FACTORS INFLUENCING THE UNEMPLOYMENT RATE IN ROMANIA DURING 1997-2019

DANIELA-GEORGETA BEJU[1], IOAN-ALIN NISTOR[2], MARIA-LENUŢA CIUPAC-ULICI[3]

ABSTRACT. Current macroeconomic theories examine the problem of unemployment rate from the aggregate demand point of view. Rising unemployment is always seen as a sign of the weak economy, where is a slow growth and also little spending. These might trigger actions by authorities to help reduce unemployment, by increasing the nation's money supply, so it can boost the economy. Among the factors that influence (un-)employment, at least two very important should be taken in consideration: exchange rate and inflation. The research aims to analyse the impact of inflation, the RON / EURO exchange rate and the financial crisis on unemployment rate in Romania during January 1997- March 2019.

Keywords: unemployment rate, exchange rate, inflation rate

JEL Codes: E24, F31, E31

---

[1] *Associate Professor PhD, Department of Finance, Faculty of Economics and Business Administration, Babeş-Bolyai University Cluj-Napoca, Romania; daniela.beju@ubbcluj.ro*

[2] *Associate Professor PhD, Faculty of Business, Babeş-Bolyai University Cluj-Napoca, Romania; ioan.nistor@ubbcluj.ro*

[3] *Lecturer PhD. Department of Finance, Faculty of Economic Sciences, Hyperion University Bucharest, Romania; maria.ulici.ciupac@gmail.com*

Introduction

The problem of the unemployment in Europe persisted since the 1980s and challenged the theoretical approaches that tried to explain the main causes of this phenomenon. Most current macroeconomic theories examine the problem of unemployment from the aggregate demand point of view (Beissinger & Möller, 2000). An important component of aggregate demand is the investment, while employment represents a financial effort for companies. Among the factors that influence (un-)employment, at least two very important should be taken in consideration: exchange rate and inflation.

Although there is a debate that shows that exchange rate volatility discourages the international trade, the vast empirical literature on this issue did not provide enough evidence for a robust relation between exchange rate volatility and the volume of the international trade. But, the absence of a significant effect of exchange rate volatility on the volume of the international trade does not necessary infer that there is no relationship between exchange rate volatility and (un-)employment and investment. A rise in exchange rate variability would discount the companies' future profits from exports, thus reducing their investment in activities oriented towards exports. Therefore, the future exports might fall but not certainly in the short run, the long run response being more difficult to assess because of the impact of other long run tendencies and high variability of exchange rate over time. The high volatility of exchange rate recorded in Europe during the last decades revealed that companies hold local prices fixed despite of large variabilities. This suggests that exchange rate has a small influence on quantities, but significant on profits. Thus, exchange rate volatility has a considerable impact on profit volatility. A rise in exchange rate volatility would cause a reduction of investment and, furthermore, would have a substantial impact on (un-)employment (Belke and Gros, 2000).

There are three views for which the real exchange rate influences the unemployment (Frenkel and Ros, 2006): macroeconomic view, labour intensity view and development view. First view indicates that a depreciated real exchange rate causes a higher net export and thus higher demand for domestic products, which in turn causes a higher level of output and

employment. The labour intensity view suggests that real exchange rate plays an important role in determining the relative prices of both labour/capital goods and imported input/labour and substantial fluctuations in these relative prices would be likely to affect the employment/output ratio. The development view emphasizes the impact of real exchange rate on the economic growth rate and therefore on the employment generated rate.

During the last decades many studies were carried out on the issue of exchange rate and unemployment because of its implication in attainment of macroeconomic objectives of full employment, price stability, balance of payment equilibrium and economic growth. Recently, unemployment increased in many countries because of the openness in international trade, some empirical research finding that the countries with higher degree of openness are affected more by the exchange rate volatility in terms of unemployment (Chimnani et al, 2012).

The second very important factor that influences unemployment is the inflation rate. The experience of the last decades showed that policymakers had to deal with a trade-off dilemma: efforts to decrease unemployment rate by stimulating aggregate demand frequently caused a higher inflation rate, whereas efforts to decrease the inflation rate frequently caused a higher unemployment rate (Goldstein, 1972).

