MAIN CONTRIBUTORS TO GDP IN TRANSITION COUNTRIES

Ştefan Cristian CIUCU*

Abstract

The main objective of this paper is to present and analyze the evolution of the main contributors to GDP in the transition countries: Republic of Macedonia, Republic of Moldova and to compare them with the main contributors to GDP in the developed country of Austria.

We will take a look at the Gross Domestic Product and its main contributors (agriculture, industry and services). Following the analysis of the statistical data, conclusions will be drawn regarding the situation of the economy in each country.

Computer software tool R is used in the study.

Keywords*: transition countries, macroeconomic stability, growth, statistical analysis, GDP.*

1. Introduction

It is well known that transition is a long and difficult process, which changes many aspects of a country's economy and influences the society as a whole. There are many factors behind growth and there are no patterns that can characterize the growth experience of the transition economies[1].

In this article, the evolution of GDP and its main contributors will be analyzed. The initial conditions of a country in transition are very important and based on them a country can grow more or less. In countries in transition agriculture and industry in the first years usually bring great contributions to the GDP and later on the services sectors starts to develop.

For a brief review of the literature we can consider the study of (Hussin, 2012), in which the contribution of economic sectors to economic growth in China and India is discussed. In this article an overview of both China's and India's economies is done and a regression model is developed based on major contributors to GDP. Another study is of (Andrei, 2008), in which tendencies in the regional industry and specialization in Romania during the transition period are presented and an econometric model is developed.

As for the IT in macroeconometric models, the study of (Oancea, 2010) is of interest. In this article, numerical parallel algorithms for large scale macroeconometric models are implemented using a software package.

2. Data used in the study

This paper adopts a country-specific time series data from 1990 to 2012. The data source is *The World Bank* - http://data.worldbank.org.[2] Also, some of the data were calculated

* PhD Candidate, Cybernetics and Statistics Doctoral School, The Bucharest University of Economics Studies (stefanciucu@yahoo.com).

[1] Oleh Havrylyshyn, Thomas Wolf (1999). Determinants of Growth in Transition Countries. Finance & Development, International Monetary Fund, Vol. 36, No. 2.

[2] Consulted on 16 January 2014.

by the author. An analysis just between the years 1990 and 2012 is done because data for other years, for some indicators, is unavailable.

Year	GDP (current US$)	Agriculture, value added (% of GDP)	Industry, value added (% of GDP)	Services, etc., value added (% of GDP)
1990	4.471.828.622	9	44	47
1991	4.694.744.807	14	36	51
1992	2.316.618.515	17	39	44
1993	2.550.194.959	12	35	53
1994	3.381.270.267	13	30	56
1995	4.449.375.526	13	30	57
1996	4.422.159.849	13	30	57
1997	3.735.312.201	13	35	53
1998	3.571.043.202	13	34	53
1999	3.673.288.166	13	33	54
2000	3.586.883.989	12	34	54
2001	3.436.961.385	12	32	56
2002	3.791.306.758	12	30	57
2003	4.756.221.629	13	29	58
2004	5.514.253.043	13	28	59
2005	5.985.809.060	12	28	60
2006	6.560.546.900	12	29	59
2007	8.159.825.620	11	31	58
2008	9.834.038.367	12	30	59
2009	9.313.573.965	11	27	61
2010	9.338.665.631	11	28	61
2011	10.439.099.881	11	28	61
2012	9.612.518.136	11	26	63

Table 1. Data for the Republic of Macedonia

Year	GDP (current US$)	Agriculture, value added (% of GDP)	Industry, value added (% of GDP)	Services, etc., value added (% of GDP)
1990	3.592.856.080	36	37	27
1991	3.094.567.110	43	33	24
1992	2.319.243.407	51	31	18
1993	2.371.812.924	33	44	23
1994	1.702.314.353	29	38	32
1995	1.752.995.314	33	32	35
1996	1.695.130.484	31	31	38
1997	1.930.071.445	30	29	41
1998	1.639.497.207	32	24	44
1999	1.170.785.048	28	19	53
2000	1.288.420.223	29	22	49
2001	1.480.656.884	26	24	50
2002	1.661.818.168	24	23	53
2003	1.980.901.554	22	25	54
2004	2.598.231.467	20	17	62
2005	2.988.172.424	20	16	64
2006	3.408.454.198	17	16	67
2007	4.402.495.921	12	15	73
2008	6.054.806.101	11	14	75
2009	5.439.422.031	10	13	77
2010	5.811.622.394	14	13	72
2011	7.015.201.446	15	17	68
2012	7.252.769.934	13	17	70

Table 2. Data for the *Republic of Moldova*

In the above table we have:

- GDP (current US$)[3] - GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

- Agriculture, value added (% of GDP)[4] - Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.

- **Industry, value added (% of GDP)[5]** - Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.

- **Services, etc., value added (% of GDP)[6]** - Services correspond to ISIC divisions 50-99 and they include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.

3. Brief overview of the economy of the Republic of Macedonia

The breakup of Yugoslavia in 1991 marks the beginning year of the transition process. Like in most of the countries that started the transition process, a major drop in the GDP value can be observed in the first years. Macedonia was one of the least developed of the republics of Yugoslavia, with a low production level and an absence of infrastructure.

[3] http://data.worldbank.org/indicator/NY.GDP.MKTP.CD
[4] http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS
[5] http://data.worldbank.org/indicator/NV.IND.TOTL.ZS
[6] http://data.worldbank.org/indicator/NV.SRV.TETC.ZS

The first years after the breakup were the most difficult mostly due to high inflation, large fiscal deficits and almost no foreign investment.

In 1993-1994 new economic reforms were initiated by the Government with the goal of reaching economic stabilization (also money assistance from international donors like the World Bank and the International Monetary Fund were obtained).

From data of the World Bank website, it can be seen that since 1996, Macedonia, had a low inflation and tried to maintain macroeconomic stability.

