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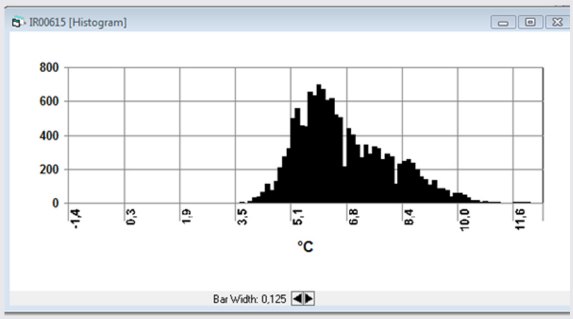
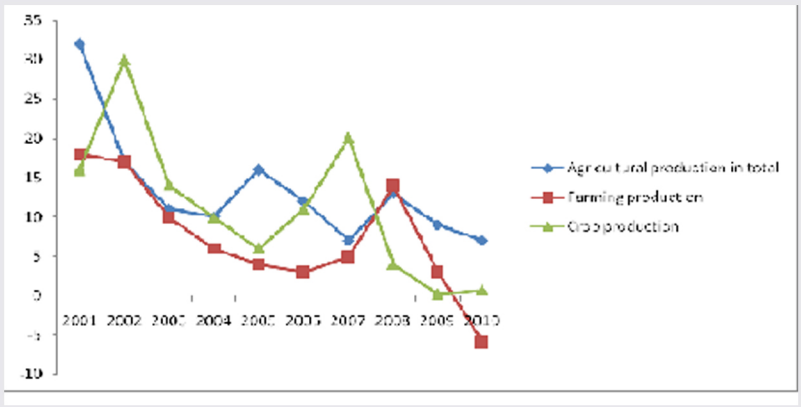
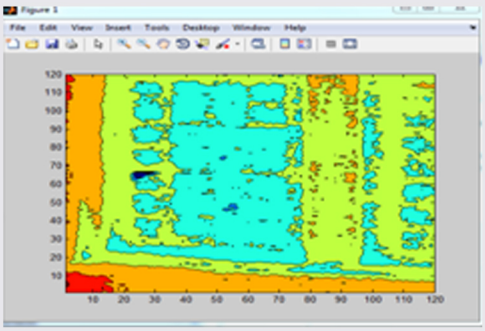
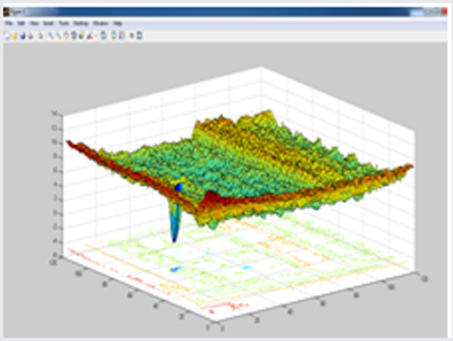
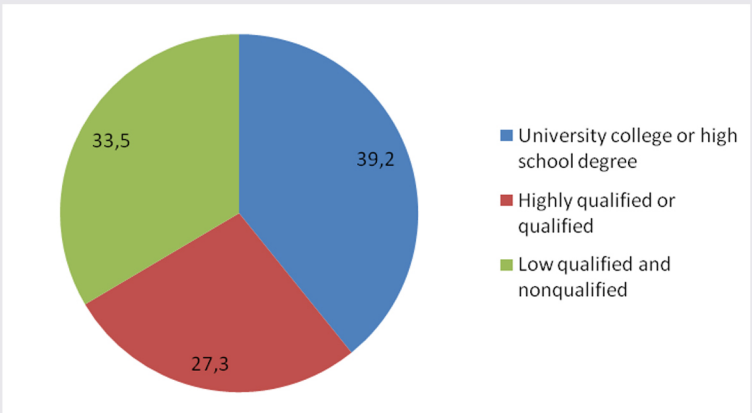
economics management information technology











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Contents

PREFACE

for the first issue

After long preparation, we decided to publish the journal that will be focused on the problems of our contemporary reality. Articles on the following topics: Economics, Management, Information and Technology (EMIT) will be presented.

The presented articles will have technical and scientific character, and will include theoretical and practical knowledge. The journal will be published quarterly or four times a year.

Our country is facing serious problems in its development. Some are present in a rather long period. The global economic crisis has deepened them, but also increased the present imbalances and risks. The exit from this situation requires, among other things, wider engagement of scientific and expert institutions and individuals. There is a need to find new models of development, and ways and methods to overcome the crisis and enable a prosperous development of our economy.

The field of research is actual, broad and complex. This is particularly challenging for young professionals and academics. Their research results should be presented to the public. Precisely, the aim of publishing this journal is that the knowledge obtained in this way is properly published.

We are aware of the obligations and responsibilities. Every beginning is difficult. We will try to justify our expectations. Because of this, the quality is our top priority.

In Bor, March 2012 *Editor*

PhD. Radmilo Nikolic

UDK: 330.342(497.11)"2000/2010" ID: 190785292 1.02 Review Article

SERBIAN ECONOMY IN TRANSITION PERIOD

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Abstract: *For more than two decades Serbian economy is in transition period. The transition is made of complex and dynamic changes aiming to transfer from government leaded into modern economy, based on the market and its laws.Changes were present in each segment of economy and industry. There were successes and fails. All in all, current results are bellowing the expectations. The goal to create efficient, rational and profitable economy has not been accomplished yet. Although there are many circumstances in and outside the country that make the transition more difficult, it has to go on. That is the certainty of today's economic reality.*

Keywords*: transition, market-based economy, efficiency, rationality, profitability.*

1. INTRODUCTION

Economic crisis, even more serious than this one, occurred in 80's of the last century, while Yugoslavia still existed. Huge national debt, deficit in foreign trade, industrial instability, economic disturbances, lacks in country's economical and political system, strong roots of inflation and all of that with constant slowing down of economic growth are the main characteristics of that period. Measures and activities taken trough long – term program of economic stabilization did not provide favorable results. On the contrary, high level of administration caused additional restrictions in economical liberty, which was already very low.

In late 80's, our country turns into market economy. Constitutional changes and new laws enabled the escape from "arranged economy". However, regardless of this positive turn, many negative trends were still going on. Illiquidity, and especially inflation, was seriously endangering the entire economic system. In 1989, inflation reaches enormous 2,665 %. That was the highest inflation in Europe and fourth highest in the world. One of the most important reasons for that was the fact that majority of domestic economy and industry had not been ready for system changes.

Few years later, political crisis joins the economic one. Socialist Federal Republic of Yugoslavia is falling apart, civil war begins and UN declares sanctions to Federal Republic of Yugoslavia (Serbia and Montenegro). All of that had worsened already difficult economic situation. Internal market was reduced, export activities were stopped and cooperative and business relations with republics of former Yugoslavia were tearing apart. The production was decreasing, as well as national income and life standard. Inflation went sky-high, and in 1993 reached 116 billion percent.

After a short period of recovery, caused by abolishment of UN sanctions, political problems appeared yet again. Crisis in Kosovo, EU sanctions and finally NATO campaign in 1999, led the economy to collapse. Most of the industry and infrastructure was destroyed and thousands of people lost their jobs. Citizens of our country paid that price through sharp descent of life standard. In such circumstances, the Government tried to maintain a minimal level of economic activities, mainly focused on basic human needs, and struggled to re-establish macroeconomic stability.

In early 2000's, political changes in our country provide abolishment of EU sanctions and Serbia becomes a member of numerous international organizations and financial institutions. At the same time, conditions for transition process became more favorable, enabling radical reforms of economical system. This is mainly the topic of this paper.

2. RESULTS OF TRANSITION-RELATED CHANGES

Transition process in Serbia included almost every aspect of economy and society. Some positive trends, such as democratization, liberation of market, reforms of economic system, structural improvements, started to develop.

2.1. Privatization of public property and state-owned capital

This is a very important segment of the transition process. Socio-economic system based on public property has been proven as non-flexible, non-efficient, irrational and unprofitable. This is especially the case in free market economy, when publicly-owned companies failed to compete with private capital. That is also one of the main reasons why socialism eventually failed.

Even in initial attempts to turn over to market economy, in former Yugoslavia, it was clear that one of the basic preconditions was the change of ownership, from public and state-owned into private.

New federal law on public property was intended to provide legal framework for changes. However, legal framework was changed several times, as well as transition models, so the results were very modest.

In 1997, Serbian Government introduces Law on Privatization. This law had both positive and negative reactions, but it manages to provide the change of ownership for significant part of public capital. Most of the complaints were related to lack of obligation for companies to enter the privatization process and lack of deadlines for process ending.

