

A DEMAND-SUPPLY ANALYSIS OF GDP EVOLUTION IN ROMANIA

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Key words: nominal GDP, real GDP, aggregate demand, aggregate supply, growth factors.

Abstract: This paper aims at identifying and explaining, through a retrospective analysis, GDP fluctuations and tries to evaluate, using the aggregate supply-demand model, the contribution of each structural element in GDP formation and increase. Finally, the article proposes directions of action for continuing the sustainable development of our country and reducing the gaps between Romania and other EU members.

1. Introduction

Romania's admission in the European Union implies a sustainable and continuous economic growth, in order to reduce economic and social disparities between our country, EU average and other EU members, through a mobilization of the intern capital and labour force potential. Because the key elements in analysis of economic growth, of production, of inflation and of economic policies role are the aggregate supply and demand, we want to use the aggregate supply-demand model in order to explain and forecast the GDP fluctuations along this trend and also prices fluctuations.

2. Aggregate demand and the contribution of its elements in GDP growth

At national economy level the aggregate demand is given by the quantity of goods and services solicited by households, companies, public power and the rest of the world and it is identical with the total expenditures made by internal and external users in order to acquire the final goods and services manufactured in the economy.

The aggregate demand will only depend on the quantity of goods and services which constitute the real GDP and the level of the prices.

It results that, following the evolution of the GDP which was calculated using the expenditures method, we will be able to determine the contribution of aggregate demand to the economic growth. In order to do that, we have to distinguish between the nominal and the real GDP.

The nominal GDP stands for the total value of the final goods and services which were manufactured by the economic entities from a country, in a certain period, expressed in the prices of the current period, respectively of the period in which it was produced.

The real GDP stands for the same value expressed in the prices of a certain base-year (reference year).

The real GDP will measure the modifications of the economic production between two different periods by evaluating the production of both periods in the same prices.

In order to pass from a nominal to a real GDP we need an indicator which should reflect the price evolution for all goods of the economy. Because such an indicator does not exist in practice, we can use the following: Consumer price index (CPI); GDP

deflator (DF_i); Industrial production price index (IPPI).

Between the consumer price index (CPI) and the GDP deflator (DF_i) there are some fundamental differences: the deflator includes a larger group of goods and services, larger than the one used for the calculation of the CPI; CPI measures the evolution of the prices according to a fixed value for goods and services which remains the same each year, and which does not occur in the case of the deflator; CPI also includes the prices for the imported goods, while the deflator includes only the prices for the goods and services manufactured in the country.

According to these data the GDP deflator can be statistically expressed through the general price index (GPI).

Beside these indices in macroeconomic calculations we can also use volume index of GDP and harmonized consumer prices index.

In order to point out the contribution of the aggregate demand in GDP growth in Romania, it is necessary to follow up the evolution of its component elements (presented in table no.1).

Table 1

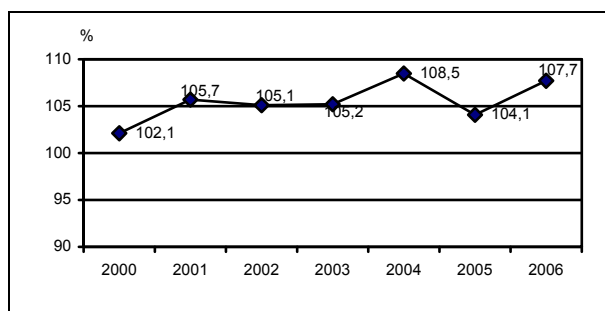
Evoluția PIB și a elementelor componente

- milioane lei prețuri comparabile SC 95 (1998) -

Indices	2000	2001	2002	2003	2004	2005	2006
Total GDP of which:	55746	84995	122748	159389	214270	256694	310084
Internal demand, of which:	59652	92031	130778	173495	237969	290222	358417
- Total final consumption	49144	73588	104318	137795	186443	230127	281518
- Gross Capital Formation	10194	16733	26104	35046	46982	60645	77212
Changes in inventories	314	1710	356	654	4544	-550	-313
Net external demand of which:	-3906	-7036	-8030	-14106	-23699	-33528	-48333
-Export	18874	29605	45712	58175	78118	95376	104950
-Import	22780	36641	53742	72281	101817	129264	153283