Many privatizations were done in 2000, due to which the economy's reserves were boosted to over $700 million[7].

In the article of (Shukarov, 2012), an analysis of people's perceptions about the effects of transition process is done. Also, the consequences of the 2008 crisis and the overall political context are presented.

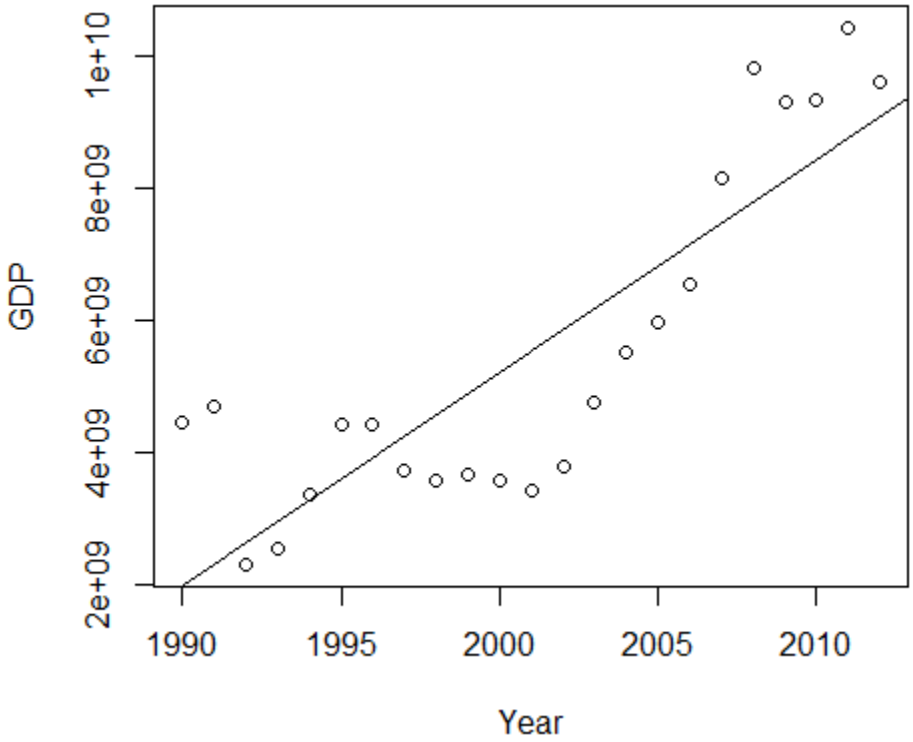

Figure 1. Plot of GDP over years in Macedonia

In figure 1, the GDP value over the 1990-2012 time period has been plotted in R software, with a line of best fit.

Analyzing the GDP data, it can be seen that it grew yearly, after 2001, by an average of 6%, until in 2008 when the economic crisis affected the economy.

In the first years of transition, agriculture was a big contributor to the GDP, but since 2002 the contributions to GDP are continuing to drop. In the article of (Kjosev, 2009), the agriculture sector in the Republic of Macedonia is analyzed with the situation at that moment and development perspectives. In 2012, the agricultural land of Macedonia was about 44.3% of land area, according to data from the World Bank website[8]. Macedonia has good climate conditions for agriculture and fertile soils. Other interesting works about the agricultural status and productivity in Macedonia are the studies of (Melmed-Sanjak, 1998) and of (Ericson, 2009).

[7] http://en.wikipedia.org/wiki/Economy_of_the_Republic_of_Macedonia
[8] http://data.worldbank.org/indicator/AG.LND.AGRI.ZS

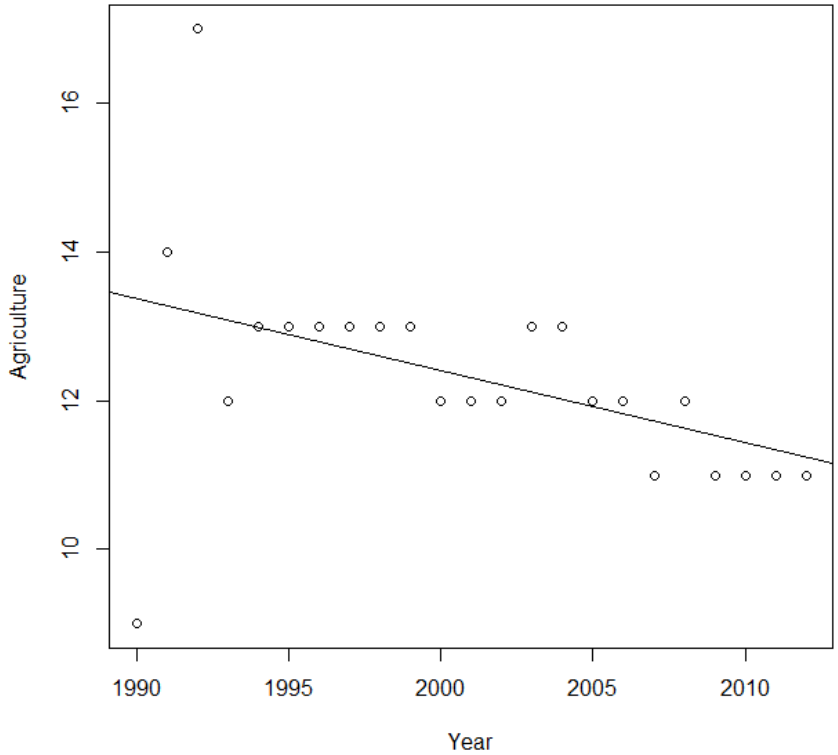

Figure 2. Plot of agriculture, value added (% of GDP) over years in Macedonia

From Figure 2 it can be seen that the value added to the GDP by agriculture tends to decrease.

In this transition period the services sector has a notable growth. With a new economy plan, tourism becomes an attractive sector for investments and development. In the article of (Petrevska, 2012), the economic impacts of tourism in Macedonia is treated. Also, in another article of (Petrevska, 2012), an attempt to provide a forecast of foreign tourism demand in 2014, by investigating the case of Macedonia is done.