Table 1. Overall results of privatization in Serbia, 2002 - 2011

Period 2002-2011	Number of Public Calls	Offered for sale	Sold	Terminated contracts	Success ratio, %	Number of employees	Book value of property (in 000 EUR)	Sale value (in 000 EUR)	Investments (in 000 EUR)	Social program (in 000 EUR)
Tenders	301	218	90	37	41	67,627 (27,014)	921,038 (423,036)	1,074,590 (546,060)	929,760 (226,047)	276,689 (2,042)
Auctions	4,061	2,461	1,555	599	63	129,813 (55,484)	976,075 (357,184)	876,318 (514,333)	201,995 (79,765)	
Tenders and auctions (sold)	4,362	2,679	1,645		61	197,440	1,897,113	1,950,908	1,131,755	276,689
Capital Market		663	564		85	115,653	520,003	531,959	5,902	
Capital Market (previously terminated contracts)		264	172		65	21,046	95,016	101,196		
Capital Market (previously privatized companies)		1,067	902		85	85,994	75,963	53,053		
Total		3,606	2,381		66	334,139	2,588,095	2,637,116	1,137,657	276,689

Source: Serbian Ministry of Economy and Regional Development

Finally, in 2001, we have got a new law, with rather different approach from the previous attempts. Aims of privatization were public and state-owned capital, and the entire process was predicted to finish in four years. An important difference about this law was that company management was no longer in charge of the privatization process. Instead, several specialized bodies were formed: Privatization Agency, Fund for Shares and Central Portfolio Register.

The new privatization law made the process of public property transformation much more intensive. Depending on circumstances, the process was faster or slower, more or less successful.

In total, in period between 2002 and 2011, 3,606 companies were offered for sale and 2,381 of them were sold, which means that success ratio was 66 %.

By tender, 90 out of 218 companies were sold. However, many contracts were abated due to unfulfilled obligations, 37 or 41%.

Most of the companies were sold by auctions, 1,555 in total, with 63 % success ratio. On the market of capital 564 companies were sold, along with 172 companies which had previous contract abatements. We can add 902 companies which were privatized before the new law.

Incomes from privatization, in total, reach 2,637,116,000 EUR, most of it by tenders and auctions, about 74 %. Besides, there are buyers' obligations for new investments (1,137,657,000 EUR) and social program for people who lost their jobs (296,689,000 EUR).

On the other side, privatization of state-owned companies is practically at the beginning. Some of these companies owe enormous capital and have thousands of employees. Most significant are EPS (electric energy), JAT (airlines), PTT (postal service), etc. The government is very cautious about selling this type of companies. The only "big one" which was sold so far was NIS (oil company), to Russian "Gasprom", as a part of arrangement which included gas pipeline, underground gas storage in Banatski Dvor and 51 % of NIS shares. For other big companies, the idea is to restructure them before their privatization.

So, even the privatization in Serbia lasts for more than 20 years, the process is not over yet. Numerous companies still have not determined their statuses, while many of them are in bankruptcy.

Generally, the expected effects of privatization have not been reached. Due to a large number of terminated contracts, many successful companies went out of work, unemployment rapidly grew and there were numerous abuses of the process. Also, assets gained by privatization were not used for development of industry and economy, or new jobs. Instead, they were mainly used for different kinds of expenditure.

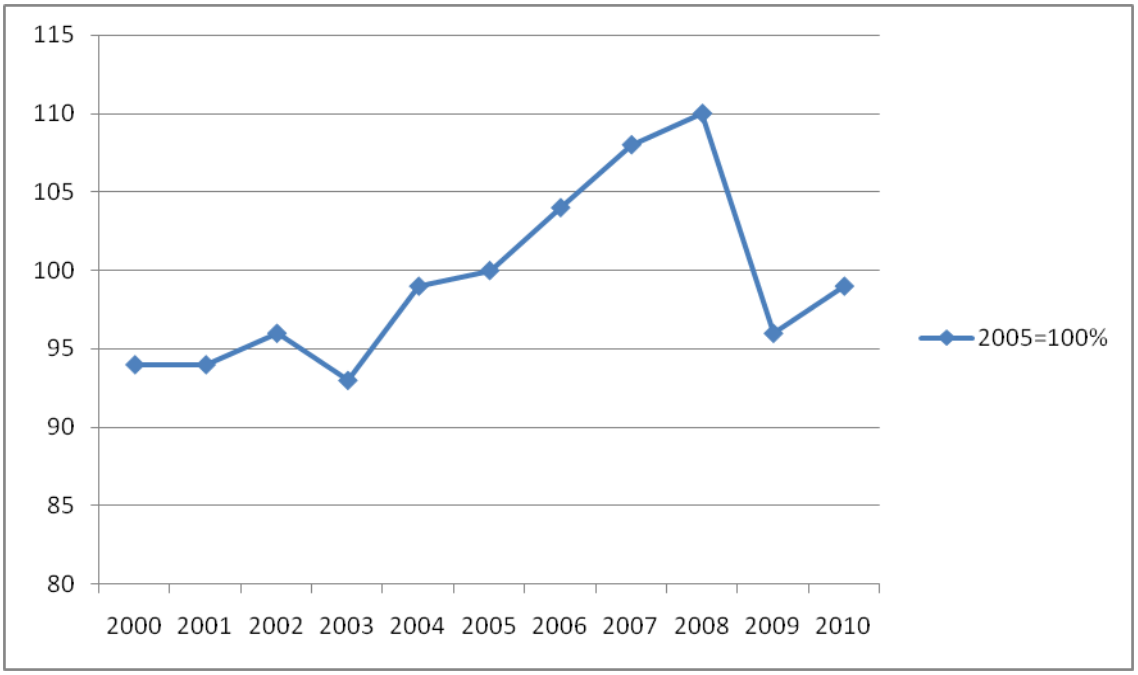
2.2. Economic effects of transition

Gained economic effects are significant segment of transition process. They are very strongly influenced by the process activities. We will take a closer look to some of them.

2.2.1. Production volume flow

Production trends over the period 2000 to 2010 would be analyzed through industry and agriculture, since they have major influence on entire economy.

Industrial production has a trend of light growth in this period. The exceptions are years 2003, when we had a slight decrease and 2009, when it was down by 13 % regarding the previous year. There were several reasons for that, but most important was the world economic crisis.



Graph 1. Indexes of industrial production flow

Table 2. Production flow by sectors of industry

Year	Total	Sectors		
		Ore and stone excavation	Processing industry	Production and distribution of electric energy and gas
2000	111.4	108.1	114.5	102.1
2001	100.1	87.2	100.7	101.2
2002	101.8	101.6	102.7	98.3
2003	97	100.8	95.4	102.3
2004	107.1	99.3	109.6	99.9
2005	100.8	102.1	99.3	106.6
2006	104.7	103.5	105.4	102.2
2007	103.7	99.4	104.3	102.8
2008	101.1	103.6	100.8	101.8
2009	87.9	95.7	84.2	100.6
2010	102.9	113.8	103.9	95.7

Previous year = 100

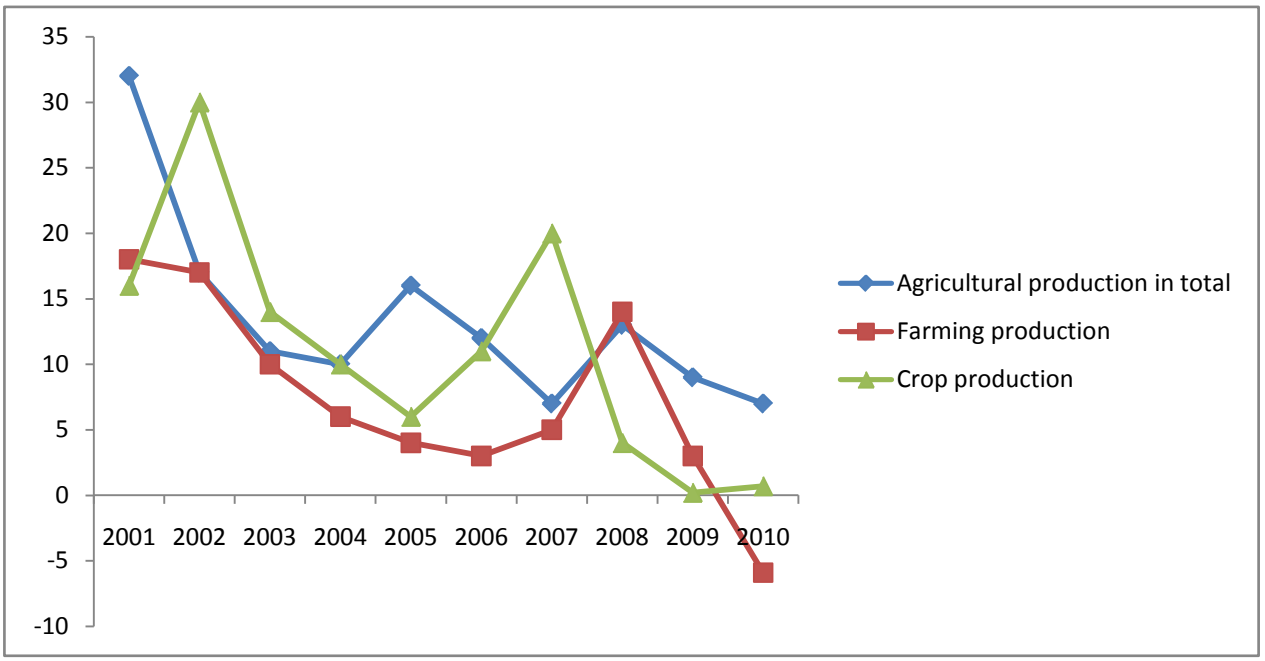
Source: Serbian Bureau of Statistics

Regarding the slight increase, industrial production is still far away from the level at the beginning of transition period. Current production is only at 47 % of industrial production in 1989.

