

THE INTERNATIONAL ROLE OF THE EURO AND IMPLICATIONS ON ROMANIAN GDP. CASE STUDY: VÂLCEA COUNTY

CAMELIA MARIN, ISABELLA SIMA, MIHAELA RUXANDA, MANOLE SORIN
"CONSTANTIN BRÂNCOVEANU" UNIVERSITY – RÂMNICU VÂLCEA, UNIVERSITY OF
BUCHAREST, "CONSTANTIN BRÂNCOVEANU" UNIVERSITY – RÂMNICU VÂLCEA Nicolae
Balcescu Street 39
cameliamarin81@yahoo.com, i_onescu@yahoo.com

Abstract:

In the present article we plan to look into how the relationship between the single currency, the Euro, and the gross domestic product of our country, particularly focusing specifically on us gross domestic product of Vâlcea County. To achieve this we considered it necessary to analyze the role of the Euro as an international currency, and to present the evolution of the exchange rate between the Euro and our national currency, the Leu, and eventually we realized a model forecast of GDP for the period 1995-2009, Vâlcea County. Perhaps at first sight there is not a clear link between the Euro and the gross domestic product of a county in Romania, but taking into account that in 2007 we are part of the great family of the European Union, we thought it would be interesting to follow and this aspect.

Key words: Euro, GDP, exchange rate, regression model, forecast

JEL classification: F15 - Economic Integration

We begin with the presentation of this scientific role it holds the Euro on the international scene.

The main use of the American dollar is and will remain in the United States of America. Symmetrically, the main use of the Euro is and will remain within the Euro area and the European continent.

Taking as reference currency Euro, below we present conversion rates Euro-dollar and Euro-Yen, to see and comment then evolution. Because conversion rates change very often from day to day, we chose as reference period on the last day of the last five months of the year 2011¹.

**Table 1 – Euro conversion yearly rates of the main currencies of the world²
(Units per Euro)**

	2009	2010	2011
USD	1,2803	1,3863	1,3418
JPY	115,1158	125,1274	112,3912

Source: Table made by the authors on the basis of data taken from the <http://www.xe.com/ict/?basecur> website accessed on 1.02.2012

¹ Sima I., Marin C., Țenovici C., Nisipeanu E. - *Crisis in the euro area and the euro. The game of giants: euro vs. Dollar*, International Journal of Academic Research in Accounting, Finance and Management Sciences Magazine, Pakistan, Volume 02, Issue 01, 2012, ISSN: 2225-8329

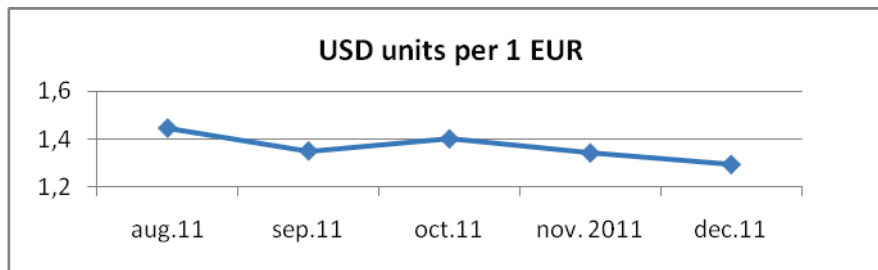
² The data are for January 31 of the three years taking into account

Table 2 – Euro conversion rates of the main currencies of the world³ (units per Euro)

	aug.2011	sep.2011	oct.2011	nov. 2011	dec.2011
USD	1,445	1,3503	1,4001	1,3418	1,2939
JPY	110,55	103,79	109,22	104	100,2

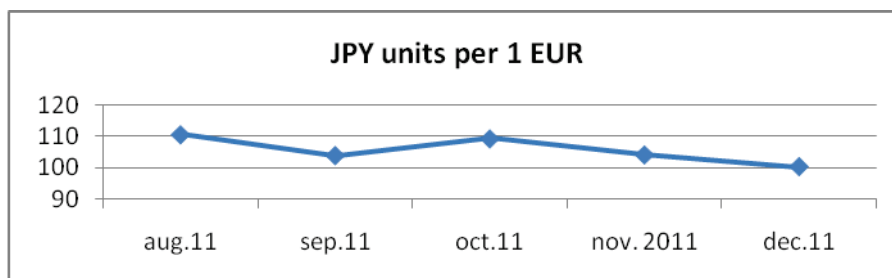
Source: Table made by the authors on the basis of data taken from the <http://www.x-rates.com> website accessed on 1.02.2012