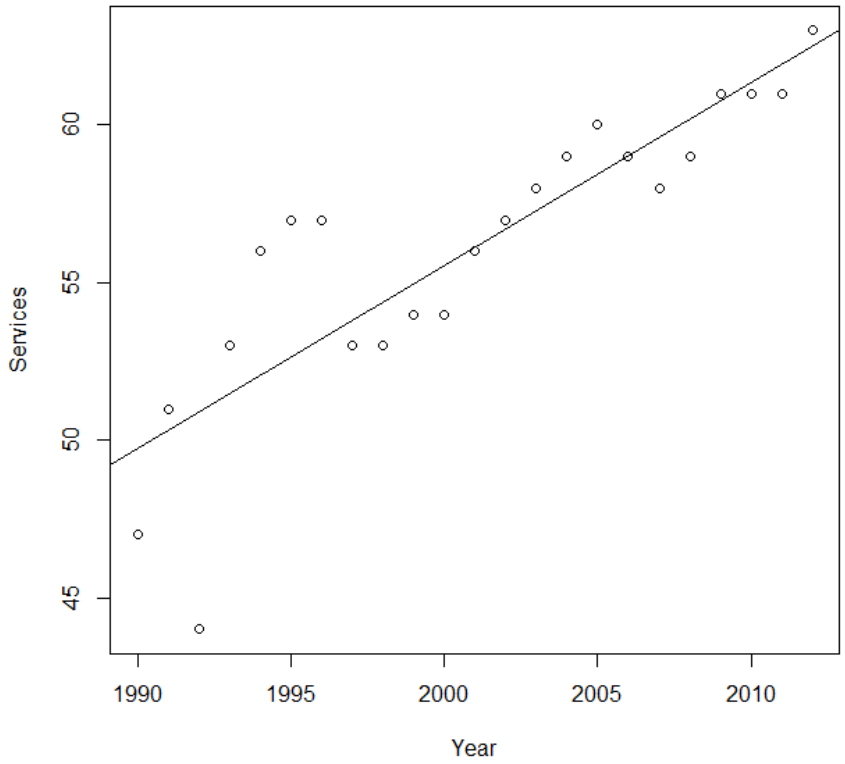

Figure 3. Plot of services, etc., value added (% of GDP) over years in Macedonia

From Figure 3 it can be observed that the services sector is under development and it is contributing more and more to the GDP each year. From the Economy Watch website it can be noted that the services sector in Macedonia provides employment to almost 50% of the total employed labor force[9].

The main industries in Macedonia are food processing, beverages, textiles, chemicals, iron, steel, cement, energy and pharmaceuticals. The food processing industry is no wonder due to quality fruits and vegetables obtained on the agricultural land. As for the textiles produced in Macedonia, they are mostly exported. The chemical industry is a large sector that produces basic chemicals and detergents. As for the rest of the industries, they all contribute to the country's GDP. It is well known that Macedonia has natural resources that can be used in metallurgy.

As for studies about the industry of Macedonia, only a little of them can be mentioned. For example, the study of (Brininstool, 2012) about the mineral industry of Macedonia. Also, the study of (SIPPO, the Swiss Import Promotion Programme, 2012), in which the textile industry in the Republic of Macedonia is presented.

[9] http://www.economywatch.com/world_economy/macedonia

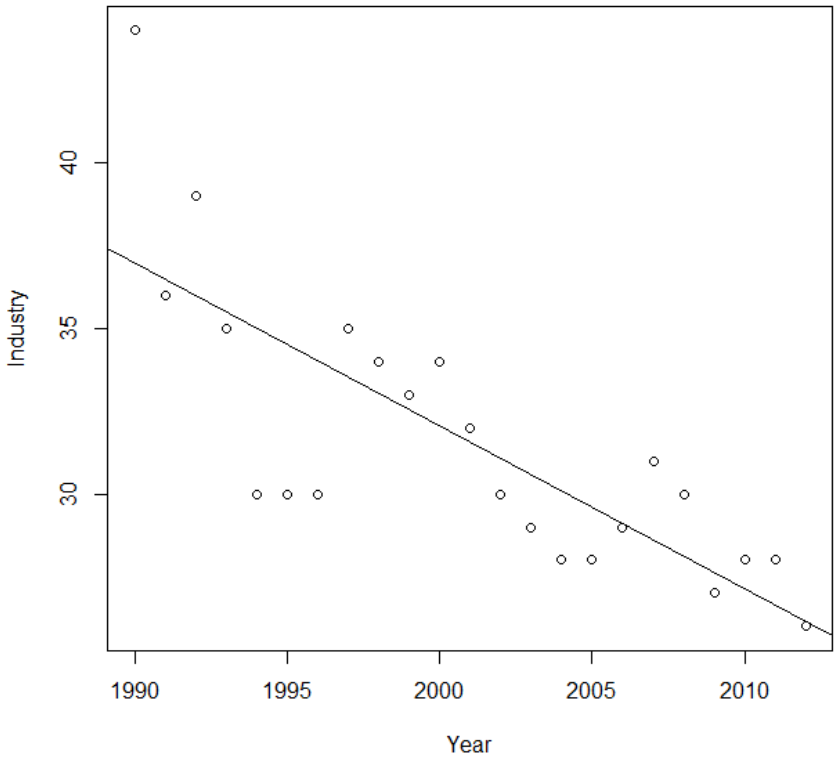

Figure 4. Plot of industry, value added (% of GDP) over years in Macedonia

For the time being, from the overview of the World Bank on the Republic of Macedonia, it can be noted that Macedonia is at the end of a Country Partnership Strategy 2011-2014 designed to integrate the country's EU accession goals into all development interventions. It has a strategy based on faster growth by improving competitiveness, more inclusive growth by strengthening employability and social protection and greener growth through more sustainable resource use.