First economist that investigated the relation between unemployment and inflation was William Phillips (1958), who introduced its famous curve, a negative slope called after its name Philips Curve. Analysing the evolution of money wage rates and unemployment rate in United Kingdom for the period of 1861-1957, Phillips found that "the rate of change of money wage rates can be explained by the level of unemployment and the rate of change of unemployment" (Phillips 1958, p. 299), suggesting the existence of an inverse relationship between unemployment rates and rates of increase in wages. Nevertheless, the negative correlation between unemployment and inflation was deducted from Phillips' empirical conclusions by Samuelson and Solow (1960), who started for the first time to name this relation as "Phillips Curve". This implies that policymakers could exploit the trade-off between unemployment and inflation, i.e. to reduce unemployment by implementing an expansionary policy that increases demand and sacrificing the inflation rate (accepting a higher inflation rate).

During the 70's the Phillips Curve appeared to break down because of the existence of stagflation – coexistence of both high unemployment and high inflation. Friedman (1968) and Phelps (1967, 1968) introduced the concept of "natural rate of unemployment" or the equilibrium rate (the rate that is consistent with a stable rate of inflation, also called NAIRU – non-accelerating inflation rate of unemployment) and the people's price expectations in their analysis. They made a distinction between Phillips Curve on short run and Phillips Curve on long run. Their investigation indicated that the negatively sloped Phillips Curve is valid only in the short run, because on the long run Phillips Curve is a vertical line corresponding to the natural rate of unemployment. At the natural rate of unemployment both the actual and expected inflation rates are equal. But any effort to reduce unemployment under the natural rate through expansionary monetary policy would push the actual inflation above the expected level. Therefore, the expected inflation would increase in reply, shifting up the short run Phillips Curve. If the policymakers continue to keep the unemployment rate below its natural level then the short run Phillips Curve would shift up continuously, accelerating inflation (Gordon, 2018).

Thus, Friedman and Phelps called short run Phillips Curve as "expectations-augmented Phillips Curve" because it shifts up once inflationary expectation increase. Friedman stated that "there is always a temporary trade-off between inflation and unemployment; there is no permanent trade-off" (Friedman, 1968, p. 11). In the long run monetary policy could not influence unemployment since it adjusts back to its natural level (so-called long-run neutrality of monetary policy).

This short run trade-off between inflation and unemployment lasted just for a few years, when it was overturned by Lucas (1972, 1973) and Sargent and Wallace (1975), who denied the existence of negative relationship between unemployment and inflation on short run. They considered that expectations are "rational" because households and businesses could anticipate any expansionary monetary policy aiming to boost the demand, which was implemented under a predictable monetary policy rule. Consequently, any expected movement of inflation could not affect the unemployment rate. In their opinion, expansionary monetary policy could influence actual rate of unemployment only if it can create an unexpected "surprise" (Gordon, 2018).

The exchange rate influences the inflation rate in several direct and indirect ways. Changes in prices for imported goods and services - this has a direct effect on the consumer price index. For example, an appreciation of the exchange rate usually reduces the price of consumer goods and durable goods, commodities and capital goods. Goods prices: Many commodities are valued in euro - so a change in the Romanian currency - the euro has a direct impact on commodity prices, such as oil and food. A stronger euro makes it more expensive for Romania to import these items. Changes in export growth: a higher exchange rate makes it more difficult to sell abroad due to rising relative prices. If exports are slowing down (demand price elasticity is important to determine the magnitude of any change in demand) then exporters can choose to lower their prices, to reduce production levels and to reduce the level of employment.

What are the limits of a depreciation of currency to solve economic problems? Not all the effects of a cheaper currency are positive - there are some disadvantages and risks:

- weak currency may make it difficult for the government to finance a budget deficit if external investors lose their confidence.

- at the same time, a weak currency makes it harder to pay a trade deficit that is due to foreign creditors.