Figure 1 – The conversion rates of the Euro-Dollar



Source: Graph made by authors based on data retrieved from the <http://www.x-rates.com> website accessed on 1.02.2012

Figure 2 – The conversion rates of the Euro-Yen



Source: Graph made by authors based on data retrieved from the <http://www.x-rates.com> website accessed on 1.02.2012

It is noted that both the U.S. dollar and Japanese yen have in the last year a trend down against the Euro, although the single currency going through this crisis of sovereign debt.

The analysis on the past three years, the 2009, 2010 and 2011, it appears that the dollar has seen a slight increase in 2010, at a rate of 1,2803 dollars per euro, at a rate of 1,3863 dollars per euro in 2011 to fall back to \$ 1 1,3418 Euros and in the first month of the year 2012 to arrive at a rate of 1,3176 dollars per 1 euro. The average data counted is a rate of 1,35228 dollars per euro, the lowest rate is 1,2669 per 1 euro, registered on 19 January 2012, while the highest rate was 1,4487 per 1 euro, registered on 29 August 2011.

As far as the Japanese currency is seen in the analysis of those three years that it has experienced a trend of increasing the conversion rate for the first two years, i.e. at a rate of 115,1158 yen per 1 euro in the year 2009, at 125,1274 yen per 1 euro in 2010 and in 2011 to decline at a rate of 112,3912 yen per 1 euro. Media of the conversion rates on the data taken into account is 104,239 yen per 1 euro, the lowest value recorded

³ The data collected are for last days of the months of August, September, October, November and December of the year 2011

on the 16 January 2012 (97,2501 yen per 1 euro), while the highest value was recorded on 25 August 2011 (111,31 yen per 1 euro). On the last day of January 2012, the conversion rate was 100,63 yen per 1 euro. We must have regard to the fact that this country is going through a period of restoration and it is possible that in the future we may be witnessing a "Japanese miracle" as happened after the Second World War. Indeed, as we pointed out before, the single currency, the Euro, has already had a huge international success, just as it had on the European continent, taking into account the fact that, as stated and M. Mussa⁴ in his work, in any one year of the occurrence of this currency was most often used for floating international securities.

In the past fifty years, until the advent of the Euro, the U.S. dollar held supremacy of the simple reason that he had no competitor. No other economy in the world not even approaching the size of the economy of the United States of America. If you were to go back in history, you might notice a similarity in terms of the influence of pound sterling on the financial market.

But, at some point, international financial market has a chance to glimpse the Euro, when the US dollar began to devalue. For example, in 2005, South Korea has announced that it will move its investments in currencies other than US dollars, which proved to be inspired given the events of the next three years.

After more than ten years since the creation of the single currency, there is still controversy regarding the European economic scene and beyond. They were powered by the sovereign debt crisis in the Euro area, while pessimists say that if it will not break, these crises will exist in the future. However, among the specialists in economy and people are hopeful, as are for example, Chinn and Frankel.

They predicted in 2005, following a study, that the euro could surpass the dollar in the year 2022 as currency, loan, but in their latest econometric calculations, in 2008, they approached this time horizon until the year 2015. Predictions of these specialists is based on the influence of the four main factors, described by me above, which economists consider crucial in winning international currency status:

- The economic size measured in output and trade;
- Deep, liquid and well developed financial markets;
- Confidence in the value of the currency;
- Market externalities.

While the first two enablers, both the euro and the dollar are at par, the dollar tends to fall below the level of the euro in relation to the third factor, despite disruptions by passing the Euro Area.

Thus, the vision of these specialists raises the question of inherent, if the dollar could lose its dominant role of leader of the world's currencies, and the answer might be Yes.

