Economic Convergence between Macedonia and European Monetary Union Member States. The Five Maastricht Criteria

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2008

Economic Convergence between Macedonia and European Monetary Union Member States
− *The Five Maastricht Criteria* −

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March 26, 2009

Abstract

The euro was introduced on January 1, 1999. As of now, 16 European Union Member States have adopted the euro in line with the requirements of the Treaty, the most recent ones being Cyprus and Malta on January 1, 2008 and Slovakia on January 1, 2009. This implies that 11 Member States are at present not full participants in Economic and Monetary Union (EMU) and have not yet adopted the euro. In this paper, Macedonia is assessed the first time in respect of EMU's economic criteria. This is due to the fact that Macedonia wants to join the EU in the coming up years. It also has to be taken into account that Macedonia intends to adopt the euro in a second step in the near future whose currency has followed a high volatility over several years. This requires an analysis of how the Macedonia's economy would operate under conditions of irrevocably fixed exchange rates. The examination of the economic convergence process is highly dependent on the quality and integrity of the underlying statistics. The compilation and reporting of statistics, particularly government finance statistics must not be subject to political considerations. We suppose that the first analysis in this respect is not without any problems because of the data base available in Macedonia. However, we believe that our analysis of the Maastricht convergence criteria is very important and a milestone for the future economic policy decisions in Macedonia.

Keywords: EMU, Economic Convergence, Maastricht

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1. Introduction

The main goal in transition countries' foreign policy, after the end of socialism, is full membership in the European Union. In line with this, Macedonia's strategic goals also include membership in European Union, for which goal the entire county agrees upon, both its public and the relevant social subjects. However, in order Macedonia to become a full member of European Union (EU) and European Monetary Union (EMU) it must fulfill in step one the acqui communautaire and in step two the famous Maastricht membership economic criteria.

For this purpose the paper analysis the major macroeconomic challenges of Macedonia toward the membership in the EU and EMU which are related to the Macedonian economic capability for meeting the membership economic criteria defined by European Commission in Maastricht, in line with the provisions of article 121 EC-Treaty (European Community Treaty). To examine the economic convergence between Macedonia and EMU's Maastricht criteria, the study focused on the analysis, based on the Treaty provisions with regard to development in prices, fiscal balances and debt ratio, exchange rates and long term interest rates. In this respect, economic developments in Macedonia are reviewed from a backward – looking perspective, covering in principle the past ten years. This helps to better determine the extent to which current achievements are the result of genuine structural adjustment, which in turn should lead to a better assessment of the sustainability of economic convergence.

The paper is structured as follow. In the second section we describe the framework used for the examination of economic convergence, thus providing the main results of the examination of economic convergence. Additionally, in order to capture the convergence criteria, in the context of the influence of the real exchange rate, the study attempts to explore the Balassa-Samuelson effect (BS effect) and the pass through effect of exchange rate on inflation developed in section 3. In order to see the BS effect for the case of the Republic of Macedonia having in mind the strategy of exchange rate targeting, i.e. pegging the Denar exchange rate to the Euro, the real effective exchange rate is analyzed, just to point out the competitiveness level of the Republic of Macedonia in the international trade. In this regard, the pass through effect of exchange rate on inflation is analyzed additionally, in order to contribute to the discussions about the exchange rate in the Republic of Macedonia.

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2. Recent Economic Developments in Macedonia

On April 26, 1992, the Republic of Macedonia, established an independent Central Bank, named the National Bank of the Republic of Macedonia (NBRM), and adopted its own national currency: Denar. Initially, the Denar was pegged to the Deutsch-Mark (D-Mark). The fixed exchange rate of the Denar relative to D-Mark was used as a nominal anchor in the stabilization program, which lead to significant reduction of inflation (Daviddi and Uvalic, 2003). During the 1996 to 1998 period, the inflation rate declined to an annual average of 2.7%, with an average annual increase in GDP of 1.7% over the same period. The exchange rate targeting strategy was an effective instrument for maintaining price stability, as since 1996 the rate of inflation has been at a low level, even negative in 1999 (NBRM, Annual Report, 2000). In 2003 the exchange rate regime in Macedonia was managed float. According to Article 18 of the Foreign Exchange Act in Macedonia, the exchange rate of the Denar was established freely on the basis of demand and supply of foreign exchange at the foreign exchange market. Nevertheless, the Denar exchange rate against the Euro serves as the intermediate target of monetary policy, so money supply and interest rates are dictated by the exchange rate target, which since mid-1997 has been set at 61 Denars to one euro and more or less maintained at that level (Daviddi and Uvalic, 2003). Effectively, therefore, the central bank has been maintaining a stable Denar exchange rate against the euro (Bisev and Petkovski, 2003). Accordingly, to stable Denar exchange rate, the NBRM in 2004 maintained stable and low interest rates, thus enabling it to participate in the foreign exchange market through foreign exchange transactions.

During 2005, the monetary policy of NBRM was conducted in a favorable macroeconomic environment, evident through the positive performances in the external sector, continuous achievement of positive GDP growth rates (4,1%), prudent fiscal policy and a stable banking system (NBRM Annual Report, 2005). The current account deficit was lowered through acceleration of export activity and high inflow of private transfers, thus giving pressures for appreciation of the Denar exchange rate relative to the Euro. In order to maintain the *Denar exchange rate stability relative to the euro,* thus maintaining *price stability,* in 2005, high net-purchase of foreign exchange on the foreign exchange market was made, through the foreign exchange transactions of the NBRM (NBRM Annual Report, 2005). However, given the policy of stable exchange rate and high amount of foreign

currency inflows in the economy, the appreciation of real effective exchange rate (REER), was potential risk for Macedonian economy, i.e., lowering the competitiveness of the domestic economy on the international market and deepening the trade deficit. In 2006, as in the previous year Macedonian economy registered high level of currency inflows due to active credit policy, which resulted in higher supply of foreign currency by the banks on the foreign exchange market and high purchases by NBRM. This significant level of currency reserves, as a key factor for the credibility of the fixed exchange rate regime, the prudent fiscal policy and the stable environment in 2006, created preconditions for reductions in the NBRM interest rates, which accordingly affected the interest rate development on the financial markets and in the banking system.