- depreciation increases the cost of imports - for example, rising prices for essential food, raw materials and also imported technology.

- weak global demand can mitigate the beneficial effects of a weak currency - it is harder to export when key markets are in recession and foreign sales are gradually reducing.

- if demand elasticity for exports and imports is low, a depreciation of the exchange rate may initially lead to a worsening of trade in goods and services. This is known as the Effect of Curbe-J.

In Romania, the unemployment rate in February 2018 was 4.6%, below the EU average. Eurostat points out that, compared to the one-year situation, the unemployment rate has fallen in all Member States, except for Estonia. In Romania, the unemployment rate has fallen from 5.3% in February 2017 to 4.6% in February 2018. Evolution of wages

and inflation is closely watched by the European Central Bank officials for monetary policy. The ECB 's main mission is price stability, defined as a price increase of less than but close to 2%. For almost three years, euro area inflation was below the 2% target set by the ECB and, according to the new estimates, will not be nearing the target in the coming years.

The research aims to analyse the impact of inflation, the RON / EURO exchange rate and the financial crisis on unemployment rate in Romania. The paper is structured in 5 sections. The first section presents an introduction of the analysed elements. The second section shows the results of various studies identified in the financial literature. The third section describes the research methodology used to analyse the impact on unemployment rate. Section four presents the data used and the results obtained in this research. The last section shows the findings of the study.

Literature review

Recently, many studies have focused on the investigation of the relationship between inflation and unemployment, some of them providing evidence in favour of this relation and, by contrast, other showing that this relation might be illusory as the inflation and unemployment could move together in the same direction.

The studies from the financial literature are vast, and there have been some controversies. On one hand, some studies have attempted to investigate whether there are relationships between the variables analysed or not. On the other hand, some studies, hypothesizing that there is a kind of relationship between them, and have tried to identify the nature of this relationship. In an attempt to carry out these studies, some researchers said the relationship between them was negative, while others said there was a positive relationship.

Bakhshi and Ebrahimi (2016) tried to investigate the relationship between the exchange rate and the unemployment rate in Iran using annual data over a 30-year period (from 1981 to 2012). To achieve the objectives of the study, the autoregressive econometric model was used.

This model consisted of five main variables, namely the unemployment rate, exchange rate, export, import and Gross Domestic Product. The results of the study have shown that economic growth had a significant and positive impact on unemployment. In addition, it showed that there was a negative relationship between unemployment and the exchange rate.

Adebowale (2015) analysed the relationship between inflation and unemployment in Nigeria for the period 1977 to 2013 using the Phillips curve. This study used the Vector Error Correction and Granger Causality to test the validity of the Phillips curve relationship in Nigeria. The Granger causality test shows that inflation is causing unemployment. Inflation and unemployment are more destructive than aid for Nigerian economic development and growth. According to the empirical findings of this study, as in the Philips curve, there is a negative relationship between the inflation rate and that of unemployment rate in Nigeria.

Chimanani et al. (2012) surveyed the effect of the exchange rate on the unemployment rate in 10 Asian countries (Pakistan, India, China, Japan, Bangladesh, Argentina, Algeria, Brazil, Colombia and Sri Lanka) using a data set from 1995 to 2005. The survey found that exchange rate volatility had a positive and significant effect on the unemployment rate in Asian countries.

Aminu and Zubairu (2012) investigate the empirical research of the relationship between unemployment and inflation. They used unit root tests, Granger causality and cointegration tests to demonstrate that inflation has negatively affected unemployment in Nigeria over the period 1977-2009.

Feldmann (2011) used data from 17 industrial countries between 1982 and 2003 to obtain only the effect of exchange rate volatility on the unemployment rate. He found that higher exchange rate volatility increased the unemployment rate. However, the magnitude of the effect was small.

Prasanna and Gopakumar (2009) used unit root, cointegration and error correction methods to find the relationship between inflation, growth and unemployment. Their empirical findings have suggested that inflation has negatively influenced long-term unemployment in India for the period 1973-2008.