Agriculture has a huge impact to national economy and social stability in Serbia. It is an economic area with long tradition. It used to provide employment and existence to majority of population. Today, some 11 % of population is related to it.

At the beginning of the transition period, agriculture has been in slight stagnation. However, the situation became drastically worse during 90's, with high oscillations in production levels and significant decrease of production. Nevertheless, the agriculture managed to carry the burden of crisis, but with high costs paid.

High oscillations in agricultural production proceeded in the first decade of this century. And, although business ambience was much more convenient, there were many circumstances which made the development difficult. Those circumstances were lack of investments, technical obsolescence, poor economic situation, high share of farming (grain) in overall production, unfavorable weather conditions, etc.



Graph 2. Indexes of agricultural production flow

High oscillations were also present in crop production. Highest growth was recorded in 2001 and 2004. Stock farming had less oscillations, but with the clear trend of livestock decrease.

2.2.2. Level of gross domestic product (GDP)

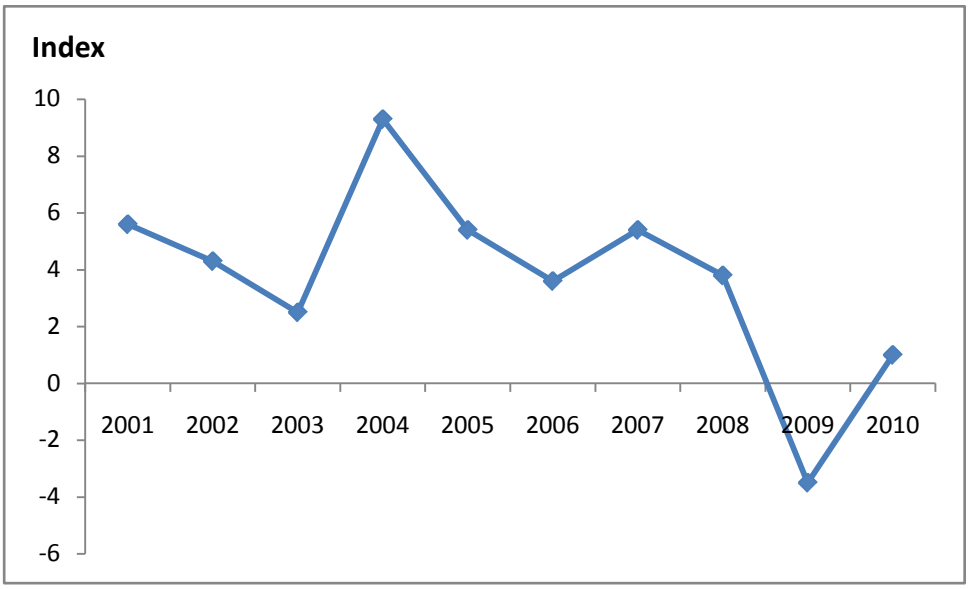
Gross domestic product was a mirror of situation in national economy. In a period after 2000, it had a trend of slight growth. Year 2009 was an exception, due to the World Economic Crisis. In 2010, GDP reached only 72 % of GDP in 1989.

Table 3. Gross domestic product flow

Year	GDP in current prices, Billions of RSD	GDP, Billions of EUR	GDP per capita, Billions of EUR
2001	762.2	12,820.9	1,708.7
2002	972.6	16,028.4	2,137.1
2003	1,125.8	17,305.9	2,313.4
2004	1,380.7	19,026.2	2,549.4
2005	1,683.5	20,305.6	2,729.0
2006	1,962.1	23,304.9	3,144.4
2007	2,276.9	28,467.9	3,856.6
2008	2,661.4	32,668.2	4,444.5
2009	2,713.2	28,883.4	3,945.4
2010	2,986.6	28,984.9	3,966.9

Source: Serbian Bureau of Statistics

In observed period, GDP in current prices was multiplied 3.9 times, or 2.3 times in EUR. At the same time, per capita increased from 1,708.7 in 2001 to 3,966.9 in 2010, but still remained low compared to countries in the region.



Graph 3. Gross domestic product (growth in %)

Along with its growth, the structure of GDP also changed. The share of agriculture and processing industry decreased, while the share of trade, both wholesale and retail trade, car repair, real estate, transport and communication, storage and similar was growing.

Table 4. The structure of GDP in %

Activity	**Year**	
	2001	**2009**
Agriculture, forestry, waterpower engineering, fishing	17.68	12.03
Excavation of ore and stone	1.96	1.48
Processing industry	22.30	13.71
Production of electric energy, gas and water	4.24	3.11
Construction and architecture	4.24	3.25
Wholesale and retail trade, car repair	8.08	12.66
Hotels and restaurants	1.24	0.70
Transport, communications and storage	9.10	17.77
Financial intermediation	6.33	5.03
Real estate, renting	9.95	14.81
Other	14.88	15.35
Total	100.00	100.00

Source: Serbian Bureau of Statistics

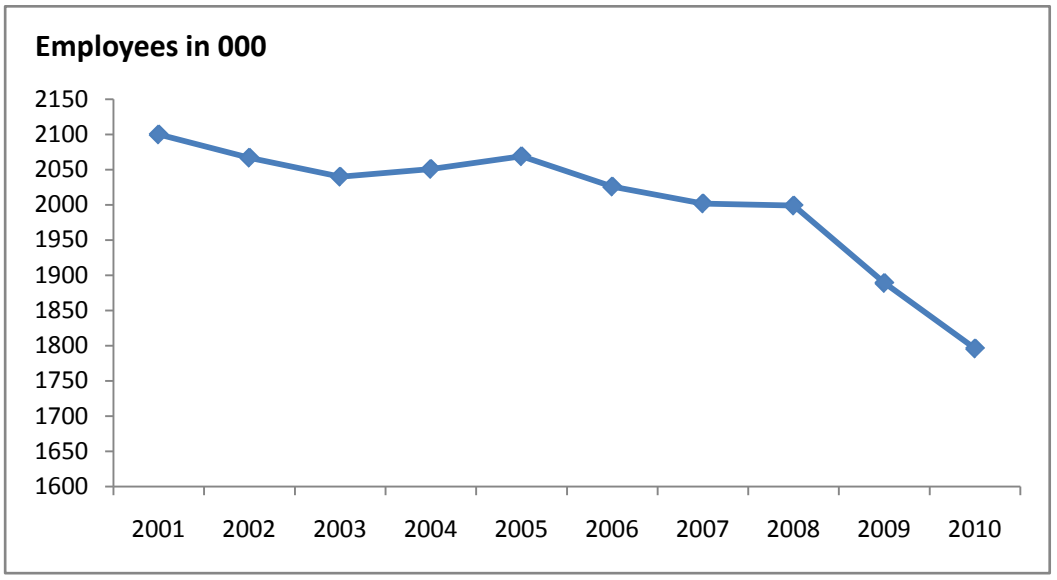
At the start of previous decade, the processing industry had the largest share in GDP (22.30%). Some 40 % of GDP was realized from processing industry and agriculture (17.68 %). After these two, there were wholesale, retail trade and car repair (8.08%), transport, communications and storage (9.10 %) and real estate and renting (9.95%).

After that, processing industry and agriculture decrease their shares in GDP. Processing industry decrease between 2001 and 2009 reached 39 %, while agriculture's decrease was 32 %. It means that these two sectors suffered from the consequences of crisis more than any other.

Transport, communications and storage are sectors with greatest share in GDP in 2009 (17.87%), which is almost twice as much than in 2001. There is a significant growth of wholesale, retail trade and car repair (57%), as well as real estate sector (49 %).

2.2.3. Employment – unemployment

Economic crisis, problematic privatization and other unfavorable circumstances caused constant decrease of employment. In a period between 2001 and 2010, number of employees is reduced by 306,000, or 15 %.



Graph 4. Employment flow

Employment has been reduced in almost every sector. The worse situation is in processing industry, where number of employees decreased from 619,113 in 2001 to 301,452 in 2010, which is 317,661, or over 50 %.