These favorable movements on the foreign exchange market during the previous years had positive reflection on the foreign reserves. Namely, the gradual liberalization of the capital account, the admission to Central European Free Trade Agreement (CEFTA), the acquiring of the status of candidate country for joining EU, the higher credit rating, as well as the aggressive policy of the Government for attracting foreign capital in the country (tax reduction, international promotion of the country), contributed to incremented inflow of foreign currency and direct investments.

3. Economic Analysis

When the fulfillment of convergence criteria is examined, sustainability is of key importance. Adaption of the euro is an irrevocable process. Therefore, convergence must be achieved on a lasting basis and not just at a given point in time. When the Maastricht Treaty was under preparation, the economic situation differed widely from one country to another. Germany, deeply attached to price stability, was concerned that some countries were not quite ready to play the rules that it had successfully set for itself for several decades. It insisted that admission to the monetary union – all countries are de facto EMU members – would be selective. The selection process was designed to certify which countries had adopted a 'culture of price stability', meaning that they had durably achieved German-style low inflation rates. In order to join the monetary union, a country has to fulfill the following five convergence criteria, which remain applicable to all future candidate countries.

3.1 Theoretical Framework

Macedonia is a potential candidate for future EU membership. Hence, in a second stage it might be a potential candidate for EMU membership too. In order to accede the European Monetary Union Macedonia has to proof nominal and real convergence, in line with the five convergence criteria. The nominal and real convergence criteria include:

1. The criterion on price stability – uniformly low and stable inflation is the fundamental criterion. Inflation rate must not exceed by more than 1.5 percentage points that of, at most, the three best performing Member States in terms of price stability[i].

2. Uniformly low and stable long-term interest rates is the second criteria. An inflation-prone country could possible squeeze down inflation temporarily, on the last year before admission – for example, freezing regulated prices – only to relax the effort afterwards. In order to weed out cheaters, a second criterion requires that the long term interest rates must not exceed the average rates observed in the three lowest inflation rate countries by more than 2 percentage points. The economic rational is: Long-term interest rates reflect markets' assessment of long-term inflation.[ii]

3. A stable exchange rate, derived from uniformly low and stable inflation rates is the third criteria. The examination of exchange rate stability against the euro focuses on the exchange rate being close to the ERM II central rate, while also taking into account factors that may have led to an appreciation, which is in line with the approach taken in the past.

4. The ratio of the planed or actual government deficit to GDP, or the annual flow of public sector debt must not exceed the reference value of 3% of GDP value.

5. The ratio of government debt to GDP, or the total stock of public sector debt, national debt, must not exceed the reference value of 60% of GDP value. Moreover there is an interesting link between the public finance criteria four and five regarding to real GDP growth. Hence, it connects both real and nominal convergence of the economy.

3.2 Empirical Assessment: Examination of Economic Convergence

Regarding the price stability criteria, during the period April 2006 – May 2007, Macedonia had annual average inflation rate below the reference value 2.6%, whereas during the period April 2007 – May 2008, the country registered annual average inflation rate, above the reference value, at about 4.4% (Appendix: Table 2). Looking back over the past ten years, inflation rate measured by consumer price index has been rather volatile, averaging 1.82 on an annual basis, over the period 1998 to 2008. With regard to the budgetary performance, Macedonia has a fiscal deficit to GDP ratio below the convergence criteria of 3% specified in the treaty. The amount in 2007 was 0.6% to GDP, whereas in 2008 it declined further down to -1.5% to GDP (Appendix: Table 3). Concerning the Macedonian general government debt to GDP, the results are not so worrying. Macedonian government debt to GDP was above the reference value during the period from 1998 up to 2003, and this ratio has declined since 2004, up to 2008, registering amounts below the reference value. In 2007 this amount was 52% whereas in 2008 it increased slightly to 53% (Table 3). Regarding the exchange rate criterion, Macedonian currency does not participate in ERM2, but traded under fixed exchange rate regime. Overall, in the two years reference period, from April 19, 2006 to April 18, 2008, the Macedonian Denar was not subject to significant depreciation pressures, thus confirming the objective of NRBM to maintain price stability. (Appendix: Table 6 and Figures 4 and 5).

As concern the convergence of long term interest rate[iii], Macedonia is below the reference value[iv], starting from the April 2007 up to March 2008 (Appendix: Table 6, Figures 6 and 7). However, to achieve a high degree of convergence, Macedonia needs also to have good results in terms of GDP growth, substantial decrease of unemployment rates, low current account deficit and reasonable inward from FDI –, which points to the need to ensure the sustainability of external position.

With regard to real GDP growth rate (Appendix: Table 4)[v], Macedonia registered upward trend of this indicator, especially starting from the year of 2003 up to 2008, where its amount was 5.3%. Before this period, the highest level of Macedonian real GDP growth rate was registered in the year 2000, at about 4.5%. This result was attributed mainly to privatization of state owned companies and a good position of international community investments, into the country's banking system and insurance companies (Dauti and Pollozhani, 2008).

Regarding the data on GDP per capita[vi] (Table 4), one can conclude that Macedonian GDP per capita has registered a constant increase, representing a relatively good indicator of the level of Macedonian standards of living. However this indicator is significantly lower, compared to the average of EU 27, meaning that Macedonian standard of living is lower than the standard of living in the EU countries (Eurostat, 2008).