Milas and Legrenzi (2006), Frenkel and Ros (2006), Djivre and Ribon (2000), Chang (2011), Nyahokwe and Ncwadi (2013), Shaari, Hussain and Abdul Rahim (2013) and Mohammadi and Gholami tried to find out if there is a relationship between exchange rate and unemployment rate. All have approved the existence of a relationship except for Mohammadi and Gholami (2008) who have rejected the existence of such relationships.

Richard, Ching-Fan and Margie (1996) investigate inflation using the integrated ARIMA-GARCH model for ten countries, such as Japan, etc. for the period 1960-1992. Research results show that inflation has a positive impact on unemployment.

Methodology of research

To analyse the impact of the inflation rate, the exchange rate and the financial crisis in 2008 on the unemployment rate, we made the following linear regression:

$$UR= c_1 + c_2 * EUR + c_3 * INF + c_3 * CRS + \varepsilon_t \qquad (1)$$

where:

UR - unemployment rate
EUR - RON / EUR exchange rate
INF - inflation rate
CRS - financial crisis of 2008
ε_t - the residual variable

The paper is proposing to analyse the impact on unemployment rate for different ages and gender. Thus, we constructed 9 regressions in which the dependent variable is:

- Regression (1): unemployment rate for all ages and people
- Regression (2): unemployment rate for all ages, but for men;
- Regression (3): unemployment rate for all ages, but for women;
- Regression (4): unemployment rate for ages under 25, but all genders
- Regression (5): unemployment rate for ages under 25 and men;

- Regression (6): unemployment rate for ages under 25 and women;
- Regression (7): unemployment rate with ages between 25-74, for all people and gender
- Regression (8): unemployment rate with ages between 25-74 and men;
- Regression (9): unemployment rate with ages between 25-74 and women

The data sample comprises 267 observations, the period being analysed from 1997 to 2019M03 (the data is monthly). The analysis is made only on the unemployment rate in Romania (Annex 1). The regression was done in Eviews. The data was taken from the Eurostat database. Unemployment, inflation and RON / EURO data are expressed as a percentage, as well as a year-to-year increase. The financial crisis variable is a dummy variable, which has a value of 0 for the period 1997-2007 (the period before the crisis), namely the value 1 for the period 2008-2019.

The results obtained

The table below presents the descriptive statistics of the analysed variables. The mean of the variables is positive throughout the analysed period. The minimum value of the inflation variable is negative, which means that in the analysed period, Romania faced deflation as well. At the same time, a negative value is also found for the minimum of the foreign exchange rate, in other words, during the analysed period, the Romanian currency also had periods of appreciation.

The results of the regressions are presented in the table below:

Table 1: Empirical Results

Regression	c	EUR	INF	CRS	R^2
(1)	5.949*** (31.649)	1.298*** (7.787)	-0.051*** (-6.249)	-0.531** (-2.399)	**0.414**
(2)	6.085*** (29.331)	0.794*** (4.315)	-0.036*** (-4.007)	0.756*** (3.096)	**0.075**

Regression	c	EUR	INF	CRS	R^2
(3)	5.858***	1.049***	-0.050***	-0.395*	0.405
	(29.136)	(5.883)	(-5.648)	(-1.669)	
(4)	14.291***	0.718*	0.043**	-0.57	0.459
	(28.442)	(1.664)	(2.027)	(-0.998)	
(5)	14.761***	1.419***	0.005	-0.62	0.346
	(28.373)	(3.177)	(0.215)	(-1.049)	
(6)	13.682***	-0.274	0.097***	-0.487	0.517
	(23.489)	(-0.547)	(3.935)	(-0.736)	
(7	4.407***	1.130***	-0.042***	-0.369*	0.343
	(26.507)	(7.663)	(-5.808)	(-1.884)	
(8)	4.430***	1.224***	-0.039***	-0.480**	0.32
	(24.832)	(7.739)	(-4.983)	(-2.283)	
(9)	4.358***	1.027***	-0.047***	-0.256	0.395
	(25.293)	(6.719)	(-6.228)	(-1.262)	

Source: Own calculation in Eviews
Note: In brackets are t-statistics values.
*,**,*** represent the threshold values for 10%, 5% and 1%.