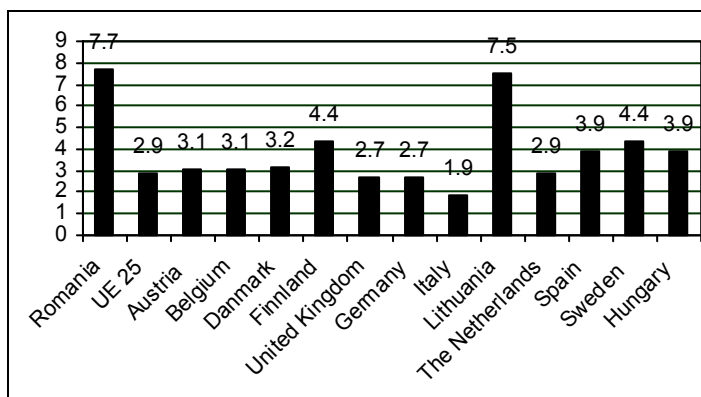
Source: National Institute of Statistics

Data analysis of the from table no.1 points out the following: The Gross Domestic Product registered a permanent growth between 2000-2006, and this growth is also pointed out in graphic no.1.



Graphic no. 1 Variation of GDP growth (last year= 100)

In real terms GDP registered between 2000-2006 a growth of 42,16% which means an annual average rhythm of approx. 5,2%. It is significant the fact that Romania registered in 2006 (compared to 2005) the highest rhythm of GDP growth from the EU member states, as we can also notice in graphic number 2.

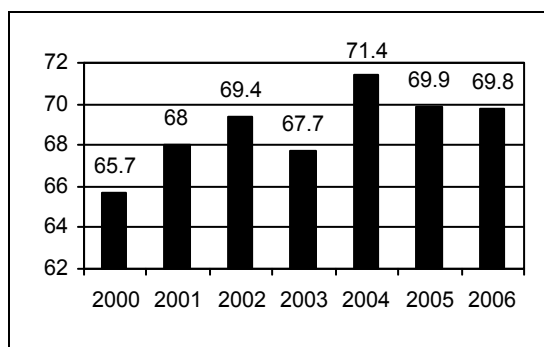


Graphic no. 2 GDP growth in EU in 2006

The growth from the last seven years provided a gradual reduction of the disparities towards the EU countries and allowed the reforms to continue in order to accomplish the general objectives of the Lisbon Strategy: “more economic growth and more occupation”.

The internal demand represented (in the entire period 2000-2006) the main factor for the GDP growth, and registered an average annual rhythm of growth of 8,2% which was superior to the GDP rhythm of growth (5,2%).

In our opinion the main factors which contributed to the growth of the internal demand were: stimulating the private sector of the economy where the contribution in GDP creation grew from 65,6% in 2000 to 69,8% in 2006 (graphic no. 3); the absorption of the community funds; the stimulation of consumption credit through monetary policy measures; reducing the taxes on personal income and companies profit by introducing the flat tax of 16% starting with 1 January 2005; foreign investments which stimulated gross capital formation.



Graphic no. 3 Contribution of private sector in GDP creation

In the analysed period, the main factor of economic growth remained the individual consumption of the households which registered an annual average rhythm of growth of

7,2%, its contribution in real growth of the GDP oscillating between 40,7% and 73,5% (table no.2).