The first reason that comes to support this answer is that at the moment the euro exists on the market as a more genuine as the German mark and Japanese yen. The second reason is that the United States of America has on more than twenty-five years

⁴ Mussa M., *Exchange Rate Regimes and Increasingly Integrated World Economy*, FMI Ocasional Paper, 193, 2000, in Clark B.P. și Polak J.J., *International Liquidity and the Role of SDR in the International Monetary System*, IMF Staff Papers, Volume 51, Edition 1; Edition 2004, available at: http://books.google.ro/books?id=pQpd8LzSi1YC&pg=PA71&lpg=PA71&dq=paper+of+Mussa+Michael+2001&source=bl&ots=EcynjSOlcw&sig=Xd6ePMMqnsqx3D3SqzaZZXbUw7s&hl=ro&sa=X&ei=Ho2eUI_3Ccnvsgb-3oEw&ved=0CCYQ6AEwAjgU#v=onepage&q=paper%20of%20Mussa%20Michael%202001&f=false, accessed at 1.02.2012

of chronic current account deficit and the dollar has over thirty-five years of depreciation⁵.

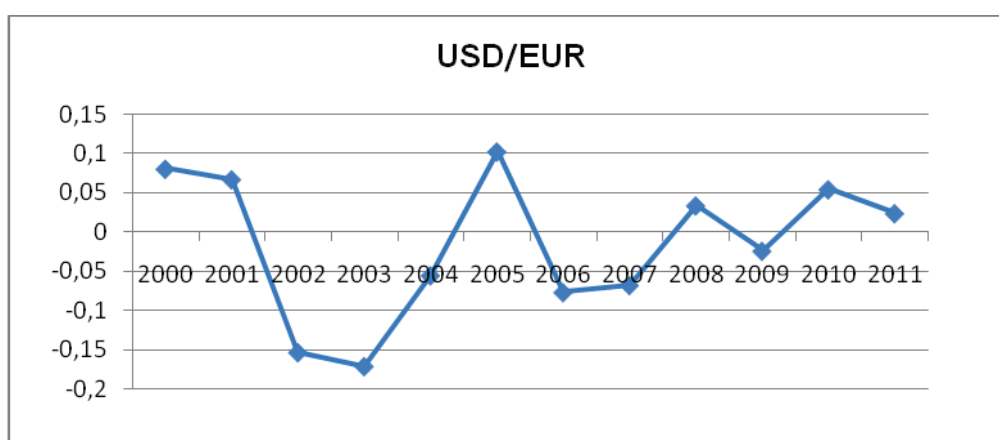
To this conclusion came and other euro-optimists, Papaioannou and Portes⁶ relying on trend exchange rates dollar euro (2000-2010) shown in the table and figure below.

Table 3 – The trend of exchange rates Dollar-Euro (2000-2010)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
USD/EUR	0,0805	0,067	-0,1536	-0,1713	-0,0555	0,1024	-0,077	-0,0679	0,0336	-0,0242	0,0542	0,0237

Source: Table made by the authors on the basis of data taken from the <http://www.rateslist.com/exchange-rate-trends-2011.html> website accessed on 1.02.2012

Figure 3 - The trend of exchange rates Dollar-Euro (2000-2010)



Source: Graph made by the authors on the basis of data taken from the <http://www.rateslist.com/exchange-rate-trends-2011.html> website accessed on 1.02.2012

So far, the financial markets, the dollar has seen a recovery against the euro, just because of the crisis through which this currency. For example, the inflation rate of the seventeen countries of the Euro area fell from 2.8% in December 2011, from 3% in November, which makes it very likely that, at some point, the European Central Bank to lower interest rates below 1%.

This will make the euro devaluation may not be produced in the way, so as to leave room for reaction to this phenomenon.

On the other hand, however, the US dollar is not better because it is stuck in the middle between the other main currencies.

