "Devaluation and the J-Curve: Some Evidence from LDCs", The Review of Economics and Statistics 67(3), 500-504.

Bahmani-Oskooee, M. (1991), "Is there a Long Run Relation Between the Trade Balance and the Real Effective Exchange Rate of LDCs?", Economics Letters, 36(4), pp. 403-407.

Brada, J. C., A. Kutan and S. Zhou, (1997). "Exchange Rate Policy and Outward Orientation Developing Countries: The Turkish Experience", Journal of Development Studies, Vol. 33, pp. 675-692.

Engle, R. F., and C. W. J. Granger (1987). "Cointegration and Error Correction: Representation,Estimation, and Testing," Econometrica, 55 (2), 251-76.

Ferda, H. (2007), "The Bilateral J-curve: Turkey versus her 13 Trading Partners" MPRA Paper No. 3564, posted 07. November 2007.

Hoda, B. (2012), "The Role of Exchange Rates in International Trade Models: Does the Marshall-Lerner Condition Hold in Albania?", Bank of Albania's 6th Economic Research in SEE; Tirana, November, 2012.

Karunaratne, Neil Das (1988), "Macro-Economic Determinants of Australia's Current Account 1977-86.

Account,1977-86," Weltwirtschaftliches Archiv, Band 124, Heft 4, pp. 712-28.

Kremers, J. J. M., Ericson, N. R. and Dolado, J. J. (1992) The power of cointegration tests, Oxford Bulletin of Economics and Statistics, 54, 325-348.

Krueger, A. D. (1983) "Exchange rate determination", Cambridge University Press, Cambridge.

Magee, Stephen P. (1973), "Currency Contracts, Pass Through and Devaluation", Brooking Papers on Economic Activity.

Moffett, Michael H. (1989). "The J-Curve Revisited: An Empirical Examination for the United States", Journal of International Money and Finance, Vol. 8, pp. 425-444.

Pesaran, M. H., Y. Shin, and R. J. Smith. 2001. "Bound Testing Approaches to the Analysis of Level Relationship," Journal of Applied Econometrics, 16, 289-326.

Pllaha, A. (2011), "Free Trade Agreements and trade integration among South Eeastern European countries: Gravity model estimations," 5th Economic Research in SEE; Tirana, November, 2011.

Vika I. (2006) "Real Effective Exchange Rate in Albania: Concept and Measurement", Bank of Albania Working Paper no.2 (18).

Rose, A.K., and J.L., Yellen (1989), "Is There a J-Curve?" Journal of Monetary Economics 24(1), 53-68.

Wilson, Peter. (2001), "Exchange Rates and the Trade Balance for Dynamic Asian Economies Does the J-Curve Exist for Singapore, Malaysia and Korea?", Open Economies Review, Vol. 12, pp. 389-413.

6. APPENDICES

APPENDIX A

Table 3 Unit root test results

	ADF test			PP test		
		Level			Level	
	c	t & c	none	c	t & c	none
pbb_al	[.9995]	[.5961]	[.8922]	[.9901]	[.7170]	[1.000]
pbb_ch	[1.000]	[.9959]	[.9995]	[1.000]	[.9992]	[1.000]
pbb_ez	[.3346]	[.3696]	[.9465]	[.3504]	[.7898]	[.9926]
pbb_ger	[.8036]	[.2067]	[.9967]	[.8504]	[.3808]	[.9930]
pbb_gr	[.2091]	[1.000]	[.3994]	[.2949]	[1.000]	[.8556]
pbb_it	[.1349]	[.4882]	[.8445]	[.1953]	[.8040]	[.9015]
pbb_ks	[.6914]	[.1067]	[.9999]	[.6893]	[.0959]	[.9999]
pbb_tr	[.9884]	[.3322]	[.9990]	[.9884]	[.4031]	[.9990]
reer	[.0042]	[.3404]	[.0817]	[.0125]	[.3657]	[.1873]
tb_ch	[.0024]	[.0010]	[.0005]	[.0024]	[.0010]	[.0005]
tb_ez	[.3354]	[.0517]	[.3677]	[.0358]	[.0340]	[.2453]
tb_ger	[.0320]	[.0334]	[.6135]	[.0650]	[.0364]	[.3762]
tb_gr	[.0556]	[.0858]	[.4902]	[.1035]	[.2270]	[.4694]
tb_it	[.0160]	[.0329]	[.0775]	[.0105]	[.0035]	[.0778]
tb_ks	[.1732]	[.5867]	[.6085]	[.0036]	[.0256]	[.4208]
tb_tr	[.0247]	[.0167]	[.0458]	[.0174]	[.0132]	[.0531]
		First Difference			First Difference	
	c	t & c	None	c	t & c	None
pbb_al	[.0114]	[.0125]	[.7744]	[.0000]	[.0000]	[.0032]
pbb_ch	[.5688]	[.0427]	[.6922]	[.0000]	[.0000]	[.0053]
pbb_ez	[.0249]	[.0647]	[.0050]	[.0187]	[.0647]	[.0040]
pbb_ger	[.0000]	[.0002]	[.0000]	[.0000]	[.0001]	[.0000]
pbb_gr	[.8818]	[.0001]	[.3870]	[.0027]	[.0001]	[.0002]
pbb_it	[.0074]	[.0207]	[.0005]	[.0063]	[.0173]	[.0004]
pbb_ks	[.0000]	[.0000]	[.0017]	[.0000]	[.0000]	[.0000]
pbb_tr	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
reer	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
tb_ch	[.0000]	[.0000]	[.0000]	[.0001]	[.0000]	[.0000]
tb_ez	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
tb_ger	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
tb_gr	[.0012]	[.0061]	[.0000]	[.0000]	[.0000]	[.0000]
tb_it	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
tb_ks	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]
tb_tr	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]	[.0000]