Table 2

Contribution of demand components in GDP dynamic

- Percentage modification towards the previous year -

Constitutive elements	2000	2001	2002	2003	2004	2005	2006
Real GDP	2,1	5,7	5,1	5,2	8,4	4,1	7,7
Final consumption	1,4	6,1	3,0	8,3	11,9	8,5	8,8
Households actual individual final consumption	0,2	6,8	4,8	8,3	12,9	9,0	9,4
Government's actual collective final consumption	20,4	-1,9	6,1	8,5	4,6	4,9	4,00
Gross fixed capital formation	5,5	10,2	8,2	8,6	10,6	13,0	12,6
Changes in inventories	1,0	-0,5	0,7	1,2	-0,3	-0,2	+0,5
Net export (export – import)	-5,6	-7,8	-5,8	-7,6	-8,2	-9,6	-4,9
Contributions to real GDP growth: Internal demand	5,9	9,8	9,3	8,8	13,0	8,7	14,1
Households actual individual final consumption	2,4	7,2	4,5	6,4	9,7	7,1	9,9
Government's actual collective final consumption	0,7	-0,3	1,5	0,6	0,5	1,0	0,2
Gross fixed capital formation	2,9	3,0	3,1	1,8	2,3	2,8	3,7
Changes in inventories	-0,1	-0,1	0,2	0,1	0,5	-2,2	0,3
Net external demand (net export)	-3,8	-4,1	-4,2	-3,7	-4,6	-4,5	-6,4

At the same time the final consumption grew in an annual average rhythm of 6,8% and the final governmental consumption with 6,5%.

An extremely important element, with significant contributions especially for the future which contributed in GDP growth, was the improvement of investment-consumption ratio. So, gross capital formation grew in an annual average rhythm of 9,8% in the analysed period, which in the given circumstances and taking into account the European and worldwide realities, will constitute the engine for the durable and sustainable economic growth in Romania in the future years.

The emphasized growth of investments in 2000-2006 period led to the increase of their contribution in the growth of the internal demand and real GDP.

Reducing the direct tax on labour and capital stimulated savings and investments, the process being also reflected in the growth of investments in the private sector and of foreign investments, as data from table no. 3 show.

Table 3

Evolution of foreign direct investments

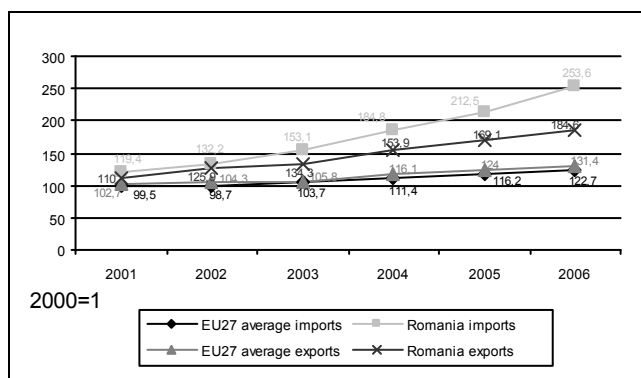
Indices	2000	2001	2002	2003	2004	2005	2006
Investment rate (% from GDP)	18,9	20,7	21,3	21,4	21,6	23,1	23,6
Investments (mill. euro)	1147	1294	1212	1946	5183	5208	7500

Source: NIS

Net export registered a negative contribution in GDP growth, as a consequence of increased imports of goods and services, mainly caused by the high dependence of the

Romanian economy, of energy imports and raw materials imports and secondly by the capital goods imports (graphic no.4). Investments in economy led to a growth in competitiveness of Romanian products, fact which was reflected in the change in structure of the industrial products export in the sense that the export of resources and products with a low incorporated added value (low technology) was reduced, and the export of products with high incorporated added value increased (medium and high technology products).

Because Romania mostly relies on imported technology, sustained efforts are necessary in order to create it also at a local level. As a consequence, it is expected that net export will continue to have a negative contribution to the GDP growth, but on a descending scale. The faster growth of imports compared to exports led to the growth of commercial deficit, which was also reflected in the growth of the current account deficit (table no.4).