Table 5. Structure of employees by economic areas in %

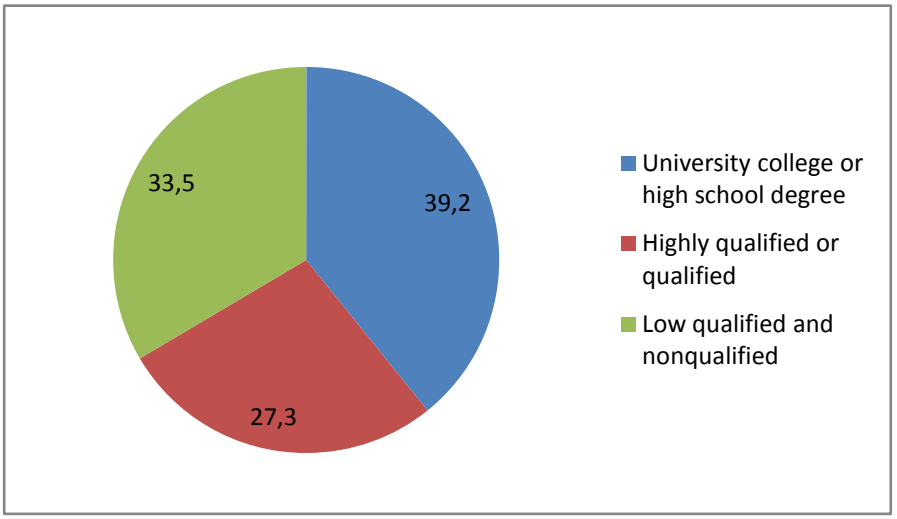
Activity	**Year**	
	2001	**2010**
Agriculture, Forestry, waterpower engineering, fishing	5	3
Excavation of ore and stone	2	2
Processing industry	35	22
Production of electric energy, gas and water	3	3
Construction and architecture	6	5
Wholesale and retail trade, car repair	12	13
Hotels and restaurants	2	2
Transport, communications and storage	7	7
Financial intermediation	2	3
Other	26	40
Total	100	100

Source: Serbian Bureau of Statistics

Number of employees has been reduced in almost every sector of the processing industry, especially in food, textile and metal processing industry. In agriculture, there is also a significant decrease of employees, 46,658 or 56 %. Also, this trend is recorded in wholesale and retail trade, but not as rapid as in other sectors, due to improved entrepreneurs' initiative. Since other sectors had a higher decrease of employment, this sector has improved its share in total number of employees by 1 % in 2010.

At the same time, unemployment rate in Serbia is growing. By the end of 2010, it reached 19.2 %, one of the highest in Europe. Most of the unemployed population has a university,

college or high school degree, 39.2 %. Highly qualified or qualified share 27.3 %, while low qualified and non – qualified make remaining 33.5 % of the unemployed population.



Graph 5. Unemployed persons by qualification and degree in 2010

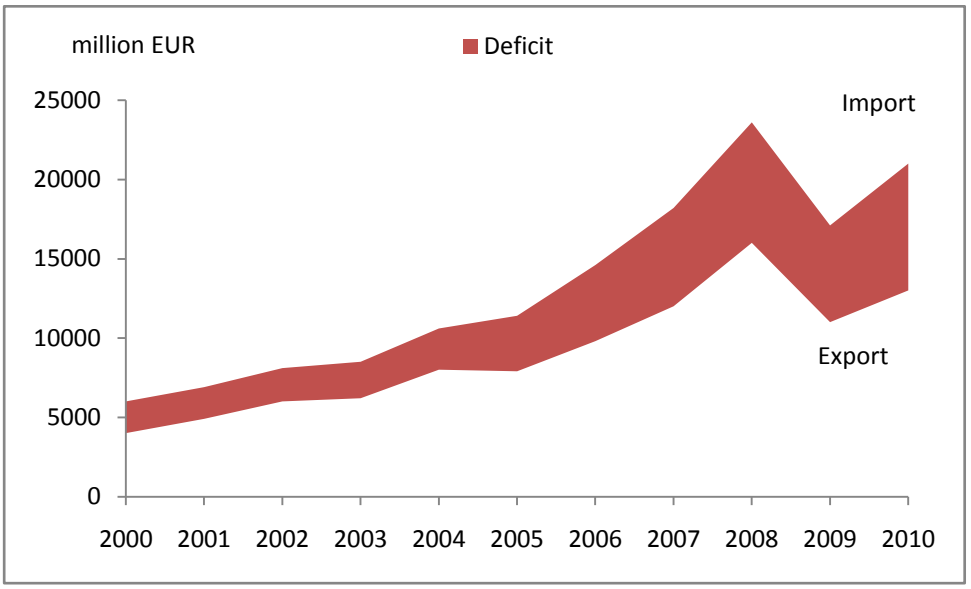
Some 53 % of 729,520 unemployed persons in 2010 were women. Also, there is a significant number of young people, but with rather long years of service, who lost their jobs during the privatization, either as redundant, or due to bankruptcy of their companies.

2.2.4. Foreign trade

In the first decade of this century Serbia had very dynamic foreign trade. Export has increased by 3.8 times and import by 2.7 times. However, there is still rather high deficit, which in 2010 reached over 5 billion EUR.

Most of the export activities are focused to EU. Value of exported goods into EU exceeded 4 billion US $, which makes 57 % of total export. Most of the exported goods went to Italy and Germany. Besides, significant export activities include CEFTA countries and the Russian Federation. From countries in the region, most of the products were sold in Bosnia and Herzegovina.

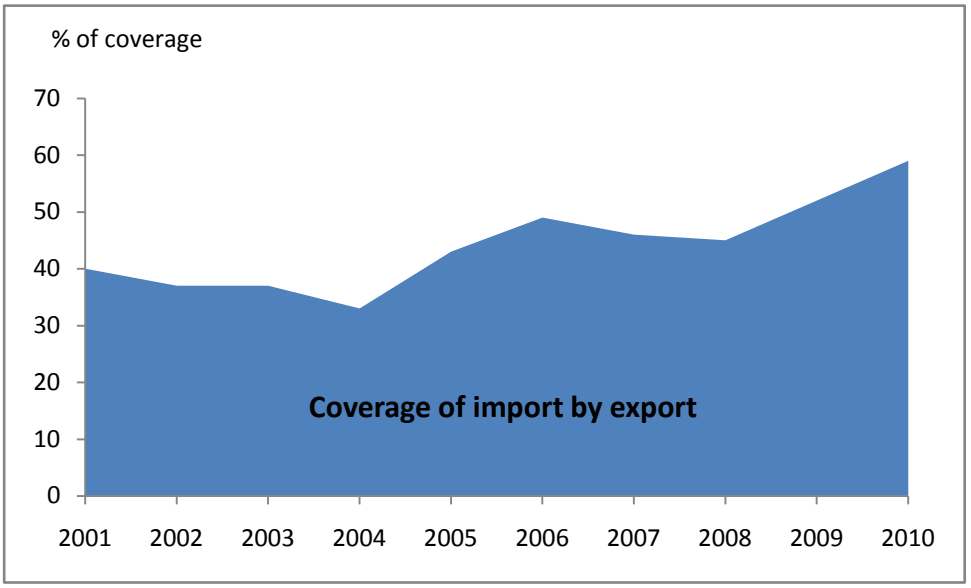
Most popular export products are: metals, simple metal products, machines, devices, units and parts, crops, food products, liqueurs and tobacco, plastics, rubber, textile and textile products.



Graph 6. Foreign trade

Most of the imported goods come from the Russian Federation (around 13 %), EU (mostly Italy and Germany) and China. Most imported products are chemical industry products, machines, devices, appliances and parts and simple metal products.

Export is not able to follow the increase of import, so the deficit of trade balance is growing. In 2008, the deficit was by 22 % higher than export of goods and services.



Graph 7. Covering of import by export

Covering of import by export is still low. But, in recent years, the situation has improved. Covering the rise from 40 % in 2001 to 59 % in 2010, which is an improvement of 48 %.

An important contribution to Serbian foreign trade comes from agriculture. In 2010, export of agricultural goods exceeded 2 billion and surplus reached 650 million US $. But, that

was still far from actual potential in this field. Serbian export of agricultural goods per hectare of arable land is 477 US $, which is one of the lowest in Europe.

2.2.5. Indebtedness and Public Debt

Indebtedness is one of the serious problems in our country, and the situation is getting worse. Only in the last ten years the external dept was enlarged by 2.5 times.