4. Brief overview of the economy of Republic of Moldova

The transition process started in 1991, when the political independence of the republic was declared. Also, in 1991, some economic reforms were started in order to reboot the economy.

In 1992, Republic of Moldova introduced a market economy, liberalizing prices and in 1993, the Soviet ruble was replaced by the Moldovan leu.

After these first steps, it can be noticed, from the data (table 2), that in 1994 the GDP was about half of the GDP in 1990, so there was work to be done.

From 1994 to 2000, no important economic growth can be noticed, and the GDP value is not stable. The country struggled to bring down the inflation from over 105% in 1994 to 11% in 1997 and made numerous privatizations. Also, various reforms and economic experiments were done in this period. From 2000-2001 the economic growth has been steady. The main exports consists of foodstuffs, wine and agricultural products, contributing significantly to the GDP.

From the World Bank's overview of Republic of Moldova [7], it can be noted that the economy recovered from the 2008-09 global economic crisis, but the growth has been volatile. Even so, despite of the economic growth, it remains one of the poorest countries in Europe.

Republic of Moldova has a National Development Strategy (NDS) Moldova 2020 which consists of seven priorities: justice and fight against corruption; national education system aligned with labor market requirements; pensions; business environment; roads infrastructure; accessible and inexpensive finance; and energy efficiency.

From the World Bank website[10] it can be noted that: "the World Bank Group (WBG) Country Partnership Strategy (CPS) for FY14–17, discussed by the Board on September 5, 2013, will provide Moldova with US$570 million over the next four years (US$450 million on IBRD&IDA [International Bank for Reconstruction and Development & International Development Association, together known as the World Bank] terms, plus US$120 million IFC [International Finance Corporation] commitments). It will support Moldova in reducing poverty and boosting shared prosperity by capturing the full benefits of openness and integration with the European Union and the broader global economy." This program will hopefully boost up the economy of Republic of Moldova.

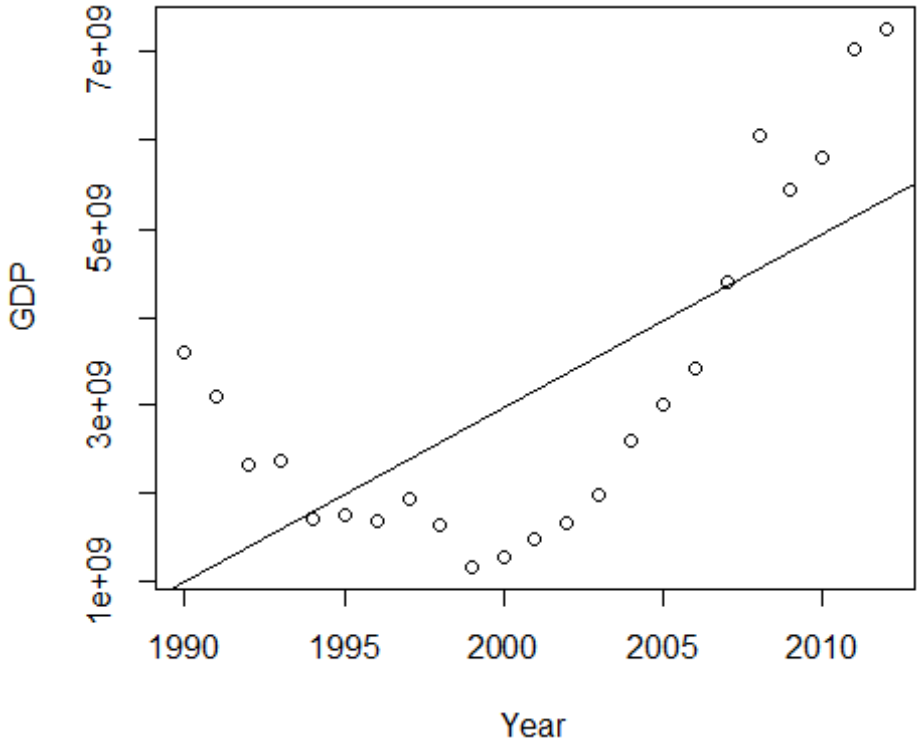

Figure 5. Plot of GDP over years in Republic of Moldova

In figure 5, the GDP value over the 1990-2012 time period has been plotted in R software, with a line of best fit. Republic of Moldova had an impressive economic growth between 2000 and 2008, but the global financial crisis of 2008-2009 has a massive impact on the economy. In 2009, the GDP dropped in the first three quarters by 7.7%.

The article of (Spânu, 2004) about the poor and volatile economy of Republic of Moldova is of interest. In this article, the level of development is presented in detail and also the main causes of economic volatility are described.

As for the agriculture land, the privatization of nearly all of it, from state to private ownership was a success, as a result of an American assistance program, "Pamînt" ("land"), completed in 2000. The agriculture still has a significant role in the economy, but it is vulnerable to climatic conditions, so some of the drop in the value added to the GDP in the recent years can be explained (due to draught and frost). In 2012, the agricultural land of Republic of Moldova was about 74.8% of land area, also according to data from the World

[10] http://www.worldbank.org

Bank website. In spite of this agricultural potential, the agricultural products for export are decreasing.

The successful development of agriculture in Republic of Moldova is discussed in the article of (Lerman, 2005), in which aspects like land consolidation and changing farm structure and fragmentation of holdings are treated.