With respect to the labor market one should note that many estimates reveal that the official unemployment in the country has been overestimated. The main reason is the participation of shadow (or black) economy in overall economic activities in Macedonia, i.e. a great number of officially unemployed people who have some sort of employment in the informal sectors (NBRM, annual report 2007). These data also lead to the conclusion about a significant participation of shadow economy in Macedonia. In this regard, data on unemployment rate, presented on Table 1, on average shows an increasing trend, up to the year of 2005, with a sharp decrease enjoying afterwards. The data presented in Table 4 shows that in 2008 unemployment rate amounted 34.9 percent, with insignificant decrease, just by 0.9% from the previous year.[vii]

As concern to external sector one, can conclude that current account deficit as a percentage of GDP increased significantly from the previous year by 12.9 percent (Appendix: Table 5). The results concerning the external sector becomes even worse, one narrowing the significant decrease of Macedonian FDI inflows on annual basis by 82.9 percent from 2007 and the increase of the external debt as a percentage of GDP, thus making Macedonian economy less capable to cover the current account deficit.

Finally, after the brief review of Macedonian economic conditions, we deduce that the biggest problems arise from real sector (GDP and unemployment). The relative growth of GDP of 5.3 % is insufficient for Macedonian circumstances. Unemployment is extremely high, even though it has decreased, relative to the previous year. Also the raising trend of current account deficit and external debt and the negative trend of FDI, makes Macedonian economy less capable to cope with competitive pressure within EU countries in particular under the current circumstances of financial turmoil.

3.3 Econometric Assessment: The Balasa Samuelson Effect and the Pass through Effect of Exchange Rate on Inflation

In order to explain the influence of real effective exchange rate (REER), in terms of the convergence criteria defined in article 121 EC-Treaty, the Balasa Samuelson Effect (BS), will be analyzed[viii]. The BS model, states that countries with productivity in tradable goods have higher overall price levels when measured in the same currency (Folfas, 2006).

The higher inflation, explained by BS effect can have different implications on the economy, depending on the exchange rate regime. Thus, in the flexible exchange rate regime, the increased inflation will be followed by a nominal depreciation of the domestic currency, while the application of the fixed exchange rate regimes can lead to real appreciation of the domestic currency and loss of the competitiveness of the accession countries relative to EU, which has a negative impact on the trade balance, i.e. increases the current account deficit (Besimi, 2004). However, the BS effect is not a good argument for applying flexible exchange rate on long term basis, because of the pass through effect of inflation (Coricelli, 2004).

In order to see the BS effect in the Republic of Macedonia, the real effective exchange rate is analyzed, which points to the competitiveness in international trade. Concerning the movement of Real Effective Exchange Rate (REER), Nominal Effective Exchange Rate (NEER) and Relative Prices, according to the prices of producers for industrial products, and cost of living measured by the indices of consumer price index (CPI), we deduce that the level of REER has been decreasing, starting from the year of 2003 (Appendix: Figure 8). This means that the real effective denar exchange rate is more favorable from the aspect of the competitiveness level of the economy, in comparison to the years just before 2003.

The pass through effect of the exchange rate on the inflation considers the influence of the changes in the nominal exchange rate of the inflation through import prices. The changes of the exchange rate have a direct influence on the import prices, thus influencing afterwards the general inflation level (Besimi, 2004).

The correlation analysis indicates that for the period 1999 to 2008, there is no significant correlation between the movement and the changes in the exchange rate and the prices of the producers of industrial products (PPI) and retail prices (RP) (Appendix: Table 8). This suggests that our model does not suffer from multicolinearity

In order to define the influence of the exchange rate on the prices, i.e. inflation, we employed a Granger causality analysis (Appendix: Table 9), which should point out which occurrence proceeds the other, and vice versa, i.e. whether the prices follow the changes of exchange rate, or vice versa, the exchange rate is stable because of price stability.

A Wald test is commonly used to test Granger Causality. Each row on the Wald table, reports a Wald test that the coefficients on the lags of the variable in the ''excluded'' column are zero for the variable in the ''equation'' column (Appendix: Table 9). For example, the large p – value of 0.949 in the first row is evidence that the coefficients on the lags of producer prices (LNPPI) are jointly zero in the equation for exchange rate (LNDENEU), indicating that there is insufficient evidence to reject the null hypothesis of Granger Causality, that producer prices (LNPPI) does not Granger causes exchange rate (LNDENEU). On the other hand, the small p value of 0.2948 in the second row favors the hypothesis that coefficients on the lags of retail prices (LNRP) are not jointly zero in the equation for exchange rate (LNDENEU), meaning that, at 10% level of significance, there is sufficient evidence to reject the null hypothesis of Granger causality that retail prices LNRP does not Granger causes exchange rate (LNDENEU). In other words, the tests shows that changes in exchange rate ''are causing'' changes in the producer prices and retail prices.

In order to make a more formal analysis of the pass through effect of exchange rate on inflation we apply the methodology of Vector Autoregression (VAR)[ix]. The analyzed period is January 1999 to December 2008. In the specification of the model, we started with a period of 4 time lags (4 months), while the results showed that statistically significant are only the changes in the first and the second time lag (Appendix: Table 10). Therefore, the VAR results are based on only two lags of each endogenous variable. The model set in this manner gives unsatisfied explanation for the relation between the inflation and the changes in the exchange rate, which is evident from the R square[x]. The pass through effect of the exchange rate is insignificant, with regard to the changes in the prices of the industrial producers and to the retail prices (which points to low import dependability of the domestic production). Thus, according to the model, it is assumed that 1% depreciation of the Denar against the Euro in the analyzed period, ceterus paribus, will on average act toward insignificant increase in the prices in the forthcoming month by 1.2 % and 1.3% respectively, in the prices of the industrial producers and retail prices.