Table 6. State of indebtedness, in million EUR

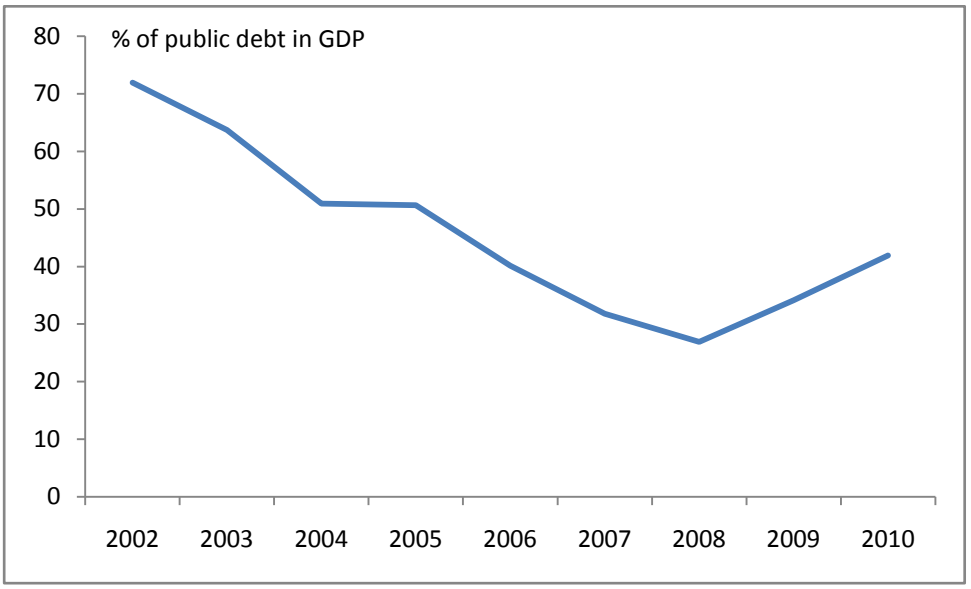
Year	External debt	Share of external debt in GDP, %	Short-term external debt	Servicing of external debt	External debt/export of goods and services	Foreign exchange reserves
2001	9,561	74.6	1,163	102	497	1,325
2002	9,402	58.7	606	218	427	2,186
2003	9,678	55.9	529	348	396	2,836
2004	9,466	49.8	442	736	334	3,104
2005	12,196	60.1	948	945	338	4,921
2006	14,182	60.9	958	1,635	278	9,020
2007	17,139	60.2	1,050	2,885	266	9,634
2008	21,088	64.6	2,143	3,453	284	8,162
2009	22,487	77.9	2,005	3,314	377	10,602
2010	23,786	82.1	1,830	3,403	322	10,002

Source: National Bank of Serbia

By the end of 2010 the external debt reached 23,786 million EUR, or 82.1 % GDP. It means that each resident of Serbia has a debt of 3,341 EUR. Since the debt exceeds 80 %, our country belongs to the group of highly – indebted countries by methodology of the World Bank. A similar evaluation could be gained from the aspect of debt servicing. The annual debt service reaches 15 % of GDP, which is 5 % over the limit for highly indebted countries. With current indebtedness and export level, it would take three years to completely repay the debt. These facts lead us to a conclusion that indebtedness is one of the most important limiting factors of growth and development. The positive side is the amount of foreign exchange reserves and their tendency of constant increase.

The share of Public Debt (external and internal) in GDP was in constant decrease till 2008, when it rose rapidly. The economic crisis in recent years forced the Government to get into new indebtednesses.

In 2010, Public Debt reaches 12 billion EUR, or 41.9 % of GDP, with tendency of further growth. At least, it is still lower then the limit of 45 % GDP.



Graph 8. Share of Public debt in GDP

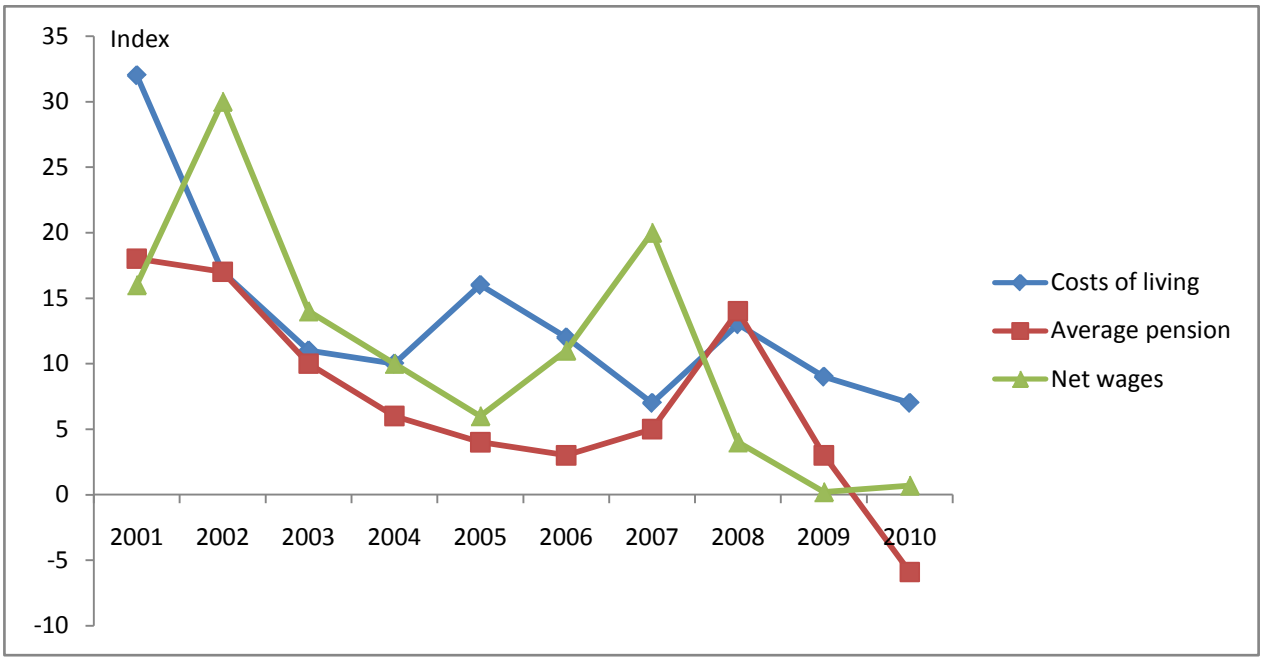
In the aspect of Public Debt, Serbia is in a much better position than many European countries. According to OECD data, Greece has the highest level of Public Debt (147.3 % of GDP), followed by Italy (126.8 %), Iceland (121.2 %), Portugal (103.1 %), Belgium (100.7 %), etc. These are the countries that face serious crisis. Some of them are on the edge of bankruptcy (Greece, Italy). Some countries that have lower level of Public Dept than Serbia are Estonia (12.1 %), Luxemburg (19.7 %) and Switzerland (40.2 %).

It should be mentioned that the rating agency Fitch Ratings raised the credit rating of Serbia to BB-, and improved it from negative into positive in November 2010. That is the rating Serbia had before the World Economic Crisis. This should contribute to lower exposure to foreign exchange risks, although we should not expect radical improvements.

2.2.6. Standard of living

Breakout of former Yugoslavia, economic sanctions by UN, civil war and always present economic crisis, heavily influenced the life standard of people in Serbia. The most rapid downfall of standard happened in the first half of 90's. Since 2000, the situation became slightly better, but the standard is still far away from good.

In a period from 2000 to 2010, the net wage growth rate exceeded costs of living only twice, in 2002 and 2007. The situation with pensions is even worse. Practically, they have always been bellowing the costs of living. At the end of 2010, net wages averaged 34,142 RSD, or 324 EUR, while pensions averaged 19,890 RSD, or 189 EUR. In the region, only Bulgaria has lower wages.



Graph 9. Indexes of net wages, average pensions and costs of living

Table 7. Wages in March of 2011 (in EUR)

Country	**Amount**	**Serbia = 100 %**
Slovenia	987	276
Croatia	755	211
Hungary	518	145
Montenegro	484	136
Bosnia and Herzegovina	418	117
FYROM	367	103
Romania	358	100.3
Serbia	357	100
Bulgaria	352	99

Source: Politika newspaper, October 30, 2011

One of the parameters that show the level of life standard is the structure of personal expenditure per household member. Around 45 % of available funds for personal expenditure go on food, footwear and clothing.

Utilities (16 %) and transport (9 %) also belong to the group of significant costs. After servicing basic existence needs, very low amount of money is left for improvement of life quality.

Table 8. Structure of personal expenditure – monthly average per household member in 2010 (%)

Sector	**Personal expenditure**
Food and non – alcoholic drinks	41.3
Liqueur and tobacco	4.4
Footwear and clothing	4.8

Rent, water, electricity, gas and similar	16
Furniture, household equipment and maintenance	4.4
Health	4.1
Transport	9
Communications	3.9
Recreation and culture	4.7
Education	0.9
Restaurants and hotels	1.9
Other goods and services	4.6
Total	100

Source: Serbian Bureau of Statistics

2.2.7. Macroeconomic stability

Macroeconomic stability is an important precondition for successful functioning of national economy. Instability in this area lowers the competitiveness of the economy, attraction for external investments and most of all, economic growth and development.

Regardless of certain improvements in some segments, macroeconomic stability is still bellow a satisfactory level. The presence of external and internal misbalance, high inflation, fluctuation of exchange rate, weakness of domestic currency and similar problems all have negative influence to macroeconomic stability.

External misbalance is expressed through deficit of balance of payments. It is constantly present in Serbian economy, and its peak occurred in 2008, 7.21 billion EUR. In 2010, this deficit was 2.28 billion EUR, or 7.8 % of GDP.