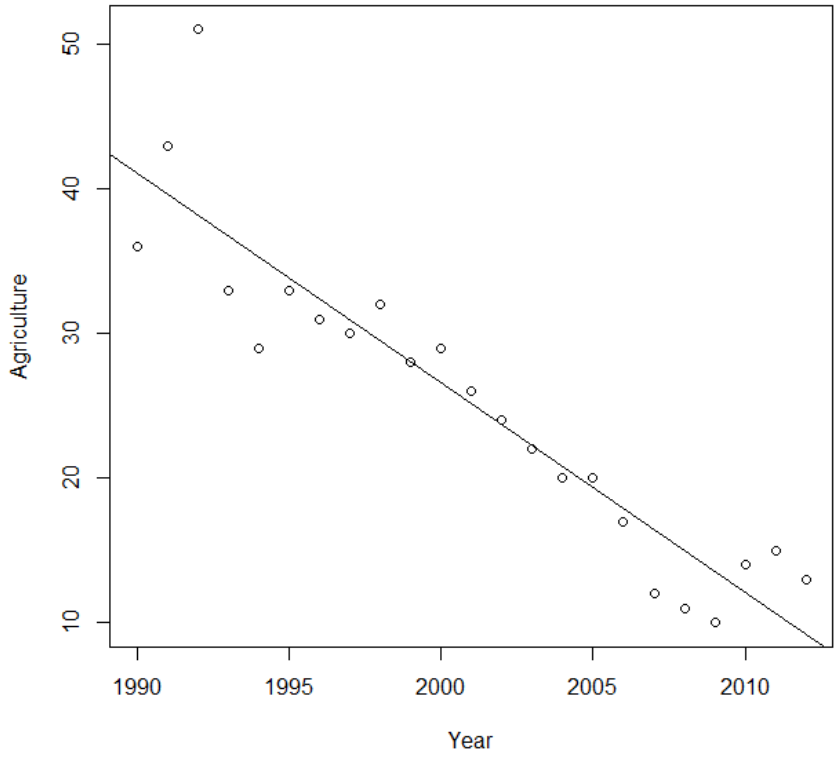

Figure 6. Plot of agriculture values over years in Republic of Moldova

A complete analysis of the industry potential in the Republic of Moldova can be read in (Bugaian, 2010). In this article the sectors of the economy that have potential to economic growth are analyzed in detail. The most important sectors are: textile and apparel sector, wine sector, ITC sector, construction materials sector and footwear sector.

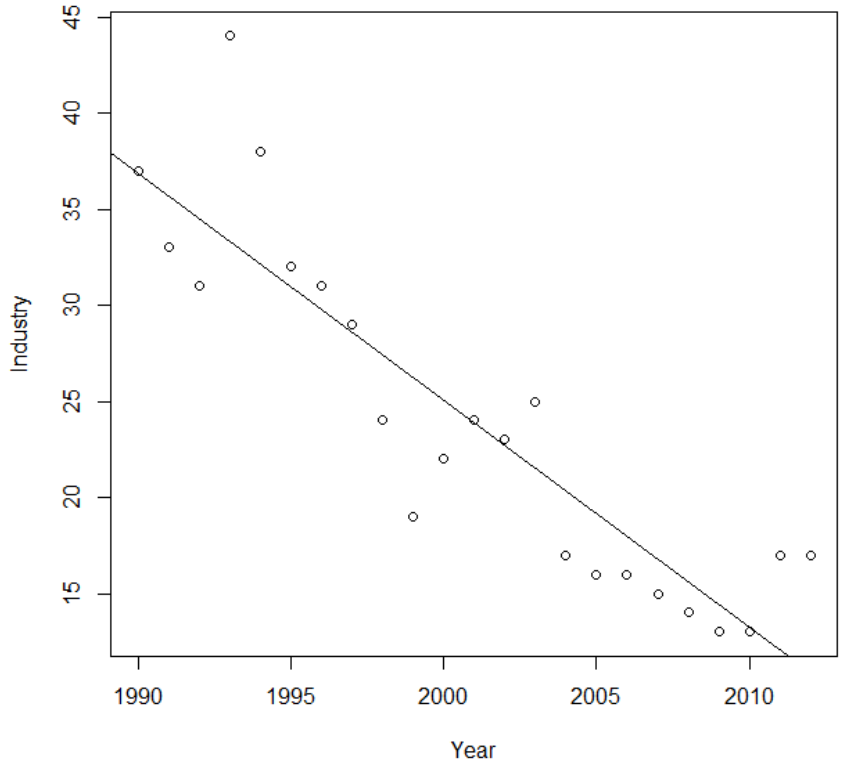

Figure 7. Plot of industry values over years in Republic of Moldova

From the data in table 2, it can be noticed that the industry sector tends to bring less value to the GDP, but it seems to be stable.

The main industries in the Republic of Moldova are: sugar, vegetable oil, food processing, agricultural machinery; foundry equipment, refrigerators and freezers, washing machines; hosiery, shoes and textiles.

All these transition years, the industry has been restructured. A very important work about the restructuring of the industry and the industrial policies is (Caraganciu, 1997). Also, the article of (Condraticova, 2010), is of interest, in which some problems concerning formation of the jewelry industry in the Republic of Moldova are treated. The oil industry in Republic of Moldova is treated by (Green, 2007), underlining the potential of this industry.