Graphic no. 4 Evolution of Romanian and EU 27 exports and imports between 2001-2006

Table no. 4

Romanian trade balance in the period 2000-2006

- million euros -

Indices	2000	2001	2002	2003	2004	2005	2006
Exports of goods and services (FOB)	11273	12722	14675	15614	18935	22255	26100
Growth towards the previous year		41,3	12,9	15,4	6,4	21,3	17,5
Imports of goods and services (CIF)	14245	17383	18881	21201	26281	32569	39370
Growth towards the previous year		43,4	22,1	8,6	12,3	24,0	23,9
Imports of goods and services (FOB)	13140	16045	17427	19569	24258	30061	36340
Growth towards the previous year		43,7	22,1	8,6	12,3	24,0	23,9
Trade balance (FOB – CIF)	-1867	-3323	-2752	-3955	-5323	-7806	-10240
Percentage from GDP %	-4,6	-7,4	-5,7	-7,5	-8,8	-9,8	-10,8
Trade balance (FOB – CIF)	-2962	-4661	-4206	-5587	-7346	-10314	-13270
Percentage from GDP %	-7,4	-10,4	-8,7	-10,6	-12,1	-13,0	-14,0

Source: NIS data and own calculations

Among the factors which have influenced Romanian imports, which in the analysed period registered an annual average rhythm of growth of 14,22% (towards 2,96% EU27 average) we mention: the unfavourable evolution of the petrol price (the

growth with more than 100% in the last 4 years); because the demand of energy products is inelastic in any country the value of the energy imports grew in Romania with over 50%; the growth of foreign direct investments which in the first years generate massive capital imports from investors origin countries; the absorption of structural and pre-accession funds which meant in most of the cases, imports of equipments for infrastructure investments and of fixed capital and of re-technologisation (projects financed in international cooperation where the financial partners were the preferred suppliers); the growth of internal prices which was faster compared to international price growth, on the background of the labour force price growth because of the strong appreciation of the national currency (leu) which was the currency with the highest nominal appreciation from the international market.

From the factors which influenced the Romanian exports, which have increased with 9,15% yearly (compared to EU 27 average of 3,98%), we have to mention: the volume growth of foreign investments which through the know-how transfer and through the interests of foreign investors that developed businesses in Romania, lead to the increase of exports especially in the branches of the manufacturing industry where most of the investments are concentrated; the strong appreciation of the leu (especially in the last years) led to the diminution with 20-25% of price competitiveness fact that caused the reduction of exports especially in the branches where the elasticity of demand-price ratio is high (the international demand is price sensitive); wage growth exceeded productivity growth in many branches. This thing led to reduction in price competitiveness as a consequence of cost growth at internal producers; the unfavourable evolution of the demand on international market.

As a conclusion we can say that in the analysed period the main factor of Romanian economic growth remained households individual consumption (the main element of the internal demand). But this has reduced its contribution to real GDP growth at the same time with the increase contribution in gross fixed capital formation.

It is also significant the fact that while the growth in gross fixed capital formation was important, households individual consumption was situated on a descendent trend, this fact being also shown by GDP evolution on expenditure elements (table no.5).