4. Conclusion

Compared with the situation for all EU countries described in the official Convergence Reports by the ECB and EU-Commission published in 2008, we conclude our analysis for the situation in Macedonia as follows: Macedonia made some progress with economic convergence, but there remain important challenges, particularly in the form of rising inflation, long-term interest rates and exchange-rate stability and in particular unemployment. In this paper, it should be kept in mind that many tests for Macedonia are highly hypothetical, because the country is not a member of the European Union and it is far away from fulfilling all legal issues to join the EU soon. However, we offer in our paper the first preliminary assessment concerning monetary integration. For the reader it is important to keep in mind that issue.

Looking ahead, available forecasts by major international institutions indicate that inflation in most European countries – and in particular in Macedonia – is likely to rise in 2008 and the coming up years. Surveys of inflation expectations (such as those by the European Commission) and recent wage agreements suggest that the increase in inflation has started to affect inflation expectations in several countries in particular the countries outside the euro area. There is thus a significant risk that recent and expected future one-off price increases in food and energy will lead to more protracted increases via second-round effects on wages or indirect effects on prices in other sectors of the economy, despite the current financial crises and the global recession. Therefore most of the Balkan countries including Macedonia are not ready to participate in the European Union and the European Monetary Union. They have to work hard on the following points: (A) reduce the shadow economy and (B) build-up a better infrastructure. Moreover there is a huge gap and mostly a lack of solid health care and pension systems in comparison to EU countries. These issues are the challenges for the domestic economic policy in the coming up years.

Literature

[1] Besimi, F (2004), The Role of Exchange Rate Stability in a Small and Open Economy: The Case of the Republic of Macedonia, *working paper n3 10.* Economic Research, National Bank of the Republic of Macedonia.

[2] Bisev, G and Petkovski, M. (2003), "FYR Macedonia - Challenges for Economic Recovery", prepared for the Conference organised by the Peace and Crisis Management Foundation, Cavtat (Croatia)

[3] Dauti, B. and Pollozhani P (2008), Economic Challenges for Macedonian Economy toward European Union Integration, *SEEU Review, Vol 4, nr 2, pp 141 – 164* ISSN- 1409-7001.

[4] Daviddi, R. and Uvalic, M. (2003), Exchange Rates Regimes in the Western Balkans and their evolution toward EMU, *First Alumni Annual Conference on ''Governing EMU'' European University Institute, Florence*

[5] Coricelli F, Jazbec B (2004), Exchange Rate Arrangements in the Accession to th The EMU, Comparative Economic Studies, vol.46, pp. 4 – 22.

[6] Marczewski K.(2002), Effekt Samuelsona – Balassy a sector realni w Polsce, NBP, Warszawa

[7] NBRM (1993), National Bank of the Republic of Macedonia, Annual Report 1993

[8] NBRM (2003), National Bank of the Republic of Macedonia, Annual Report, 2003

[9] NBRM (2005), National Bank of the Republic of Macedonia, Annual Report 2005

[10] NBRM (2007), National Bank of the Republic of Macedonia, Annual Report 2007

[11] Folfas, P (2006), The Balasa Samuelson effect in the new EU member states and Its impact on their competitiveness in intra EU trade

[12] Gujarati, D (2003), Basic Econometrics, ISBN 0 – 07 – 233542 – 4. Mc Graw Hill Press.

Table 1: Indicators of Economic Convergence

Table 1 Indicators of Economic Convergence											
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Long term interes Rate, Interbank Interes Rate, %	8.9	8.9	8.9	10.7	10.7	7	6.5	6.5	6.5	6.5	6.5
Exchange Rate, vis a vis Euro, annual average	Fixed with DM	Fixed with DM	60.7	60.9	61	61.3	61.3	61.3	61.2	61.2	61.3
Participating in ERM II	No	No	No	No	No	No	No	No	No	No	No
CPI Inflation	0,65	-1,25	6,41	4,875	2,11	1,18	-0,39	0,5	3,21	2,25	8,31
Government Balance as a % of GDP	-1,7	0	2.5	-6,3	-5,7	-0,6	0,4	0,3	-0,3	0,6	-1,5
Government Debt as a % of GDP	52	27,4	47,9	48,8	42,9	39	36,6	39,5	32,9	25,5	25
Source: EBRD - Transition Report, 2008											

Table 2: Price Developments

Table 2a HICP Inflation for Macedonia				
	September 2003 to August 2004	April 2005 to March 2006	April 2006 to March 2007	April 2007 to March 2008
HICP Inflation*	0,8	0,9	2,6	4,4
Reference Value**	2,4	2,6	3	3,2
Euro Area***	2,5	2,3	2,1	2,5
Source: State Statistical Office of				
Republic of Macedonia (SSO) and Eurostat				

Table 2b: Inflation Forecasts	
Average Annual Inflation Forecasts for 2009	
EBRD (Nov 2008)	3,5
European Union (April 2008)	2,7
IMF (October 2008)	3
United Nations (DESA)* (October 2008)	5
Economicst Intelegence Unit (August 2008)	5,2
Viena Institute (June 2008)	3
Department of Economics and Social Affairs (DESA)	
Source: EBRD - Transition Report 2008	

*Calculations for September 2003 to August 2004 period is based on the unweighted arithmetic average of the annual percentage changes of Finland, Denmark and Sweden plus 1,5 percentage points (Convergence Report May 2004), whereas for the period April 2005 to March 2006, April 2006 to March 2007 and April 2007 to March 2008, these calculations are based on the unweighted arithmetic average of the annual percentage changes of Finland, Poland, and Denmark plus 1.5 percentage points. (Convergence Report May 2006, May 2007, May 2008)