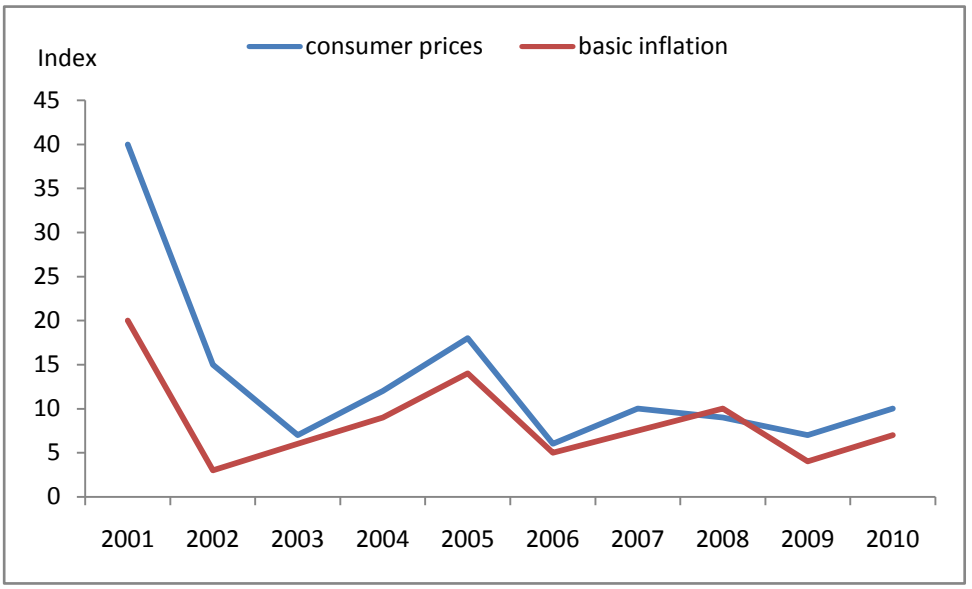
Despite the significant inflow of funds from the privatization of publicly-owned companies and remittances of Serbian workers abroad, the deficit could not be covered. According to data from the World Bank, Serbian people sent some 43 billion US $ into the country, in a period from 2000 to 2010. Since the privatization of publicly-owned companies is close to the end, much less inflow is expected in the next period. On the other hand, the privatization of state owned companies is on its way, so we could expect the increase of direct external investments. Also, foreign exchange reserves exceeded 10 billion EUR.

Table 9. External and internal misbalance

Year	**Balance of payments**		**Budget**	
	Deficit, million EUR	**Deficit share in GDP, %**	**Deficit or surplus, million EUR**	**Share of deficit or surplus in GDP, %**
2001	370	2.9	26	0.2
2002	1,190	7.4	689	4.3
2003	1,770	10.2	450	2.6
2004	3,001	15.8	57	0.3
2005	2,046	10.1	61 (surplus)	0.3 (surplus)
2006	2,541	10.9	443	1.9
2007	5,219	18.3	484	1.7
2008	7,217	22.1	556	1.7
2009	2,282	7.9	953	3.3
2010	2,275	7.8	1,043	3.6

Source: National Bank of Serbia

The internal misbalance is expressed through the budget deficit. Except in 2005, the deficit is present in the entire observed period. The lowest deficit occurred in 2001 (0.2 % of GDP), while the highest was in 2010 (3.6 % of GDP), when it exceeded one billion EUR, with a tendency of further increase. Incomes from the privatization helped this segment, too. As a comfort, we could say that many European countries had higher budget deficits in 2010 – Ireland (32.4 %), Great Britain (10.3 %), Greece (10.4 %), Spain (9.2 %), Portugal (9.2 %), and Poland (7.9 %). The only country with extremely high surplus was Norway (10.5 %). Serbia covers its budget deficit mostly by new indebtedness, often with unfavorable payment conditions. The interest on securities in 2011 exceeds 7 %. It also should be mentioned that very little work has been done in order to reduce the budget outcomes, especially in public sector.



Graph 10. Indexes of consumer prices and basic inflation

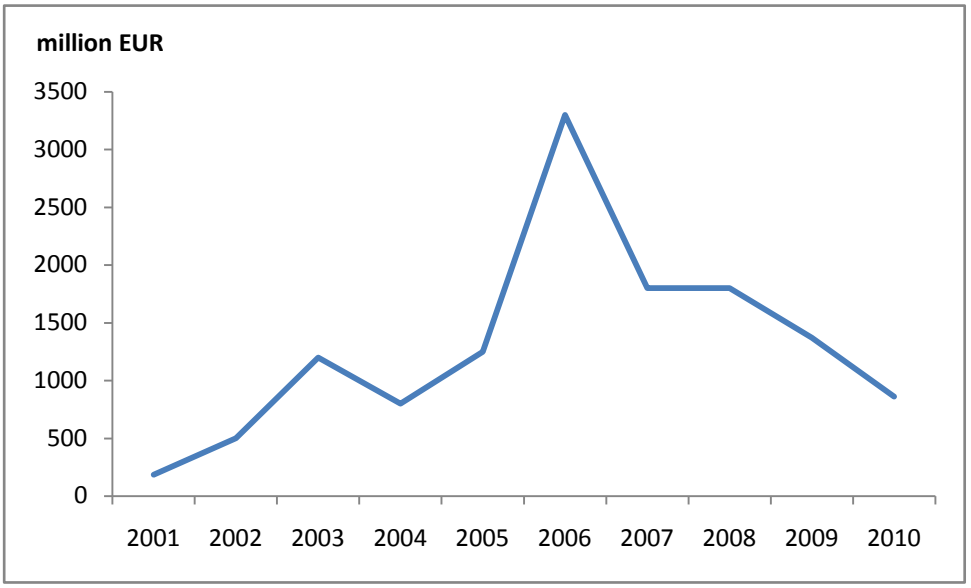
The next macroeconomic problem our country is facing is inflation. Despite the obvious stabilization regarding the period of hyperinflation in 90's, the situation is still worrying.

Serbia has significantly high inflation, one of the highest in Europe. In 2010, the annual increase of consumer prices was 10.3 %, and the basic inflation 8.6 %. Countries in the region have a much lower inflation rate – Albania 3.6 %, Bosnia and Herzegovina 2.1 %, FYROM 1.6 %, Croatia 1 % and Montenegro 0.5 %.

At the same time we have a very high depreciation of domestic currency. Dinar, as a national currency, depreciated 72 % in period from 2001 to 2010. In 2001, 1 EUR was worth 59.78 RSD (average), while in 2010 it increased to 103.04 RSD. However, regardless of this situation, we can still hear that Dinar is overrated, which is unfavorable for export and stimulates excessive import. It should be annotated that the National Bank of Serbia, in order to stabilize the exchange rate, often intervenes in the exchange market with money from foreign exchange reserves.

High inflation, instability of domestic currency and high credit risk, caused a pretty high cost of capital. Interest rates on credits are often several times higher than in economically stable countries. That is convenient for creditors, especially banks, while it is unfavorable for industry, e.g. economic entities, as credit users.

According to the data from the Association of Small and Medium Enterprises, in the period between 2001 and 2010, the industry paid about 22 billion EUR of interests. Such a situation makes worse the already poor solvency of industry and makes its recovery much difficult. In 2011, some 69,500 companies were insolvent, with over 260 billion RSD of obligations and 700,000 employees.



Graph 11. Direct foreign investments

Since the macroeconomic and business environment is still unfavorable, direct foreign investments are very rare. This makes overall situation in this area very poor.

The highest income of foreign investments occurred in 2006, with over 3.2 billion EUR. After that, came the period of stagnation. By countries, the greatest investor is Austria, followed by Greece, Germany, Holland, Norway and Italy, and after them Slovenia, France, Luxemburg, Hungary, etc.

3. GLOBAL POSITION OF SERBIA

According to the data from the World Economic Forum, and also some international and domestic institutions, we will give the global position of Serbia with analysis of vital indicators.

Table 9. Position of Serbia according to indicators provided by the World Economic Forum in 2011

Number of analyzed countries - 142			
No.	**Indicator**	**Value coefficient**	**Ranking**
1	Competitiveness	3.88	95
2	Macroeconomic stability	4.5	91
3	Level of domination at the market	2.5	139
4	Volume of state regulations	2.3	134
5	Efficiency of anti – monopoly policy	2.8	137
6	Success in solving social conflicts	2.5	137
7	Rate of national savings	14.8	103
8	Cooperation between employees and employers	3.3	136
9	Independent judiciary	2.4	128
10	Organized crime	4.3	107

As we can see, Serbian ranking is poor. Out of 142 countries, it is at 95th spot in competitiveness, 91st place in macroeconomic stability, while in other categories the situation is even worse. Furthermore, in some indicators, the situation is getting worse.

To complete the overall picture, we will add two more indicators – the rate of economic liberty and the state of democracy. According to the report of the Heritage Foundation and the Wall Street Journal, in the domain of economic liberty Serbia takes 98th place out of 184 analyzed countries, with 58 points. This means that Serbia belongs to the group of countries with lack of economic liberty. Except Bosnia and Herzegovina, all of the countries in the region are better placed – FYROM 43rd, Albania 57th, Bulgaria 61st, Romania 62nd, Slovenia 69th, Montenegro 72nd and Croatia 83rd.

The situation is slightly better in the segment of democracy. On the list of the Economist Information Unit (EIU), Serbia has taken 64th position out of 165 countries in 2011. That is one position better than in the previous year. By the democracy index, Serbia is behind all of the countries in EU, but in front of FYROM, Montenegro and Bosnia and Herzegovina.