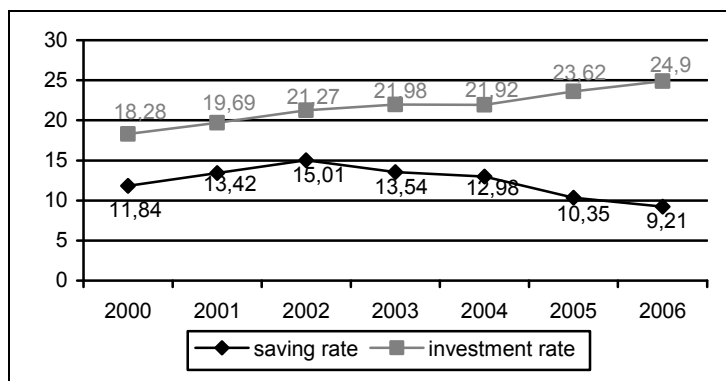
Table 5

GDP evolution on expenditure in the period 2000-2006

Indices	2000	2001	2002	2003	2004	2005	2006
Total GDP	100	100	100	100	100	100	100
Internal demand, of which:	107,0	108,28	106,54	108,85	111,06	113,33	115,50
Total final consumption	88,16	86,58	84,99	86,45	87,01	89,65	90,76
Gross capital formation	18,22	19,69	21,27	21,99	21,93	23,63	24,90
Changes in inventories	0,56	2,01	0,28	0,41	2,12	-0,22	-0,08
Net external demand, of which	-7,00	-8,28	-6,54	-8,85	-11,06	-13,33	-15,59
Exports	33,86	34,83	37,24	36,50	36,46	37,30	33,85
Imports	-40,86	-43,11	-43,78	-45,35	-47,24	-50,36	-49,43

Source: calculated on data basis from Table 1

The data from the table no.5 also show the fact that the internal investment rate grew in the analysed period from 18,28% to 24,9%. In the same period the internal savings rate grew from 11,84% in 2000 to 15,01% in 2002 and afterwards it registered continuous reduction up to 9,21% in 2006 (graphic no.5).



Graphic no. 5 Evolution of internal investment rate and saving rate in Romania

3. Aggregate supply and the contribution of its elements in GDP growth

For the study of the contribution of the aggregate supply in GDP growth we will use the data related to GDP, which were already presented in table no. 6.

Table 6

GDP evolution on categories of resource in the period 2000-2006

- million RON current prices -

Indices	2001	2002	2003	2004	2005	2006
GDP	116768,7	151475,1	197564,8	246468,8	288047,8	342418
Added gross value	104283,7	135619,2	175401,8	219975,9	254388,8	303285
Taxes on product	12185,8	15769,5	22072,0	26278,2	33715,5	39191
Rights on imports	903,8	936,1	1329,7	1632,5	2033,4	2722
Subsidies on product	-604,6	-849,7	-1238,7	-1417,8	-2089,9	-2779

Source: Romanian Statistical Yearbook, NIS, 2006

Data from Table 6 show that fact that the main GDP component is the gross added value which registered an annual average rhythm of growth of 5% (but inferior to the rhythm of growth of the real GDP). The most significant growths are to be seen in 2000 (+5,9% towards 1999), 2004 (+6,5% towards 2003) and 2006 (+6,4% towards 2005).

Table no.7

GDP evolution on branches of activities in the period 2000-2006

- percentage modifications from last year -

Indices	2000	2001	2002	2003	2004	2005	2006
GDP	2,1	5,7	5,1	5,2	8,4	4,1	7,7
Industry	5,9	4,4	5,1	4,4	6,5	2,5	6,4
Agriculture	-18,1	28,0	-6,6	5,2	18,9	-13,9	1,5
Constructions	6,3	11,1	7,6	7,0	9,1	9,9	13,0
Services	5,5	3,6	7,1	5,5	6,8	8,1	6,5

Source: NIS

Table 8

The GDP structure on branches of activities in the period 2000-2006

Indices	2000	2001	2002	2003	2004	2005	2006
Industry	27,3	27,7	28,1	25,0	25,2	24,4	24,0
Agriculture, sylviculture, pomiculture, forest exploitation	11,1	13,4	11,4	11,6	12,8	8,9	8,0
Constructions	4,9	5,3	5,8	5,8	6,0	6,5	6,9
Total services	41,4	40,3	40,5	46,4	45,2	48,3	49,1
Total economy	84,7	87,1	85,8	88,80	89,10	88,1	88,0
Net taxes on product	15,3	12,9	14,2	11,20	10,9	11,9	12,0
GDP	100	100	100	100	100	100	100

Source: NIS

Following the GDP evolution on branches of activity (table no. 7) we see that the acceleration of its rhythm of growth (+5,2% per year for the period 2000-2006) was accompanied by some positive results consisting of adapting the supply to the exigency of the demand.