** Calculations are based on the unweighted arithmetic average of the annual percentage changes of inflation measured by consumer price index
*** The euro area is included for information only

Table 3: Fiscal Developments

	2002	2003	2004	2005	2006	2007	2008
General Government Fiscal Position (as a % of GDP)							
General Government surplus (+)/Deficit (-) (EBRD)	-5,7	-0,6	0,4	0,3	-0,3	0,6	-1,5
Reference value (Convergence Reports 2002 - 2007)	-3	-3	-3	-3	-3	-3	-3
General Government Gross Debt (EBRD)	42,9	39,0	36,6	39,5	32,9	25,5	25,6
Reference value (Convergence Reports 2002 - 2007)	60	60	60	60	60	60	60
Source: EBRD, Convergence Reports 2003,2004,2005,2006,2007							

Table 4 Measures of Inflation and related indicators

Table 2: Measures of Inflation and related indicators											
Years	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Consumer Price, Annual Average (%) (EBRD)	-0,1	-0,7	5,8	5,5	1,8	1,2	-0,4	0,5	3,2	2,3	8,4
Producer Prices, Annual Average (EBRD)	4	-0,1	8,9	2	-0,9	-0,3	0,9	3,2	4,5	2,5	na
GDP deflator (EBRD)	89,976	92,44	100	103,611		107,459	108,9	108,9	132,908	139,674	149,446
Related Indicators											
Real GDP growth rate (EUROSTAT)	na	4,3	4,5	-4,5	0,9	2,8	4,1	4,1	4	5,1	5,5
GDP per capita in Purchasin Power Standard (EU27 = 100) (EUROSTAT)	26,8	26,8	27	25,2	25	25,6	26,6	28,5	29,4	30.3	30,7
Unemployment rate % of labour force (IFS)	34,500	32,410	32,250	30,520	31,940	36,690	37,150	37,300	36,000	34,925	
Labor productivity, whole economy (GDP/Total Employment) (IFS)	333,25	344,23	356,864	312,6	336,589	356,373	386,6	386,035	382,842		
Nominal Efective Exchange Rate	86,569	95,176	99,999	103,346	105,597	110,339	113,417	114,614	114,839	116,340	117,34
Money Supply (M4) (in milions of national currency - denar) - (IFS)	na	na	na	na		81802,100	94773,300	109135,000	136400,000	177522,000	na

Table 5: External Developments

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Table 3: External Developments											
Balance of Payments (in EURO milion) (NBRM)											
Current Account and Capital Account Balance	0,00	0,00	0,00	0,00	0,00	25,69	-15,62	6,37	-6,94	32,81	12,82
Current Account Balance						**-168,19**	**-362,72**	**-121,34**	**-44,92**	**-414,83**	-666,66
Goods Balance						**-752,96**	**-914,30**	**-858,48**	**-1.020,43**	**-1.174,82**	-1.461,71
Exports, f.o.b.						1.203,23	1.345,01	1.642,94	1.902,65	2.441,45	2.283,18
Imports, f.o.b. /2						-1.956,19	-2.259,31	-2.501,42	-2.923,08	-3.616,27	-3.744,89
Services Balance						**-6,05**	**-43,43**	**-24,65**	**22,15**	**25,54**	12,06
Capital Account and Financial Account Balance						**193,89**	**347,11**	**127,71**	**37,97**	**447,64**	679,48
Direct and Portfolio Investment Balance						105,00	269,18	275,11	417,78	621,25	401,33
Direct Investment Balance						100,13	259,72	74,91	344,65	506,85	443,60
Portfolio Investment Balance						4,87	9,46	200,20	73,13	114,39	-42,27

Table 6: Exchange Rate Developments

Table 6a Exchange Rate over the reference period

Exchange Rate Developments over the reference period	April 2006	April 2008
Membership of the Exchange Rate Mechanism (ERM II)	No	No
Average Exchange Rate, 2007, 2008, MKD / EUR	61,1625	61,3856
Source: NBRM		

Table 6b Exchange Rate over the last ten years

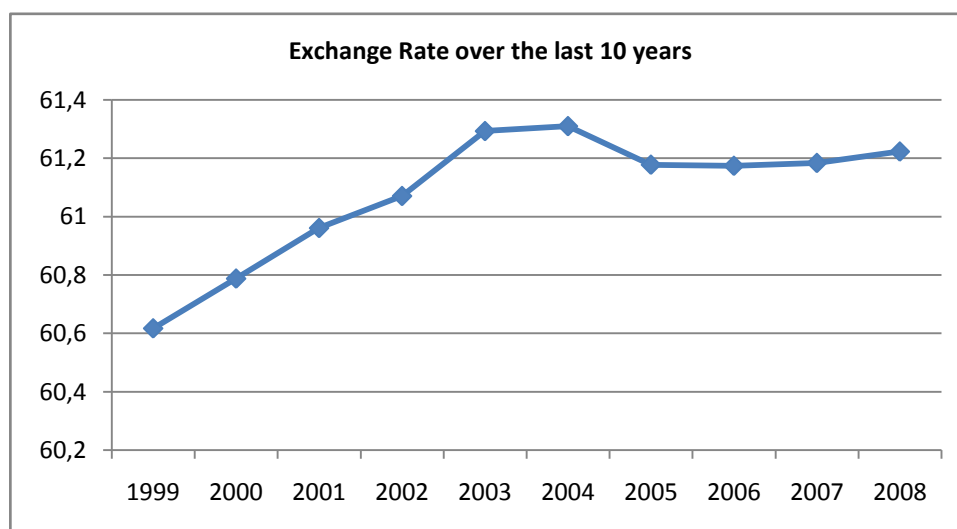| Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
DEN/EUR	60,62	60,79	60,96	61,07	61,29	61,31	61,18	61,17	61,18	61,22
Source: NBRM										