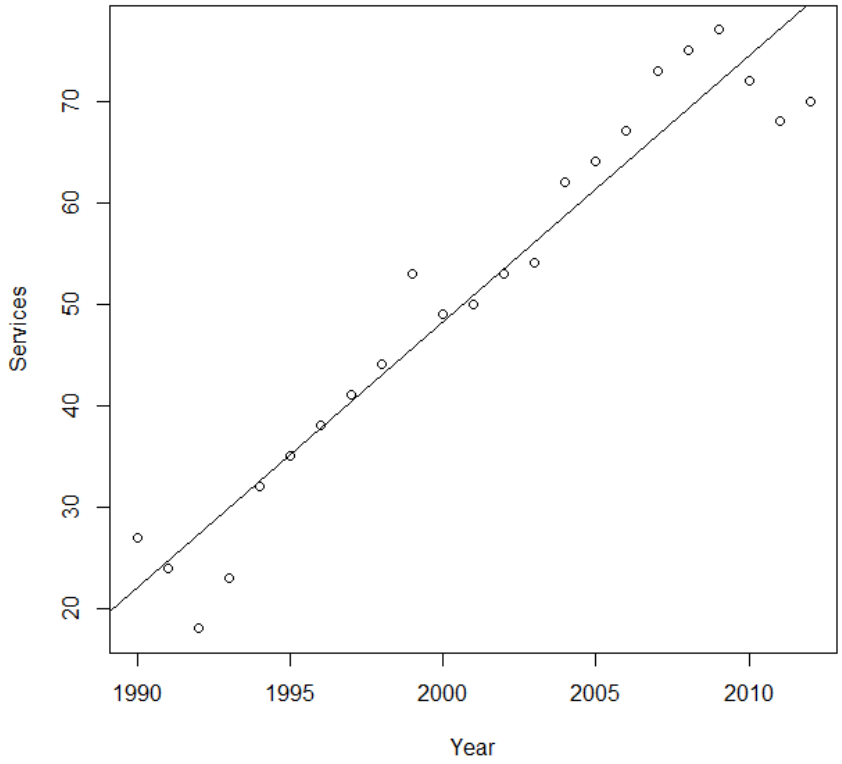

Figure 8. Plot of services values over years in Republic of Moldova

The services value added to the GDP, from 1990 to 2012, has increased significantly, mostly due to tourism. From National Bureau of Statistics[11], most of the tourists are from Romania, Russia, Ukraine, Germany, USA and Turkey.

5. From a developing economy to a developed economy

According to the IMF 35 economies are classified as "advanced economies" (developed economies)[12]. From Europe: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

Analyzing the data (from the World Bank website) for all of these countries of Europe (previous paragraph), it can be seen that the value added by agriculture to GDP it is usually under 10% and in some cases under 5% (for each country).

In the case of Republic of Moldova, the value added by agriculture to GDP is much higher, but this value tends to decrease. Republic of Moldova, before the transition period, had a high level of agriculture. The fact that the agriculture sector is losing ground is not a good thing. Macedonia has a lower value added by agriculture to GDP than Republic of Moldova, but still a higher value than the developed countries of Europe. Having a country whose economy is based on agriculture is not a bad thing.

Next we will take a quick look on the data about the agricultural, industrial and services sectors of Austria (table 3).

Looking at the data for Austria, it can be noticed that the values added to GDP by each sector is more stable than in Republic of Moldova and Republic of Macedonia. The

[11] http://www.statistica.md/
[12] IMF Advanced Economies List. World Economic Outlook, October 2012, p. 180

agriculture sector in Austria adds a little value to the GDP, but Austria is based more on the services (it is well known that international tourism is the most important part of the national economy) and industry sectors (the main industries are construction, machinery, vehicles and parts, food, metals, chemicals, lumber and wood processing, paper and paperboard, communications equipment).

Year	GDP (current US$)	Agriculture, value added (% of GDP)	Industry, value added (% of GDP)	Services, etc., value added (% of GDP)
1990	164,753,092,097	4	32	64
1991	172,008,564,526	3	32	65
1992	193,073,835,462	3	31	66
1993	188,423,702,827	3	30	67
1994	201,444,060,957	3	31	67
1995	238,561,783,813	3	31	67
1996	234,676,456,979	2	31	67
1997	207,826,098,771	2	31	67
1998	213,329,585,371	2	31	67
1999	212,301,777,115	2	31	67
2000	192,070,749,954	2	31	67
2001	191,678,678,300	2	30	68
2002	207,537,336,721	2	29	69
2003	253,945,776,524	2	29	69
2004	291,430,382,497	2	29	69
2005	304,983,601,950	2	29	69
2006	324,954,402,044	2	29	69
2007	375,041,784,030	2	30	68
2008	414,171,069,689	2	30	68
2009	383,733,743,330	2	29	70
2010	375,217,439,474	2	29	69

Table 3. Data for *Austria*[13]

The small contribution the GDP of agriculture is mostly due to the fact that Austria is a mountainous country, with small farms, that are fragmented.

According to the IMF, Austria is one of the richest countries in the world in terms of GDP per capita.

6. The use of IT software in statistics and econometrics

Computer software in statistics and econometrics is more and more used by specialists in order to ease the work. This part of the article is to demonstrate the power of IT software in data analysis. R software will be used. R is a **free software programming language and software environment for statistical computing and graphics**[14].

We will only use the data for Republic of Macedonia in this part of the article and run some functions and commands.

The first step is importing the data into R from a file, then after importing the data into R, a summary of the data is of interest.

[13] Data for 2011 and 2012 is unavailable on the World Bank website
[14] http://en.wikipedia.org/wiki/R_%28programming_language%29

```
> summary(analysis)
      GDP               Agriculture       Industry        Services
 Min.   :2.317e+09   Min.   : 9.0   Min.   :26.00   Min.   :44.00
 1st Qu.:3.630e+09   1st Qu.:11.5   1st Qu.:28.50   1st Qu.:53.50
 Median :4.472e+09   Median :12.0   Median :30.00   Median :57.00
 Mean   :5.548e+09   Mean   :12.3   Mean   :31.57   Mean   :56.13
 3rd Qu.:7.360e+09   3rd Qu.:13.0   3rd Qu.:34.00   3rd Qu.:59.00
 Max.   :1.044e+10   Max.   :17.0   Max.   :44.00   Max.   :63.00
```

Figure 9. Data summary in R for Macedonia

This summary, for each variable displays the min., max., median, mean and 1st and 3rd quantiles.

When dealing with time series one of the things to know is the correlation between the data. For example, we will take a look at the GDP data.