We can also notice the fact that there was no year in which gross added value from the industry exceeded GDP growth, although the annual average rhythm of growth was with 4,2% higher than the one registered in agriculture 2,2%.

In the last years of this period (2005 and 2006) we witnessed an accentuation of the ascendant trend of the gross added value in industry, its rhythm of growth being supported by all three sub-sectors: extractive, manufacturing and energetic.

The most representative evolutions were registered in: the food industry which in the last years benefited from the consistent contribution of the foreign investors drawn by the market potential but also by the important funds granted through different programmes (SAPARD); metallurgy as a consequence of internal demand growth of the industrial and construction operators; electric machines and devices; transport vehicles.

The last two branches increased their rhythm of growth especially because of the deliveries in export.

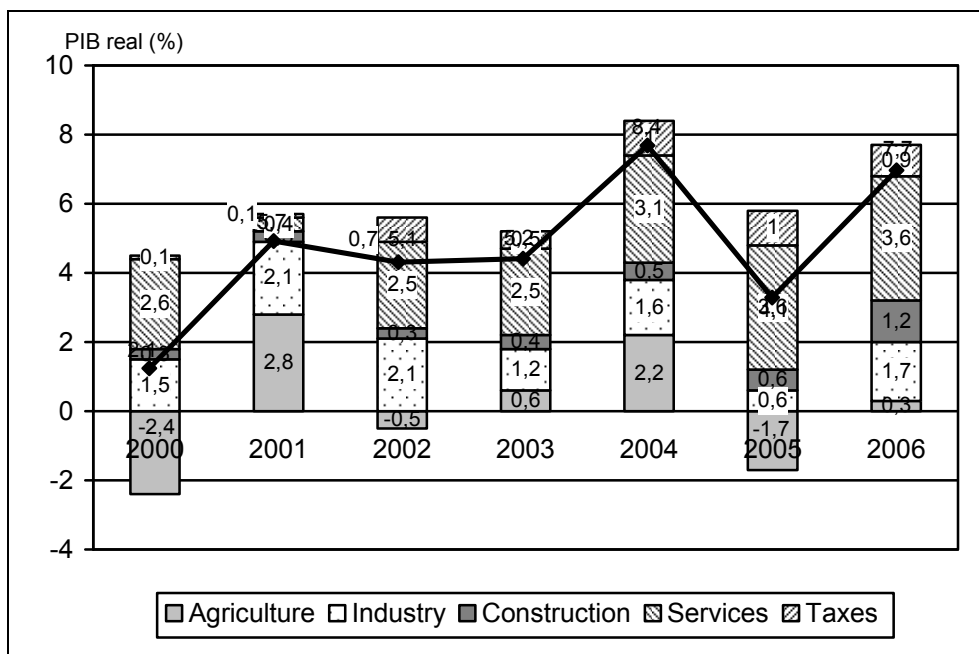
The gross added value from agriculture knew some ups and downs related to the climate conditions especially in the vegetal production which in 2006 knew a significant growth compared to 2005, growth which did not compensate the negative rhythm of the zootechnical component.

The most sustainable growth was registered in constructions sector which registered an annual average rhythm of growth of 9,1%. A major contribution in this sector was represented by engineering constructions and residential buildings, which was also a consequence of the growth of foreign investments (gross fixed capital formation).

The dynamic and the share of the services registered an ascending evolution, the annual average rhythm of growth in this sector (6,1%) being the highest one.

The progresses registered in all activities sectors led to significant mutations in the GDP structure (table no.8)

In spite of all these deficiencies industry had in the period 2000-2006, there were some significant contributions in the growth of real GDP (table no.7 and graphic no. 6).



Graphic no. 6 The evolution of the contribution of the main components to the growth of the real GDP in Romania, in the period 2000-2006

Analysing the contribution of the branches to GDP real growth (graphic no. 6) we see that the most significant growth was registered in services sector which had the greatest contribution in real GDP growth (3,1% in 2004 and 3,6% from the real GDP growth took place in this sector in 2005 and 2006).