According to the results obtained (Table 1), there are other factors that influence the unemployment rate, because R^2 is under 52% in all regressions. In other words, a maximum of 52% of the change in the unemployment rate is explained by the fluctuation of the exchange rate, the financial crisis and inflation.

Inflation has a negative impact on the unemployment rate, exception for the person less than 25 years where the impact is positive. The impact is also statistically significant, except regression 5.

The exchange rate positively influences the unemployment rate. The impact is statistically significant, as the probability is under the value of 10%. We have an exception; the impact on unemployment rate for women under 25 years is negative, but insignificant statistically.

The euro has appreciated against the Romanian currency by 22% in the last decade, from 3.6 lei to 4.67 lei, but the pressure on the national currency became more visible at the beginning of the crisis, when the euro passed the threshold of 4 lei and did not returned below this level.

The financial crisis of 2008 adversely affects the unemployment rate (the coefficient for this variable is negative). The impact is statistically significant only for the first three regressions and regression (7) and (8). Here is another exception; the impact is positive and statistically significant on unemployment rate on men of all ages (regression 2).

Conclusion

Unemployment is one of the negative aspects that many economies, including European countries, had to face during the last decades. Thus, a vast economic literature was examined in order to determine the factors that influence this phenomenon. Exchange rate and inflation rate represent one of the most important determinants of the unemployment, identified by the empirical studies. Exchange rate volatility has a significant impact on investment and, thus, on unemployment. The relation between inflation and unemployment was one of the most debated issues among economists. While, initially it was believed that there is a negative relation between inflation and unemployment, later this relation was considered valid only on short run. And recently its existence has become questionable since it can have the same trajectory not necessarily at precisely the same time.

REFERENCES

1. Adebowale, K.B. (2015), The Relationship between Inflation and Unemployment in Nigeria, Working Paper, Eastern Mediterranean University, Gazimağusa, North Cyprus
2. Animu, U., A., & Abdulrahaman, Z. (2012). An Empirical Analysis of the Relationship between Unemployment and Inflation in Nigeria for the Period 1977-2009, 20(47), 0401
3. Bakhshi, Z. şi Ebrahimi, M. (2016), The effect of real exchange rate on unemployment, *Marketing and Branding Research*, issue 3, pp. 4-13
4. Bessinger T. and Möller J. (2000), Unemployment: Theoretical explanations, in Globalization and Unemployment, Helmut Wagner (ed.), Springer-Verlag Berlin Heidelberg 2000, pp. 89-133