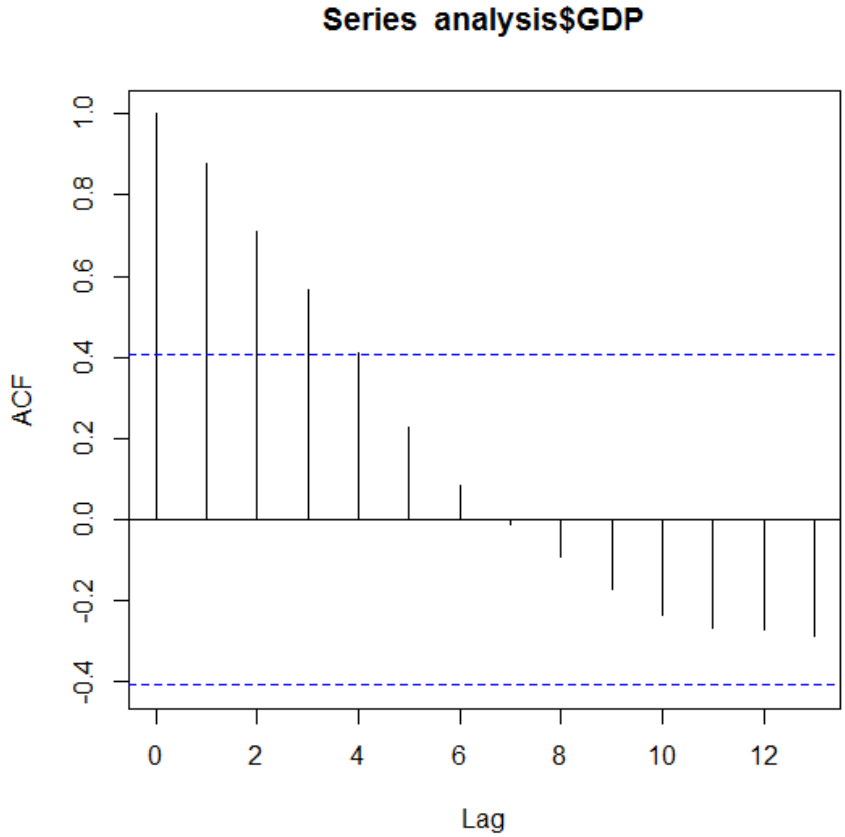

Figure 10. Correlation plot for GDP in the Republic of Macedonia

We can see that there is not a lot of persistence from one period to the next. The blue and dotted lines are confidence intervals, where anything outside these boundaries is a significant relationship. The data seems to be correlated.

Next, for the GDP of the Republic of Macedonia, an exponential smoothing will be done using the Holt Winters method. This method has three parameters in order to tweak the model (alpha, beta and gamma). We are only interested in alpha and beta, alpha being the smoothing factor, and beta controlling how the trend adapts.

In figure 12, is the plot of the Holt-Winters fit of the model, after tweaking the parameters. Black is the actual data and red is the Hold Winters fitting of the data. It is our best fitting of the data, it is not very close, but it is following the data. If more data was available, a better fit could have been done. Also, usually if the data has a more regular and larger seasonal component, than this type of analysis works better.

```
> summary (ts.fit.pred)
             Length Class  Mode
fitted       63     mts    numeric
x            23     ts     numeric
alpha         1     -none- numeric
beta          1     -none- numeric
gamma         1     -none- logical
coefficients  2     -none- numeric
seasonal      1     -none- character
SSE           1     -none- numeric
call          3     -none- call
```

Figure 11. Summary of the Holt-Winters

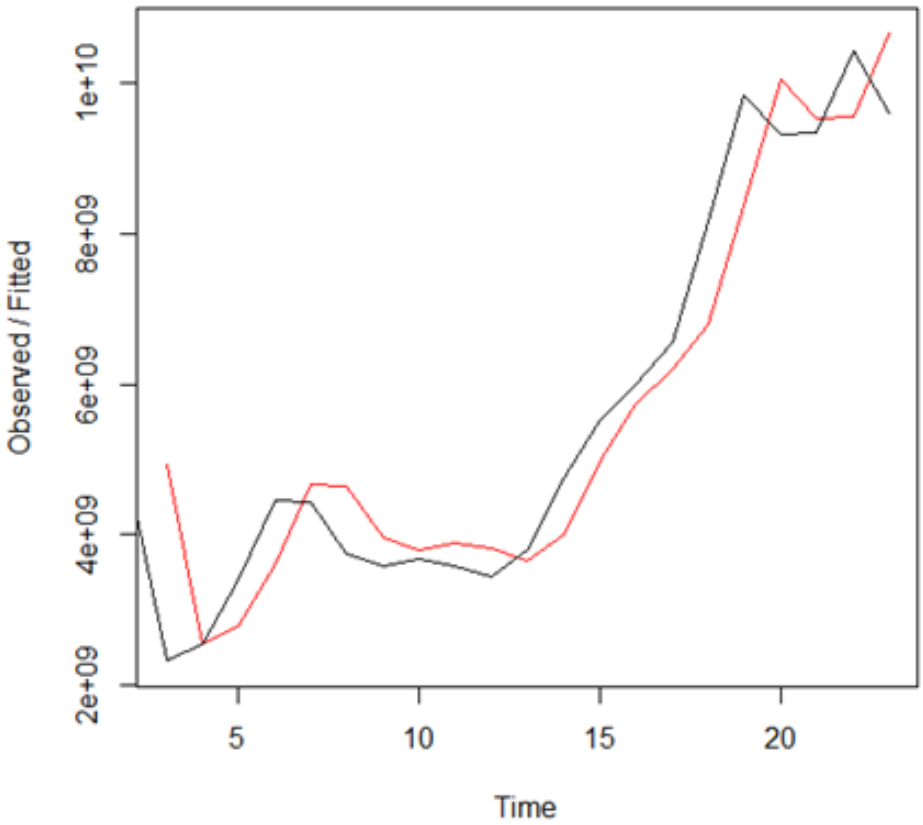

Figure 12. Plot of the Holt-Winters fit of the model

After fitting the data using Holt-Winters, predictions can be done. For example, using some functions in R software and based on Holt-Winters, ten future GDP values can be predicted, also with prediction intervals (figure 13).

```
> ts.predict
Time Series:
Start = 24
End = 33
Frequency = 1
           fit         upr        lwr
24  9835434321 11623203214 8047665428
25 10058350506 12586637521 7530063491
26 10281266691 13377773246 7184760136
27 10504182876 14079720663 6928645089
28 10727099061 14724671834 6729526288
29 10950015246 15329136813 6570893679
30 11172931431 15902923324 6442939538
31 11395847616 16452421647 6339273585
32 11618763801 16982070481 6255457121
33 11841679986 17495101619 6188258353
```

Figure 13. Plot of the Holt-Winters fit of the model

The prediction has large prediction intervals, mostly due to the fact that we have a few data into the model.