Table 3 abbreviations: pbb = GDP, reer = Real Effective Exchange Rate, tb = Trade Balance, al = Albania, ch = China, ez = Euro Zone, ger = Germany, gr = Greece, it = Italy, ks = Kosovo and tr = Turkey

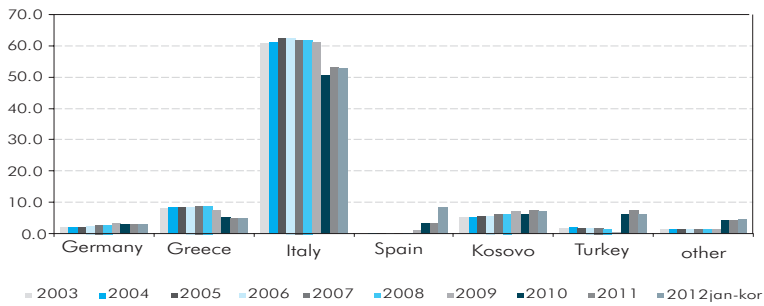
Table 4 Johansen cointegration test

	Country:					
	Euro area	Germany	Greece	Italy	Kosova	Turkey
Cointegrating Relations among Variables	1	1	1	1	2	1

APPENDIX B

APPENDIX B. 1

Chart 2 Albanian exports by trading partner weighted over total exports 2003 – 2012, in%



Source: Author's own calculations using data from Bank of Albania

Albania's trading partners structure has undergone through some significant developments, throughout the period 2003 – 2012. However, the most noticeable shifts are in Albania's traditional trading partners, Italy and Greece, whose exports weights over total exports have shown a downward trend between 2008 and 2012. Therefore, exports to Italy in 2008, weighted against total exports, counted for almost 61.76%. However, in 2012 the weight of exports to Italy only counts for 52.75% over total exports, showing a downward trend from year to year. A similar view appears with Greece, Albania's second most important traditional trading partner. The weights of exports to Greece, over total exports, have shrunk by almost 5 percentage points (2008 – 2012), showing a clear downward trend from year to year.

On the other hand, exports to Spain and Turkey grew significantly. Thus, the weight of exports to Spain, over total exports, jumped from almost 0.15 in 2008 to about 8.44% in 2012, showing a clear upward trend from year to year. Weights of exports to Turkey have also grown continuously from 2008 to 2012, up by almost

4.55 percentage points. Albania's exports to "the rest of the world countries" have also grown significantly (by almost 3 percentage points) between 2008 and 2012. Kosovo has also become an important trading partner for Albania, counting for about 7% of Albania's exports in 2012. Germany and China remain stable trading partners to Albania's exports.

Due to the financial crises (throughout 2008 – 2012), which has mainly affected Albania's main traditional partners (Italy and Greece), Albanian exporters seem to have switched to new exporting markets such as Turkey, Spain, and "rest of the world countries".