Figure 4. Exchange Rate over the reference period
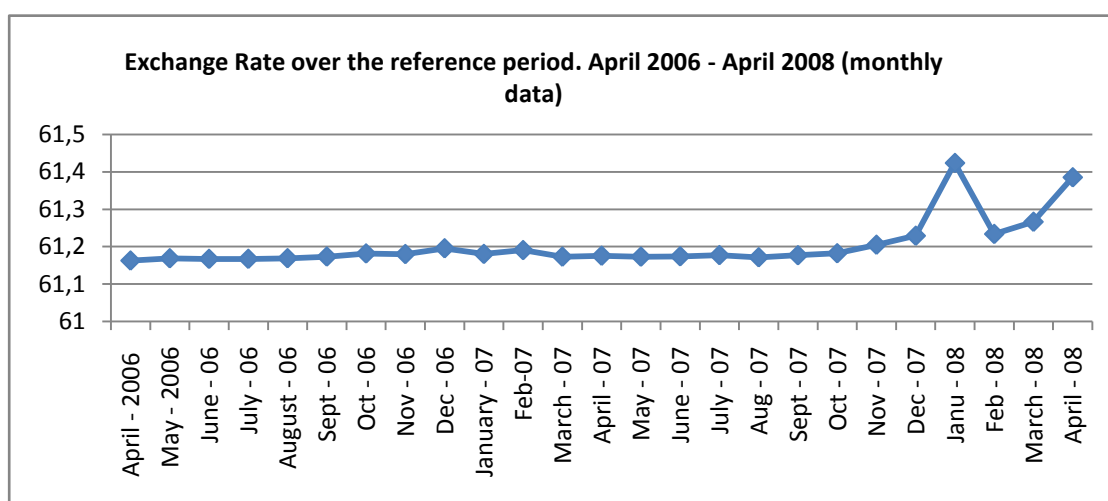
Source: NBRM

Figure 5 Exchange Rate over the last ten years

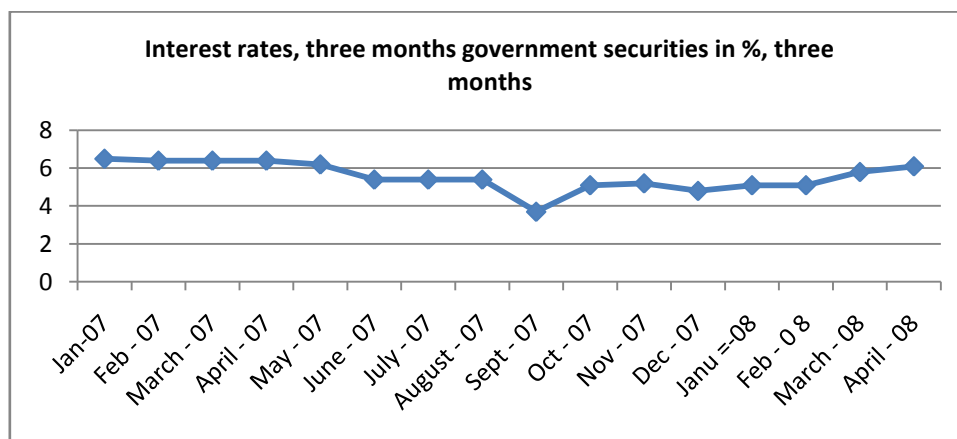
Source: NBRM

Table 7: Interest Rate Developments

Table 7a: Interest Rate developments over the reference period

Long Term Interest Rate	April 2006 to March 2007	April 2007 to March 2008
Three months government securities in %, three months	6,25833	5,3
Reference Value (Convergence Reports), April 2007, April 2008)	6,4	6,5
Euro Area (Convergence Reports), April 2007, April 2008)	4	4,3
Source: NBRM, Convergence Reports, own calculation		

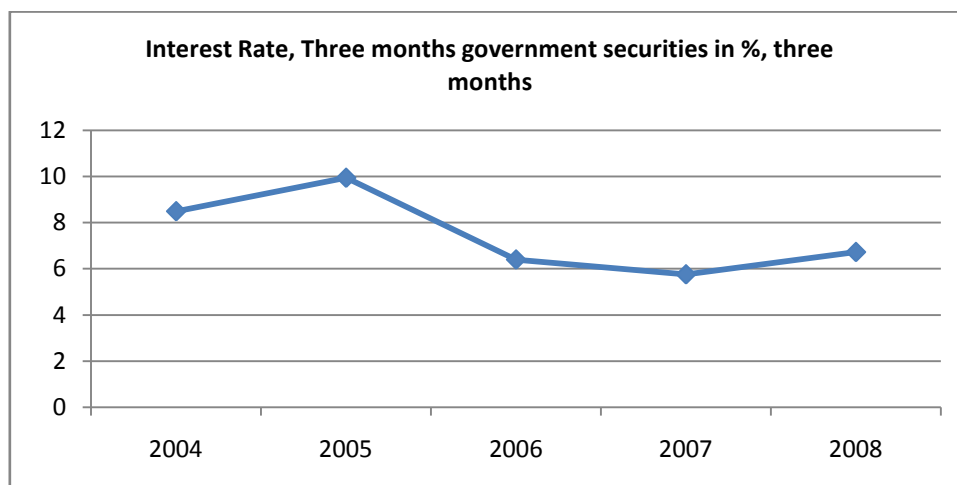## Table 7b: Interest Rate developments over the last five years