3. Conclusions

For a country in transition the initial conditions are very important. When the data about each sector (agriculture, industry and services) is analyzed, it should be taken into account that each country has its own specific. All of the references in the sections 3 and 4 provide more details about the economy of each country. Most of the countries in the Eastern Europe that are now under transition were agricultural or industrial countries.

In my opinion both of the countries (Republic of Moldova and Republic of Macedonia) should try to keep the level of agriculture high and also to develop the other sectors. Also, usually in transition countries the services sector can be more and more developed.

The most important fact in a country economy is stability. Both of the country should try to keep the sectors that contribute to GDP more stable, like in Austria's case.

Analyzing the GDP per capita and the sectors that contribute to GDP is not enough for understanding the quality of life and the level of development. There are many other factors that influence the quality of life.

As for IT in economics, there are many software tools that are suitable for data analysis. In this case, the R software has the main benefit of being a free software, that can respond to a lot of necessities.

References

- Oleh Havrylyshyn, Thomas Wolf (1999). Determinants of Growth in Transition Countries. Finance & Development, International Monetary Fund, Vol. 36, No. 2.
- Fauzi Hussin, Soo Yoke Yik, The Contribution of Economic Sectors to Economic Growth: The Cases of China and India, Research in Applied Economics, Vol. 4, No. 4, 2012.
- Andrei, Tudorel, Vlad, Liviu Bogdan, Nedelcu, Monica, Tendencies in the Regional Industry and Specialisation in Romania during the Transition Period, Theoretical and Applied Economics, Volume 3(520), 2008.
- Oancea, Bogdan, Andrei, Tudorel, Stancu, Stelian, Iacob, Andreea Iluzia, Numerical Parallel Algorithms For Large Scale Macroeconometric Models, Analele Stiintifice ale Universitatii "Alexandru Ioan Cuza" din Iasi, Issue (Month): (july), Pages: 341-356, 2010.
- Bugaian, Larisa, Gheorghita, Maria, Nistor, Doina, Analysis of the Industry Potential in Republic of Moldova, Annals of "Dunarea de Jos" University of Galati, Fascicle I, Economics and Applied Informatics. Years XVI – 2010.
- http://www.worldbank.org/en/country/moldova/overview

- Spânu, Vlad, Why is Moldova Poor and Economically Volatile?, a chapter of the book "The EU and Moldova: on a Fault-line of Europe", published by the Federal Trust Fund, London, 2004
- Shukarov, Miroljub, Perceptions of Transition and the Crisis in Macedonia, Croatian Economic Survey: Vol. 14: No. 1, pp. 107-131. 2012.
- Kjosev, Sasho, Agriculture Sector In The Republic Of Macedonia – Current Situation And Development Perspectives, Revista Tinerior Economisti (The Young Economists Journal), Volume: 1, Issue (Month): 12 (April), Pages**:** 117-124, Year: 2009.
- Melmed-Sanjak, J., Bloch, P., Hanson, R., Project for the analysis of land tenure and agricultural productivity in the Republic of Macedonia, working paper, no. 19, Land Tenure Center, University of Wisconsin–Madison, 1998.
- Petrevska, Biljana, Economic Impacts Of Tourism: The Evidence Of Macedonia, Revista Tinerior Economisti(The Young Economists Journal), Issue (Month): 18 (April), Pages: 174-181, Volume: 1, Year: 2012.
- Petrevska, Biljana, Forecasting International Tourism Demand: The Evidence Of Macedonia, UTMS Journal of Economics, Issue: 1, Pages**:** 45-55, Volume**:** 3, Year**:** 2012.
- Ericson, T., Pelling, E., Surry, Y., Support to Agriculture in FYR Macedonia - - An Exploratory Assessment (1999-2004), Swedish University of Agricultural Sciences, Department of Economics in its series Working Papers with number 53839, 2009.
- Brininstool, Mark, The Mineral Industry of Macedonia, USGS, Minerals Yearbook, MACEDONIA [ADVANCE RELEASE], 2011.
- SIPPO, the Swiss Import Promotion Programme, New Markets, New Opportunities. The Textile Industry in the Republic of Macedonia, 2012.
- Lerman, Z., Cimpoies, D., Land Consolidation As A Factor For Successful Development Of Agriculture In Moldova, Hebrew University of Jerusalem, Department of Agricultural Economics and Management in its series Discussion Papers with number 7171, 2005.
- Caraganciu, A., Industrial Restructuring and Policy Issues in the Republic of Moldova, Centre for Economic Reform and Transformation, Heriot Watt University in its series CERT Discussion Papers with number 9723, 1997.
- Condraticova, Liliana, Modern Jewelry Art of Moldova, Revista Romaneasca pentru Educatie Multidimensionala - Romanian Journal for Multidimensional Education, Pages: 73-78, Issue (Month): (August), Volume: 4, 2010.
- Green, Nathalie, The Essential Oils Industry In Moldova, Paper presented at the IFEAT International Conference in Budapest, Hungary, 23 - 27 Sept. 'Developments in the Global Aroma Chemicals and Essential Oils Industries'. Pages 103-112 in the printed Conference Proceedings, 2007.