4. CONCLUSION

Big expectations and even bigger disappointments, we could say. Aims of transition are yet to be accomplished. Furthermore, in many segments, the situation is even worse than in 90's, when the process started.

The privatization of public property, after more than two decades, is close to an end. Unfortunately, the process was not very successful. Huge number of economic entities no longer exists; some are still in agony with insecure future, while the number of those who preserved or improved their business economy is very small. Also, several hundred thousands of employees lost their jobs.

Economic effects of transition are catastrophic. Industrial production recovers slowly and barely reaches 50 % of the production level at the beginning of 90's. A similar situation is in agriculture, too, with significant decrease of farming production. GDP grows slowly, but the share of industry and agriculture in it is decreasing. The level of foreign trade is low

and with strong deficit of trade balance and with low coverage of import with export. Foreign investments are rare and they do not contribute to growth and development. Unemployment, reaching 20 %, is one of the highest in Europe.

By the level of external debt (82.1 % of GDP), Serbia belongs to the group of highly indebted countries. Public debt reached 42 %, out of maximally allowed 45 %, with a tendency of further growth. Debt servicing becomes more and more questionable.

External and internal misbalance is still present (deficit of balance of payment and budget), followed by high inflation, instability of domestic money, insolvency and low level of life standard of the residents.

Also, according to numerous indicators, the global position of Serbia is extremely unfavorable, or even humiliating. Out of 142 countries taken in consideration, our country is ranked 95th in competitiveness, 91st in macroeconomic stability, 139th in level of dominance at the market, 134th in volume of state regulations, 103rd in rate of national savings, 128th in independence of judiciary, 107th in organized crime, etc. There is also low placement in ranking related to the rate of economic liberty – 98th place out of 184 countries. A small improvement has been made in the domain of democracy (64th out of 165 countries).

This situation is not sustainable. Poorness of the Serbian economy has to be stopped. The actual model of economic growth and development has to change. Instead of the expenditure model, with spending more than earned and covering it with new indebtedness, there should be a new model which has to be focused on investments and development, based on re – industrialization, increase of export and drastic reducing of public spending. Such a model is imposed by economic reality of modern business economy.

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EMPLOYEE MOTIVATION AND COMPANY PERFORMANCE

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Abstract: *People, their characteristics, habits, motivation and content represent the core of human resource management. Human capital is the main competitive advantage on the global market. Nowadays, human resource management and development is becoming more significant due to the fact that a man has gained a new place and a new role in all social processes and in their management. Managers have to use all of their knowledge, both organizational and psychological, in order to create favorable environment in the company and conditions in which the employees can fulfill their needs and wishes, thus, to contribute to the company's success. This can only be accomplished by creating a good quality system and by combining those motivation techniques that are adequate for certain situations.*

Keywords: *motivation, motivation factors, human resource management, company*

1. INTRODUCTION

Human resource management is considered to be the central issue of the future success of any business organization. The organization's quality and productive capacity are determined by the quality of employees. The success of most organizations depends on their ability to find employees who have certain competences required for successful performance and doing tasks directed at fulfilling company's strategic objectives. Management decisions and working with employees are of utmost importance for employing and retaining the best workers. In order to take the best use of the employees' potential, the human resource management should integrate all processes, programs and systems within an organization, which are intended for employing workers and them efficiently contributing to the organization.

Human resource management is not only a strategic instrument, but it is also being used for achieving the company's sustainable competitiveness. In order to become competitive through human resources, a manager should completely change the way he thinks about his employees and how he comprehends employment. This means that employees should be considered partners and not only as an expense which needs to be reduced or avoided, [1].

Motivation is one of the most important issues in management. The reason for this is quite simple:

Companies fulfill their objectives if their employees and management are being efficient. Therefore, there are three key factors relevant for a company's performance [2].

- Employee competencies for good performance,
- Possibilities for employee performance,
- Employee willingness or motivation to achieve good performance.

Employees being motivated and content, is a subject of interest of many authors because the understanding of these topics can result in the improvement of the efficiency and

creativity, the improvement of the quality of the working environment within a company and the improvement of the competitiveness and company performance, [3]. In order to increase one's motivation, a person has to define his boundaries, secure the possibility of choice, harmonize his work and private life, set new challenges, clearly define objectives, develop and improve skills, cooperate with others and help them professionally. However, he should have in mind that no theory is good enough to foresee what motivates each one of us, because what motivates him might not motivate somebody else [4].

Nowadays, motivation and content of the employees comprise the core of interest of the contemporary human resource management, because only by creating the high quality motivation system can the organization benefit to improve its competitive ability and advantage on the market. Moreover, many universities provide opportunities to their students, by interacting with several experienced professionals, to develop their skills in different fields of this topic [5].
In the contemporary, constantly changing and uncertain business environment, which requires a new way of managing a company, the market promotes its own business and management philosophy, thus, human resource management philosophy as well.
New ways of doing business emphasize, among other things, the growing need of using and creating new working potentials of the employees [6]. A certain number of companies are stressing the importance of focusing on the human resource qualities. Such (high-quality) human resources are becoming a key factor for the competitive advantage. The difference between a successful company and a less successful one is represented by human resources [7]. People, their characteristics, habits, motivation and content represent the core of the human potential management. The human capital is the main competitive advantage on the global market. Human resource management and development is becoming more important because of the new place and role of a man in social processes, as well as in their management. The main objective of a manager is to comprehend how complex human nature is, to evaluate all motivation theories and to select an adequate material and non-material motivation technique depending on the specific context in which the company is in.

2. MOTIVATION AND FACTORS WHICH HAVE INFLUENCE ON INDIVIDUAL MOTIVATION

To define motivation properly and concisely is pretty hard. People are simply just motivated on their own or it is forced upon them. The answer to the question "What is motivation?" was different through the ages and in different cultures. Motivation can be defined as a process, which triggers an activity in a man directed towards certain objects and its coordination in order to achieve a certain goal [8].
Motivation represents an energy which guides us towards fulfilling a goal. That is a complex phenomenon which shapes human behavior. Numerous motivation theories provided basic answers what triggers human activity (motives) and how the motivation process comes into being. They are divided according to the content and processes, depending on the fact whether they were looking for answers what motivated people or how the motivation process came into being. If we take a look at people's needs, which represent the base for the motivation as a generator of human activities and behavior, we can conclude that those who studied this phenomenon agreed on the list of people's needs.

Work motivation is a complex set of forces which initiate and keep the employee on a specific post within the organization. From a personal perspective, that is an internal state which leads to the goal being fulfilled and many factors have an influence on it. From a

manager's point of view, motivation is an activity which ensures the employees to chase predefined goals.
Motivation is closely linked to work and the organizational efficiency. Motivation in an organization can be defined as a guided behavior of the employees towards organizational goals but also towards satisfying personal needs and goals at the same time. The main aspects of motivation are:

- Motives of the employees,
- Organizational goals,
- Individual goals.

Motivation in an organization is efficient if employees fulfill their personal needs and goals through organizational goals. Motivation as such emphasizes willingness in a man's behavior and represents the energy which urges him to act and behave in certain ways.
Employee motivation is one of the key preconditions for success in business. That's why it is important to constantly nourish and improve this system. Highly motivated workers know what to do and how to reach the predefined goal in the quickest and most efficient manner. This is important both for the organization and an individual who gets certain reward for the work and effort.
There is a set of factors which influence motivation but all of those actually influence a person, his perceptions, values and needs. There are other important factors for the whole motivation process, a wider environment, social and economic development, etc. There is a wide array of factors which influence individual motivation and can be divided into four categories:

- Personal traits,
- Characteristics of a certain post,
- Characteristics of an organization,
- Wider environment.

2.1. Motivation and Company Performance

Having in mind that the success of a company or an organization depends on the capabilities and motivation of its employees, and the success and employee motivation depend on the ability of the manager who leads them, therefore, one can conclude that the manager's behavior greatly influences employees' behavior. The manager is also responsible for motivating employees, which implies winning people over and guiding them in a certain direction in order to gain results. Most of the employees should be motivated to a certain extent, so managers have to provide an environment in which one can achieve high levels of motivation [9].
There are three major reasons for motivation:

- To improve productivity, efficiency and creativity,
- To improve the working environment,
- To strengthen competitive advantages and success.

A motive and motivation are very important psychological characteristics in management. An individual needs certain abilities, means, working conditions, but also motivation in order to succeed in a certain field, which means that all of these factors together influence one's behavior and his success. It is important for managers to care about the employee motivation because it governs some relations in the organization. It is important to care about employee motivation and maintain it in order to have it as a constant. In order to achieve certain results, certain working conditions, acceptable for employees, that motivate and satisfy them, have to be provided.

Motivation is represented by those managerial activities which mobilize and urge employees to do certain and anticipated tasks, in a certain way, meaning, efficiently and effectively, and therefore, secure the achievement of the organizational goals and plans. For achieving organizational plans and goals, managers have to constantly improve the cooperation with employees, their efficiency and effort when working, because that is not guaranteed at first when entering an organization. By applying various motivation techniques and plans, managers provide opportunities for employees to fulfill personal goals and plans, simultaneously with organizational goals and plans, which show that motivation is an activity that managers use for securing employees to behave in a certain way.