Mainly the growth from services sector was related to the activities from retail trade, transports, telecommunications, real estate transactions and services for those enterprises which registered annual rhythms of the turnover which were superior to the sector average.

4. Conclusions

The positive evolutions registered in the Romanian economy in the analysed period led to the attenuation of the GDP disparities per inhabitant as compared to the EU27 average (table no. 9 and graphic no.7).

Data from table no.10 show the following:

- in the analysed period 2000-2006, although the GDP per inhabitant at purchase power standard (PPS) diminished as compared to the EU27 average in some countries as Belgium, Denmark, Germany, Italy, Sweden, it still continues to be over this average. In other states there were some slight oscillations (Austria, The Netherlands, Finland, United Kingdom) while in the countries from the old communist block (Bulgaria, Latvia, Hungary and Romania) there was some significant growth which were able to recover 9% (Hungary) and 18,3% (Lithuania) from the EU27 average.

- although our country has recovered 11,6% it continues to be on the last but one place from the EU countries with a GDP per inhabitant at PPS which represented in 2006 37,6% from the average. The GDP growth per inhabitant in our country was the consequence of the total GDP growth but also of the population reduction.

- the growth of the real GDP in the EU 27 countries registered an average annual

rhythm of growth of 1,685 between 2000-2006 as compared to 5,8% in our country. The highest rhythms of real GDP growth were registered in the Baltic countries (Latvia 7,49%, Estonia 7,46% and Lithuania 6,63%) followed by Romania (5,2%), the Czech Republic and Bulgaria (4,62%), Slovakia (4,43%) and Slovenia (4,29%), all former countries from the communist bloc with a special growth potential.

Table 9

Evolution of GDP per inhabitant at standard purchasing power

Country	2000	2001	2002	2003	2004	2005	2006	2007*	2008*
EU (27 countries)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Euro Zone	115.6	113.8	112.9	112.1	111.1	111.0	110.2	109.9	109.4
Austria	133.7	127.6	127.9	129.0	128.8	128.6	128.7	129.3	128.7
Bulgaria	27.9	29.4	31.1	32.6	33.6	35.2	37.1	38.7	40.3
Denmark	132.2	128.4	129.0	124.7	124.5	126.3	126.6	126.6	125.5
Finland	119.0	117.1	115.7	117.1	116.1	114.6	113.6	114.2	114.1
Germany	117.4	118.3	112.4	111.2	107.6	105.4	103.7	103.3	102.2
Italy	39.4	41.6	44.2	49.2	51.1	53.8	57.7	60.9	63.1
Lithuania	134.8	134.3	134.0	129.9	130.3	131.9	132.1	133.0	132.8
The Netherlands	117.4	118.1	118.9	120.0	121.8	119.6	119.1	119.4	118.7
UK	125.4	120.0	119.2	120.5	120.4	119.1	120.3	121.8	122.3
Sweden	26.0	27.6	29.4	31.5	33.6	34.4	37.6	39.5	41.1
Hungary	159.5	155.4	151.8	152.4	153.5	155.3	154.5	151.0	149.7
Romania	117.4	114.7	112.3	112.4	113.2	114.2	113.7	113.0	112.5
US									
Japan									

Source: Eurostat

*) – predictions

- the recovery of the disparities towards the EU average will be quite difficult because in the mentioned countries, the labour productivity per person is situated under the EU27 average being in 2006 of 33,5% in Bulgaria, 71,2% in the Czech Republic, 63,7% in Estonia, 52,9% in Latvia, 58,6% in Lithuania, 38,35 in Romania, 84,7% in Slovenia and 70,4 % in Slovakia.

- Romania's integration in the EU structures increased the chances and the opportunities of taking advantage of being a fully member and underlined the need to amplify the own effort in order to modernize the economy and to reduce the disparities that separate us from other member states.

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