Globally, this combination of a weak dollar and a weak euro may prove to be a pretty serious issue, affecting especially the trade. Of course that these declines are reflected in the prices of goods on the market, but they turn into losses for countries producing and exporting. Analyzing all the above data we can conclude that in spite

⁵ Chinn M. D. & Frankel J.A., *The Euro May Over the Next 15 Years Surpass the Dollar as Leading International Currency*, NBER Working Papers 13909, National Bureau of Economic Research, Inc., 2008, p.51, available at <http://www.nber.org/papers/w13909.pdf>, accessed at 15.03.2012

⁶ Papaioannou E. & Portes R., *Costs and benefits of running an international currency*, European Economy - Economic Papers 348, Directorate General Economic and Monetary Affairs, European Commission., 2008, available at http://ec.europa.eu/economy_finance/publications/publication13486_en.pdf, accessed at 15.03.2012

of the crisis the global economy, the top of the international coins remain currently unchanged, the euro is the second most popular. Note however, that this percentage continues to gain currency in the face of American currency, in terms of share in international trade, especially due to the sustained efforts of the European Central Bank.

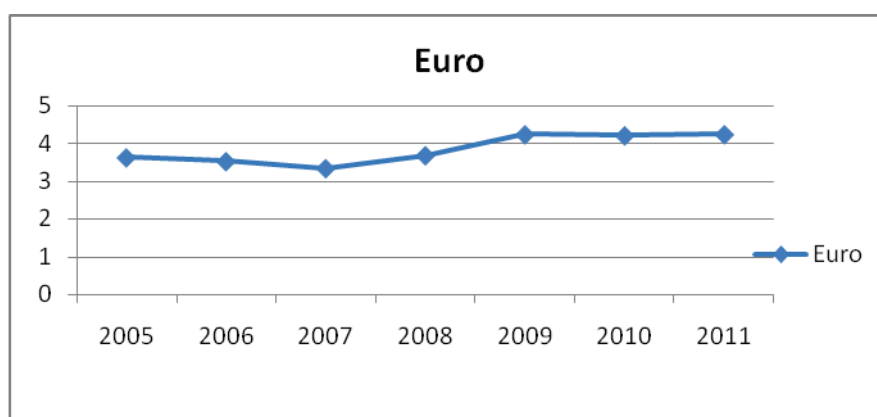
As we mentioned at the top of this work, to be able to make the preview of the GDP, Vâlcea County for the years 2010 and 2011, we have achieved an evolution of the exchange rate of the Euro-Leu for the period 2005-2011 (annual average values).

Table 4 – Developments of Euro- Leu exchange rate (2005-2011)

Year	2005	2006	2007	2008	2009	2010	2011
Euro	3,6234	3,5245	3,3373	3,6827	4,2373	4,2099	4,2379

Source: Table made by the authors on the basis of data taken from the <http://www.bnr.ro/Cursul-de-schimb-3544.aspx># website accessed on 10.10.2012

Figure 4 – Developments of Euro- Leu exchange rate (2005-2011)



Source: Graph made by the authors on the basis of data taken from the <http://www.bnr.ro/Cursul-de-schimb-3544.aspx># website accessed on 10.10.2012

From the above it is clear that the exchange rates between the Euro and the Leu were heavily influenced by the instabilities on the world markets, are they financial, economic, etc. Precisely these influences proved to be damaging to the economy and has had a direct link with its gross domestic product and gross domestic product of which we present below.

We have proposed to estimate GDP Vâlcea County in the years 2010 and 2011. In this respect, first of all, we show that the GDP and time variables between which there is a high intensity and we'll find the coefficients parabolic model, which expresses the dependency between the two variables. Whereas we have the values of gross domestic product in the period 1995-2009, for the time that you specified with the t , we consider the correspondence

$$1 \rightarrow 1995, 2 \rightarrow 1996, 3 \rightarrow 1997, \dots, 15 \rightarrow 2009,$$

meaning

$$i \rightarrow 1995 + i, i = 1, 2, \dots, 15$$

The evolution of Vâlcea County GDP, during the period 1995-2009 is given in Table 5.

Table 5

Year	<i>t</i>	GDP, mil. lei
1995	1	145,5
1996	2	218,7
1997	3	524,4
1998	4	711,4
1999	5	1015
2000	6	1391,7
2001	7	2084,3
2002	8	2388,4
2003	9	3474,1
2004	10	4187,3
2005	11	4907,3
2006	12	5958,7
2007	13	6808,8
2008	14	7334
2009	15	7934,1