APPENDIX B. 2

Table 5 Composition of Albanian exports in goods 2008 – 2012, in % (SITC, Description)

Composition of exports in goods 2008 - 2012						
	Weight in %					
CODE and DESCRIPTION (SITC)						
	2008	2009	2010	2011	2012 (Q1+Q2)	Growth differences of weights in pp 2012 - 2008
0. Food and live animals	3,5	4,8	3,6	3,4	3,9	0,4
1. Beverages & tobacco	0,3	0,5	0,4	0,3	0,4	0,1
2. Raw materials, minerals	11,8	10,8	11,6	10,5	9,8	-2,0
3. Fuels and lubricants	8,9	12,1	18,0	21,2	24,9	16,0
4. Animal & vegitable oils & fats	0,0	0,0	0,1	0,1	0,1	0,1
5. Chemicals	1,1	1,7	1,0	1,3	0,9	-0,2
6. Manufactures	25,3	18,1	24,6	25,2	23,2	-2,1
7. Machinery and equipment	4,1	4,6	4,2	4,0	3,8	-0,3
8. Miscellaneous manufactures	44,9	47,4	36,6	33,9	33,0	-11,9
9. Other & unclassified	0,0	0,0	0,0	0,0	0,0	0,0
	0,0	0,0	0,0	0,0	0,0	0,0
TOTAL	100,0	100,0	100,0	100,0	100,0	0,0

Source: Author's own calculations using data from Bank of Albania.

The weights of "fuels and lubricants" over total exports of goods have grown significantly, jumping from 8.9% in 2008 to 24.9% in 2012, showing a clear growing trend from year to year. However, the weights of "miscellaneous manufactures" over total exports of goods shrunk by almost 12 percentage points (from 44.9% in 2008 to 33.0% in 2012), mainly contributed by reduced exports of the categories of "textile and textile articles" (-10.1 percentage points) and "footwear, headgears and umbrellas" (-2.0 percentage points).

APPENDIX B. 3

Table 6 Composition of Albanian imports in goods 2008 – 2012, in % (SITC, Description)

Composition of imports in goods 2008 - 2012						
	Weight in %					
CODE and DESCRIPTION (SITC)						
	2008	2009	2010	2011	2012 (Q1+Q2)	Growth differences of weights in pp 2012 - 2008
0. Food and live animals	11,9	12,2	12,7	12,1	12,8	0,9
1. Beverages & tobacco	3,2	3,8	4,1	3,3	3,5	0,4
2. Raw materials, minerals	2,1	2,9	1,8	1,4	1,4	-0,7
3. Fuels and lubricants	16,1	11,8	13,8	17,5	19,8	3,7
4. Animal & vegitable oils & fats	1,4	1,2	1,2	1,3	1,3	-0,2
5. Chemicals	9,7	11,2	11,1	10,6	11,7	1,9
6. Manufactures	23,8	25,0	26,3	24,8	21,5	-2,2
7. Machinery and equipment	22,0	22,8	19,4	20,1	18,9	-3,0
8. Miscellaneous manufactures	9,9	9,1	9,5	9,0	9,0	-0,9
9. Other & unclassified	0,0	0,0	0,0	0,0	0,0	0,0
	0,0	0,0	0,0	0,0	0,0	0,0
TOTAL	100,0	100,0	100,0	100,0	100,0	0,0

Source: Author's own calculations using data from Bank of Albania.

The structure of imports of goods has mostly been impacted by the categories of "fuels and lubricants" and "machinery and equipment". Imports of "fuels and lubricants" have grown by about 3.7 percentage points during this period (from 16.1% overt total imports of goods in 2008 to 19.8% in 2012). The main contributors to such increase in imports are the category of "mineral products", which for the same period grew by 2.9 percentage points. Weights of imports of "manufactures" and "machinery and equipment" over total imports of goods (2008 – 2012) have shown a downward trend, declining by 2.2 and 3.0 percentage points respectively. The main contributors to such declines are the categories of "base metals and articles of base metals" and "machinery and mechanical appliance, electrical equipment" whose imports have shrunk by 2.5 and 3.9 percentage points, respectively.

CIP Katalogimi në botim BK Tiranë

Alban Pllaha
The "J-curve" effect in bilateral trade:
The impact of currency depreciation on trade balances between Albania and its main trading partners- /
Pllaha Alban - Tiranë:
Banka e Shqipërisë, 2013

-32 f; 15.3 x 23 cm.

Bibliogr.
ISBN: 978-99956-42-90-2.

You may find this paper in the following address:

www.bankofalbania.org

If you want to receive a hard copy of this paper, write to us at:

Bank of Albania
Sheshi "Avni Rustemi", Nr. 24, Tiranë, Shqipëri
Tel.: + 355 4 2419301/2/3; + 355 4 2419409/10/11
Fax: + 355 4 2419408

or send an e-mail to:

public@bankofalbania.org

Printed in 380 copies