Long Term Interest Rate,	2004	2005	2006	2007	2008
Three months government securities in %, three months	8,491667	9,941667	6,4	5,757	6,725
Source: NBRM					

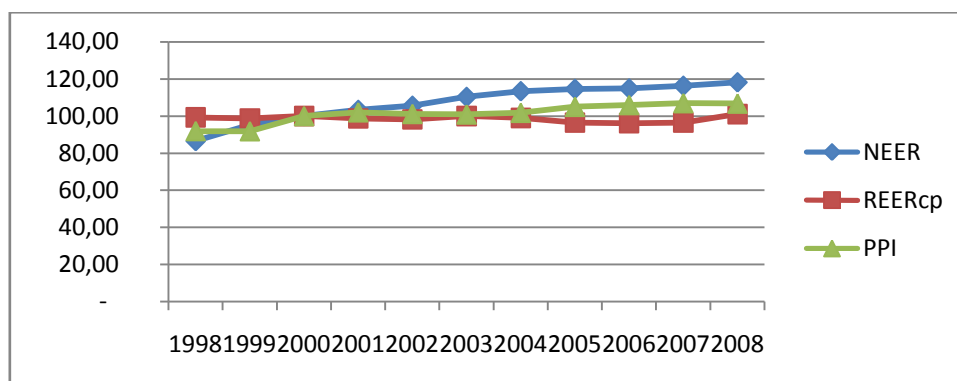## Figure 6 Interest Rate over the reference period

Source: NBRM

## Figure 7 Interest Rate over the last 5 years

Source: NBRM

Figure 8: Movement of the nominal and the real effective exchange rate and relative prices according to the prices of producers for industrial products

Source: International Financial Statistics (IFS)

Figure 9: Movement of the nominal and the real effective exchange rate and relative prices according to the cost of living
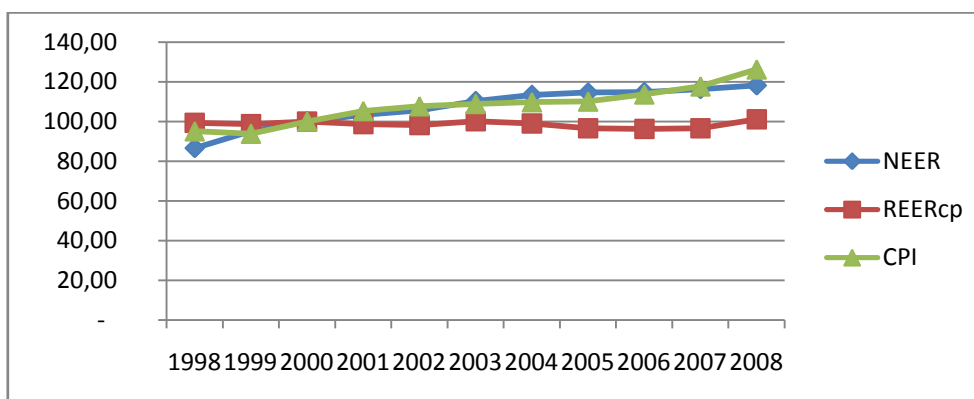
Source: International Financial Statistics (IFS)

Table 8 Correlation matrix of the movements and the changes in the exchange rate, the prices of the producers of industrial products and retail prices (in logarithms)

1999m1 - 2008m12	LNDENEU	LNPPI	LNRP
LNDENEU	1		
LNPPI	-0,0466	1	
LNRP	-0,0977	0,3687	1

1999m1 - 2008m12	LNDENEU	LNPPI	LNRP
LNDENEU	1		
LNPPI	0.0324	1	
LNRP	-0,028	0,2931	1

Table 9 Granger Causality wald test

Granger causality Wald tests				
Equation	Excluded	chi2	df	Prob > chi2
LNDENEU	LNPPI	.1053	2	0.949
LNDENEU	LNRP	2.4242	2	0.298
LNDENEU	ALL	2.7582	4	0.599
LNPPI	LNDENEU	2.4031	2	0.301
LNPPI	LNRP	1.5648	2	0.457
LNPPI	ALL	3.7379	4	0.443
LNRP	LNDENEU	2.9255	2	0.232
LNRP	LNPPI	2.4281	2	0.297
LNRP	ALL	5.2926	4	0.259

Table 10 Vector Autoregression (VAR)

. var LNDENEU LNPPI LNRP						
Vector autoregression						
Sample: 1999m4 - 2008m12				No. of obs	= 117	
Log likelihood = 1379.504				AIC	= -23.22229	
FPE = 1.65e-14				HQIC	= -23.02102	
Det(Sigma_ml) = 1.15e-14				SBIC	= -22.72652	
Equation	**Parms**	**RMSE**	**R-sq**	**chi2**	**P>chi2**	
LNDENEU	7	.001284	0.9017	1072.857	0.0000	
LNPPI	7	.011902	0.1024	13.34486	0.0379	
LNRP	7	.008122	0.0481	5.90678	0.4337	
	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LNDENEU						
LNDENEU						
L1.		.6211996	.086876	7.15	0.000	.4509257	.7914734
L2.		.3240771	.0861267	3.76	0.000	.1552719	.4928822
LNPPI						
L1.		-.0021832	.0123508	-0.18	0.860	-.0263904	.022024
L2.		-.0035232	.0131343	-0.27	0.789	-.0292659	.0222195
LNRP						
L1.		.0216583	.0157132	1.38	0.168	-.009139	.0524555
L2.		-.0108781	.0156962	-0.69	0.488	-.0416422	.019886
Co		.2017483	.1642514	1.23	0.219	-.1201785	.5236752
LNPPI						
LNDENEU						
L1.		-1.212821	.8052053	-1.51	0.132	-2.790995	.3653524
L2.		1.037292	.7982601	1.30	0.194	-.5272692	2.601853
LNPPI						
L1.		.3080137	.114473	2.69	0.007	.0836508	.5323765
L2.		.1079101	.1217344	0.89	0.375	-.1306849	.3465051
LNRP						
L1.		-.0824835	.1456368	-0.57	0.571	-.3679264	.2029593
L2.		.1603737	.1454798	1.10	0.270	-.1247614	.4455087
cons		3.053705	1.522355	2.01	0.045	.0699445	6.037466
LNRP						
LNDENEU						
L1.		-.5799998	.549491	-1.06	0.291	-1.656982	.4969828
L2.		.299321	.5447514	0.55	0.583	-.768372	1.367014
LNPPI						
L1.		.1008793	.078119	1.29	0.197	-.0522312	.2539898
L2.		.0701081	.0830744	0.84	0.399	-.0927147	.2329309
LNRP						
L1.		-.0274296	.099386	-0.28	0.783	-.2222225	.1673633
L2.		.0141529	.0992788	0.14	0.887	-.18043	.2087358
cons		5.035542	1.038891	4.85	0.000	2.999354	7.07173