5. Belke A. and Gros D. (2000), Effects of European Monetary Integration on Unemployment: How Costly Was (Intra-European) Exchange Rate Variability? in Globalization and Unemployment, Helmut Wagner (ed.), Springer-Verlag Berlin Heidelberg 2000, pp. 203-242
6. Chang, S. C. (2011). The interrelationship between exchange-rate uncertainty and unemployment for South Korea and Taiwan: Evidence from a vector autoregressive approach. International Economics, 125, 65–82
7. Chimanani, H., Bhutto, N. A., Butt, F., Sheikh, S. A., & Devi, W. (2012). The effect of exchange rate on unemployment rate in Asian countries. Proceedings of 2nd International Conference on Business Management
8. Chimnani H., Bhutto N. A., Butt F., Shaikh S. A., Devi A. (2012), The Effect of Exchange Rate on Unemployment Rate in Asian Countries, Proceedings of 2nd International Conference on Business Management, 28-29 March 2012, University of management and Technology, Lahore, Punjab, Pakistan, pp. 2-16
9. Djivre, J. & Ribon, S. (2000, June). Inflation, unemployment, the Exchange Rate and Monetary Policy in Israel 1990-1999: A SVAR Approach. Paper presented at the meeting of Bank of Israel, Research Department, Jerusalem, Israel
10. Feldmann, H. (2011). The unemployment effect of exchange rate volatility in industrial countries. Economic letters, 111(3), 268–271
11. Frenkel, R. (2006). Real exchange rate and employment in Argentina, Brazil, Chile and Mexico. Iktisat Isletme ve Finans, 19(223), 29–52
12. Frenkel, R., & Ros, J. (2006). Unemployment and the real exchange rate in Latin America. World Development, 34(4), 631–646
13. Friedman M. (1968), The Role of Monetary Policy, The American Economic Review, Volume LVIII, March 1968, Number 1, pp. 1-17
14. Goldstein M. (1972), The Trade-off between Inflation and Unemployment: A Survey of the Econometric Evidence for Selected Countries, Staff Papers (International Monetary Fund), Vol. 19, No. 3 (Nov., 1972), pp. 647-698
15. Gordon R. J. (2018), Friedman and Phelps on the Phillips Curve Viewed from a Half Century's Perspective, NBER Working Paper Series, No. 24891, Cambridge, National Bureau of Economic Research, August 2018, pp. 1-14
16. Knell M. (2002), The effects of EMU on euro area unemployment, Atlantic Economic Journal, September 2002, Volume 30, Issue 3, pp. 244-262
17. Lucas R. (1972), Expectations and the Neutrality of Money, Journal of Economic Theory,1972, vol. 4, issue 2, pp. 103-124
18. Lucas R. (1973), Some International Evidence on Output-Inflation Tradeoffs, The American Economic Review, Vol. 63, No. 3, (Jun., 1973), pp. 326-334

19. Milas, C., & Legrenzi, G. (2006). Non-linear real exchange rate effects in the UK labor market. Studies in Nonlinear Dynamics & Econometrics, 10(1), 1–34
20. Mohammadi, T., & Gholami, A. (2008). An investigation into the effects of the policy of exchange rate unification on major variables of macroeconomic. Economic Questionnaire, 29, 49–74
21. Nyahokwe, O., & Ncwadi, R. (2013). Impact of exchange rate volatility on unemployment in South Africa. Mediterranean Journal of Social Sciences, 4(3), 109–120
22. Phelps E. S. (1967), Phillips Curves, Expectations of Inflation and Optimal Unemployment Over Time, Economica, New Series, Vol. 34, No. 135 (Aug., 1967), pp. 254-281
23. Phelps E. S. (1968), Money-Wage Dynamics and Labor-Market Equilibrium, Journal of Political Economy, 1968, Vol. 76, No. 4, Part 2 (Jul.-Aug., 1968), pp. 678-711
24. Phillips A. W. (1958), The relation Between Unemployment and the Rate of Change of Money Wage Rates in United Kingdom 1861-1957, Economica, New Series, Vol 25, No. 100 (Nov., 1958), pp. 283-299
25. Prasanna, V. S., & Gopakumar, K. (2009). An Empirical Analysis of Inflation, Unemployment and Economic Growth in India from 1973 -2008
26. Richard, T. B., Ching-Fan, C., & Margie, A. T. (1996). Analyzing Inflation by the Fractionally Integrated ARIMA-GAGCH Model for the Period 1960-1992, Journal of Applied Econometrics, issue 11, 23-40
27. Samuelson P. A. and Solow R. M. (1960), Analytical Aspects of Anti-Inflation Policy, The American Economic Review, Vol. 50, No. 2, Papers and Proceedings of the Seventy-second Annual Meeting of the American Economic Association (May 1960), pp. 177-194
28. Sargent T. and Wallace N. (1975), "Rational" Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule, Journal of Political Economy, 1975, vol. 83, issue 2, pp. 241-254
29. Shaari, M. S., Hussain, N. E., & Abdul Rahim, H. (2013). The effects of oil price changes and exchange rate volatility on unemployment: Evidence from Malaysia. International Journal of Research in Business and Social Science, IJRBS, 2(4), 72–83
30. www.bnr.ro
31. https://ec.europa.eu/eurostat
32. www.zf.ro