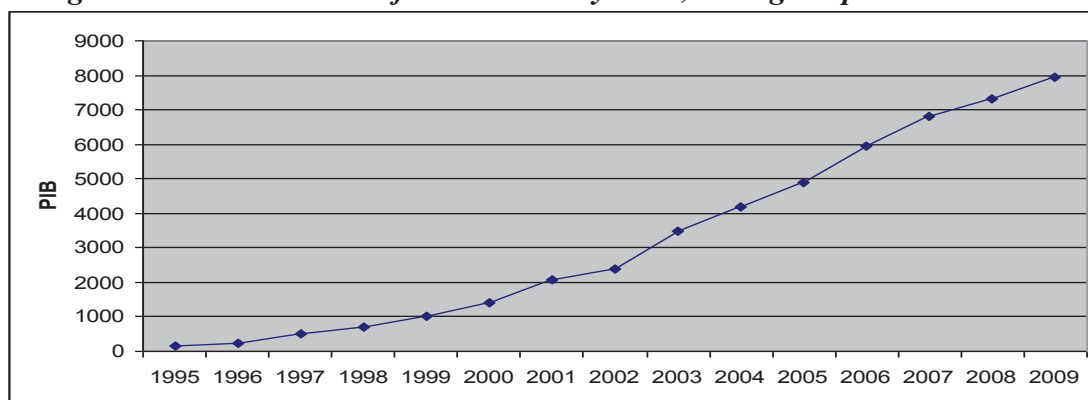
Based on the data in table 5. is shown in Figure 5. The graph suggests that the trend of evolution can be estimated using a linear model, i.e. the parabolic model.

Parabolic model is based on the following formula:

$$\hat{y}_i = a + b \cdot i + c \cdot i^2$$

Choosing the appropriate function is calculated⁷ from the average deviation pattern adjustment formula

$$\sigma_{ajustare} = \sqrt{\frac{\sum (y_i - \hat{y}_i)^2}{n}}$$

Figure 5 - The evolution of Vâlcea County GDP, during the period 1995-2009

Source: The chart was made by the authors on the basis of data from Statistical Yearbook of Vâlcea County

Considering that GDP is the endogenous variable, and as exogenous variable time, achieve the following parabolic regression model:

$$P_i = a + b \cdot i + c \cdot i^2 + \varepsilon_i, \quad i = 1, 2, \dots, 15$$

This relationship can be regarded as a linear regression model; the GDP is expressed in terms of two factors: the time and the square of the time.

By using the Eviews software, obtain the following information:

Regression Statistics	
Multiple R	0,996455
R Square	0,992922
Adjusted R Square	0,991743
Standard Error	249,4982
Observations	15

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	1,05E+08	52396371	841,7178	1,26E-13
Residual	12	746992	62249,33		

⁷ Gh. Săvoiu, Grigorescu R, Manole S, Asandei M., *Cercetări și modelări de marketing: metode cantitative în cercetarea pieței*, University, Bucharest, 2005, pp. 181-183

Total 14 1,06E+08

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-186,386593	222,2364	-0,83869	0,418039	-670,598	297,825
X Variable 1	124,745751	63,91587	1,951718	0,074704	-14,515	264,0065
X Variable 2	29,7661361	3,884524	7,66275	5,83E-06	21,30249	38,22979

In *Regression Statistics* table we find that $R = 0,996455$ and $R^2 = 0,992922$, where it appears that the relationship between the variables of the model package is intense.

The ratio between the theoretical value and the calculated value of the Fisher-Snedecor is a number less than $1,26 \cdot 10^{-13}$, read from the Significance F of the second table, which validates the model.

P-value column of the table appear in the reports of the third theoretical values and calculated values of test parameters of the model Student, i.e. sub-unitary numbers $0,418039$, $0,074704$ and $5,83 \cdot 10^{-6}$, what shows that the estimation of the parameters are significantly different from zero. Also from the Coefficients, we read estimated values of the coefficients

$$\hat{a} = -186,386593$$

$$\hat{b} = 124,745751$$

$$\hat{c} = 29,766136$$

After replacing them in the relationship, it appears the following regression model:

$$P_i = -186,386593 + 124,745751 \cdot i + 29,766136 \cdot i^2 + \varepsilon_i,$$

$i = 1, 2, \dots, 15$

Values adjusted with the help of the parabolic model are presented in the table:

Year	<i>t</i>	GDP	parabolic
1995	1	145,5	-31,8747
1996	2	218,7	182,1695
1997	3	524,4	455,7459
1998	4	711,4	788,8546
1999	5	1015	1181,4956
2000	6	1391,7	1633,6688
2001	7	2084,3	2145,3743
2002	8	2388,4	2716,6121
2003	9	3474,1	3347,3822
2004	10	4187,3	4037,6845
2005	11	4907,3	4787,5191
2006	12	5958,7	5596,8860
2007	13	6808,8	6465,7852
2008	14	7334	7394,2166
2009	15	7934,1	8382,1803

In fact, the parabolic model adjusted (theoretical) values are provided by the software.

Next, we determined the average deviations of adjustment for the parabolic model, so the calculations, such as in the table below:

Year	<i>i</i>	Parabolic model
1995	1	31461,7863
1996	2	1334,4808
1997	3	4713,3874
1998	4	5999,2134
1999	5	27720,7735
2000	6	58548,9069
2001	7	3730,0743
2002	8	107723,2003
2003	9	16057,4031
2004	10	22384,7895
2005	11	14347,4551
2006	12	130909,3576
2007	13	117659,1729
2008	14	3626,0386
2009	15	200775,9499
Total		746991,9896
$\sigma_{ajustare}$		223,1579

Considering that it retains the same trend in the period 1995-2009 in the evolution of Vâlcea County GDP, and for 2010 and 2011, we use the parabolic model determined previously for forecasts relating to these years. So, as for the gross domestic product of Vâlcea County in the years 2010 and 2011, respectively, the following values:

$$\hat{P}_{16} = -186,386593 + 124,745751 \cdot 16 + 29,7661361 \cdot 16^2 = 9429,6762646$$

$$\hat{P}_{17} = -186,386593 + 124,745751 \cdot 17 + 29,7661361 \cdot 17^2 = 10536,7045069$$

Therefore, the forecast of Vâlcea County GDP growth are: 9429,6762646 million lei – in 2010 and 10536,7045069 million lei - in 2011.

In conclusion we have seen clearly that there is a link between the Euro, the single currency both at European level, but also as the international currency, and the evolution of Romanian GDP, including GDP of Vâlcea County. This influence is given especially by the exchange rates between the Euro and the Leu, which, unfortunately for our national currency are not favorable and the effects of which can be seen in the prices. Although the National Bank of Romania made huge efforts to be able to stabilize the national currency, and especially for there to be a future appreciation, but until the effects of the global crisis will not know a terminus, this harmful influence of Euro to Romanian GDP will continue to exist.

BIBLIOGRAPHY

1. Chinn M. D. & Frankel J.A., *The Euro May Over the Next 15 Years Surpass the Dollar as Leading International Currency*, NBER Working Papers 13909, National Bureau of Economic Research, Inc., 2008
2. Mussa M., *Exchange Rate Regimes and Increasingly Integrated World Economy*, FMI Occasional Paper, 193, 2000, in Clark B.P. and Polak J.J., *International Liquidity*

- and the Role of SDR in the International Monetary System* , IMF Staff Papers, Volume 51, Edition 1; Edition 2004
3. Papaioannou E. & Portes R., *Costs and benefits of running an international currency*, European Economy - Economic Papers 348, Directorate General Economic and Monetary Affairs, European Commission., 2008
 4. Săvoiu Gh., Grigorescu R., Manole S., Asandei M., *Cercetări și modelări de marketing: metode cantitative în cercetarea pieței*, Ed. Universitară, Bucharest, 2005
 5. Sima I., Marin C., Țenovici C., Nisipeanu E. - *Crisis in the euro area and the euro. The game of giants: Euro vs. Dollar*, International Journal of Academic Research in Accounting, Finance and Management Sciences Magazine, Pakistan Volume 02, Issue 01, 2012, ISSN: 2225-8329
 6. *** - Statistic Yearbook of Vâlcea County, 2010
 7. *** - <http://www.bnr.ro/Cursul-de-schimb-3544.aspx#>
 8. *** - <http://www.rateslist.com/exchange-rate-trends-2011.html>
 9. *** - <http://www.xe.com/ict/?basecur>
 10. *** - <http://www.x-rates.com>