[i] Inflation shall be measured by means of the consumer price index on a comparable basis, taking into account differences in national definitions. The notion of "at most, the three best performing Member States in terms of price stability", which is used for the definition of the reference value, has been applied by taking the unweighted arithmetic average of the rate of inflation of the following three EU countries with the lowest inflation rates: Malta (1.5%), the Netherlands (1.7%) and Denmark (2.0%). As a result, the average rate is 1.7% and, adding 1½ percentage points, the reference value is 3.2%.

[ii] The notion of "at most, the three best performing Member States in terms of price stability", which is used for the definition of the reference value, has been applied by using the unweighted arithmetic average of the long-term interest rates of the same three EU countries entering the calculation of the reference value for the criterion on price stability. Over the reference period considered in this report, the long-term interest rates of these three countries were 4.8% (Malta), 4.3% (the Netherlands) and 4.3% (Denmark); as a result, the average rate is 4.5% and, adding 2 percentage points, the reference value is 6.5%.

[iii] Article 4 of the Protocol on the convergence criteria referred to in Article 121 of the Treaty stipulates that: "the criterion on the convergence of interest rates referred to in the fourth indent of Article 121(1) of this Treaty shall mean that, observed over a period of one year before the examination, a Member State has had an average nominal long-term interest rate that does not exceed by more than 2 percentage points that of, at most, the three best performing Member States in terms of price stability. Interest rates shall be measured on the basis of long-term government bonds or comparable securities, taking into account differences in national definitions. (Convergence Report, May 2008)

[iv] The reference period considered in this report is from April 2007 to March 2008. The notion of "at most, the three best performing Member States in terms of price stability", which is used for the definition of the reference value, has been applied by using the unweighted arithmetic average of the long-term interest rates of the same three EU countries entering the calculation of the reference value for the criterion on price stability. Over the reference period considered in this report, the long-term interest rates of these three countries were 4.8% (Malta), 4.3% (the Netherlands) and 4.3% (Denmark); as a result, the average rate is 4.5% and, adding 2 percentage points, the reference value is 6.5%.

[v] Gross domestic product (GDP) is a measure of the results of economic activity. It is the value of all goods and services produced less the value of any goods or services used in producing them. The calculation of the annual growth rate of GDP volume allows comparisons of economic development both over time and between economies of different sizes, irrespective of changes in prices. Growth of GDP volume is calculated using data at previous year's prices

[vi] The volume index of GDP per capita in Purchasing Power Standards (PPS) is expressed in relation to the European Union (EU-27) average set to equal 100. If the index of a country is higher than 100, this country's level of GDP per head is higher than the EU average and vice versa. Basic figures are expressed in PPS, i.e. a common currency that eliminates the differences in price levels between countries allowing meaningful volume comparisons of GDP between countries. Please note that the index, calculated from PPS figures and expressed with respect to EU27 = 100, is intended for cross-country comparisons rather than for temporal comparisons (EUROSTAT).

[vii] However, despite the insignificant fall of the unemployment rate, in relation to the previous year, we can say that the unemployment rate in Macedonia is still high, and this problem becomes even worse once the long-term unemployment is identified.The analysis of the duration of the unemployment from 1996 until 2005 indicates that the persons unemployed for more than one year and the persons unemployed for more than four years participate in the total unemployment with 84.3% and 58.4%, respectively. Having in mind that the relation between the duration of the period in which one person is unemployed is in inverse proportion to the possibility for their employment, such a structure significantly hinders the possibility for solving the problem with the unemployment (NBRM Annual Report, 2006). However, certain studies show that the real unemployment rate is significantly lower that the official one. For example, if the unemployment rate is adjusted for the estimated number of employed persons in the grey economy, it would equal 15%. (Source: IMF, Selected Issues, October 2006)

[viii] *Thus, the Balassa-Samuelson effect means that real value of local (national) currency is higher; the higher is local labor productivity in the tradable sector relative to that in the rest of the world, or even the pace of the appreciation of local (national) currency is higher, the higher is the growth rate of local labor productivity in the tradable sector relative to that in the rest of the world (Marczewski, 2002)*

[ix] This methodology enables us to analyze the movements of certain economic categories through time series, while at the same time avoids the problem of endogeneity of variables which is present at the structural econometric models. (Gujarati D, 2003)

[x] Actually, it is assumed that the model explains only 10% and 4% of the change in the prices of the producers of industrial products and of the retail prices, respectively