Managers working in the field of motivation, have to urge people to behave in a favorable way in order to fulfill certain organizational goals because people are aware of that fact that by doing so their personal goals will also be fulfilled. Therefore, motivation is efficient when people combine their potential with the organizational goals, and simultaneously fulfill their own and professional goals. Managers have to know how to motivate employees, what motivates them to work hard and what does not. If motivation is positive, a person is motivated and therefore achieves high performance.

One should motivate employees, if they are expected to do their best, and motivation is one of the most basic issues in contemporary organizations. Each man has his personal needs, but there are a number of them which can be classified as common for everybody. If these needs are fulfilled, there is a possibility for an employee to do his best. As basic needs there are physiological needs, needs for security, belonging, and respect and the need for self-esteem.

The goal of every organization is to develop motivation processes and the working environment in order for the employees to gain results in line with the managers' expectances, which can be done through satisfying their needs. However, among other motivators the best one for the employees is the possibility to do rewarding and tasks for which he is getting paid. Employees' behavior is most often characterized either as behavior needed for fulfilling goals or behavior for getting paid, meaning, motivation can be moral and material. It is known that material motives grow on moral motives, so managers have an important task of intersecting moral and material (personal) motives. The control of the employee motivation is also important because motivation represents forces which influence the person, both from within and from outside, and cause the person to act in a certain way, a goal oriented way [9].

Inner forces are actually inner factors which influence motivation, while the working environment, award systems, security and respect represent external factors.

It is important that managers create conditions which will urge the employees to make effort and channel their behavior towards higher goals.

It is important to evaluate the performance and to use that evaluation as a tool for strengthening motivation. That is why it is based on a criterion important for the individual and the organization, which is real and applicable to the environment.

Results and motivation are closely related. Motivation is the inner need and readiness of the employees to achieve results. The result is what employees create while performing their tasks, which means that results are the product of motivation.

2.3. Application of Motivation Techniques in Human Resource Management

Based on the results of numerous experiences and research one can conclude that there is no universal solution for building up a motivation system within a company, but it greatly depends on the organizational politics and specific solutions. One of the basic tasks is to define goals and the rewarding system, while knowing and comprehending human

motivation. The rewarding and motivation system cannot be subject to individual behavior and manager's attitude, but part of the business and development politics, and thus, defined rules and norms. Motivation system has to secure three types of behaviors important for the organizational functioning and development:

- Employees need to be integrated into the system and they should stay there,
- Employees have to do tasks and activities in a satisfactory way,
- Innovative and creative activities should be developed in order to fulfill the company's development goals.

For the motivation system to secure the above mentioned three types of behavior, the combination of financial and nonfinancial factors of motivation is required in order to satisfy a variety of human needs.

1. ***Activities in the field of material compensations*** – An adequate material reward represents a basis on which one should upgrade a variety of motivation stimuli in order to increase the total motivation potential. Material compensations are required, but not enough for developing a motivation basis of various behaviors within a company. Nonmaterial compensations are becoming more important in the economically developed systems.

2. ***Activities in the field of nonmaterial compensations*** – An employee motivation system with material compensations, has to encompass those that are nonmaterial because its aim is to satisfy various human needs. The more needs it satisfies, the more appropriate it becomes for fulfilling organizational goals. Having in mind that needs are not only material but social, psychological (need to grow, develop oneself, self-acknowledgement, acknowledged status, cooperation and social contacts, security, etc) the material motivation system should be improved with mechanisms which point out the importance of each one of the employees for the organization and their individual contribution.
Knowledge and creativity instead of the performance and productivity, in a classical sense, are becoming the base for efficiency and the success of a modern organization; therefore it is logical that new motivational bases are being found. The motivation basis is upgraded with collective rewarding systems, which apart from material compensations are beginning to include other motivation factors such as participation in setting up goals and decision making, autonomy and responsibility, task sharing, cooperation, flexible working hours, etc.

3. ***Motivation activities for managers*** – In order to establish a high quality motivation system it is important that managers understand employee needs. That is a precondition for a successful influence on their attitudes and behavior. Knowing everything that they should know about their own field of work, they also have to comprehend a psychological structure of an individual, individual psychological needs and problems, not in order to manipulate but to secure high quality performance.
The complexity of the motivation system requires special attention and shaping by the top management. Assumptions required for the successful implementation of the motivation system are: exact measurement of performances, unbiased estimates, giving way to advancement and further schooling, so that all levels of management have psychological and organizational knowledge. Management should design awarding and motivation packets whose structure depends on how complex the motivation system should be developed and whether a basic system is based on the collective or individual factors. Managers should stick to certain guidelines when designing and maintaining a high quality motivation system:

- Recognize certain differences in attitudes, employee needs, connect employees with tasks,
- Use goals for designing tasks for employees and for feedback on their quality of work when fulfilling these goals,
- Tend to have achievable goals,
- Personalize rewards,
- Link rewards and performance,
- Secure the righteousness of the system,
- Do not neglect the importance of the wages for employee motivation.

A lot of companies partly link bonuses with quality, which is considered the most important factor for the long term success of a company. A lot of companies give bonuses for increased knowledge which leads towards a more flexible organization, more rational use of human resources, increases individual interest and proficiency.

One of the key concepts in the 90s was the *promotion* which represented a delegation of power to subordinates in the organization. Therefore, there is full participation of employees in the decision-making process and the delegation of power, which gives way to employees to fully exercise their creativity. In order for a program to be successful, employees should be given information, knowledge, power and rewards.

Thus, a manager can help the employees get a better status, better opinion about themselves and their work by:

- Involving employees in the decision-making process,
- Granting more responsibility to employees,
- Encouraging employees' ideas and suggestions, and righteously rewarding employees in line with their contributions.

Numerous motivation programs have been developed recently which aim at improving employee motivation and content (Figure 1).

Name of the program	Purpose
Performance monitoring	Reword for an employee depending on the contribution. Payment according to performance.
Rewarding system	Rewards to all employees and management in all units when expected performances are achieved. Encourages team work.
ESOP	Employees get shares which enable them to share the company's profit.
Bonuses	Rewords for employees together with payments based on performance.
Rewarding knowledge	Payment according to the achieved skills and competences. Employees are being motivated to learn skills required for other posts as well, so that they can improve the company's efficiency.
Flexible working hours	Flexible working hours enable the employees to set up their own working time. This provides two or more employees to work part time on the same post.

Figure 1. New motivation programs [10]

The examples of new motivation programs point to the fact that employees and their motivation, development and content are becoming the subject of management's thinking because they actually represent the main tool for the competitive advantage on the market.
The management has to use all of their knowledge, both organizational and psychological, to create a favorable organizational climate and conditions in which the employees can fulfill personal needs and wishes, therefore do their best and make the company successful. This can be done by establishing an adequate motivation system and by combining exactly those motivation techniques that are appropriate for a certain situation.
Whether the application of the management concept is successful is reflected in the coordinated organizational functioning. The business culture is being established on the basis of the cultural cohesion whose essence is to have an adequate culture at a certain place with a proper goal.
The productivity is directly dependant on the employee motivation level. In order to raise the employee motivation level to the top, managers have to know employees' needs and motives and how to secure their satisfaction. Employee satisfaction is the only means for securing a high level of productivity and creativity in employees. Three dimensions of motivation are important for understanding its influence on employee performance: direction, intensity and consistency. The intensity of motivation determines the amount of effort one will make in time in order to satisfy his needs. If the intensity of the motivation is stronger, then the employees will make more effort in order to fulfill their goals. Human behavior is successfully governed in the business environment. This requires management's action and one should determine and implement the chain which can be described as: value - needs – motives – factors – motivation – high productivity. Every manager and company should in general pay attention to employee needs in a way which will enable the implementation of various motivation techniques, that is, to adjust the existing techniques directed towards nourishing motivation, and as its result productivity as well [11].
Some of the most popular motivation techniques are: setting up realistic and achievable goals for each and every employee, using money not only as a reward but also as a motivator, acknowledging and rewarding successful individuals and teams, delegating more responsibility and authorization, enriching activities of a certain post, improving the status, constant trainings and development, job security, efficient communication system from the manager towards the employees and vice versa, team building (if applicable), establishing an informal system of social interactions among employees, etc.
The biggest influences on the company's success have people as key business resources. Without people the organization would not exist; a man gives the company its meaning. People are far more complex than other resources because a man is a conscious and thinking being with his own goals and his own life outside of the organization. Human energy is the total intellectual, psychological, physical and social energy which can be used for fulfilling company's goals. When channeled well, human energy has the power to overcome each and every obstacle. Only human recourses have absolute inner ability to grow which represent the only resource which develops even more when used.
Human resource management's task is to reveal, develop and link human potentials and to make them useful for fulfilling company's needs, while they get their personal satisfaction. Knowing people and their psychology is a precondition for motivating employees, which means that managers should spend a lot of time with employees in order to comprehend what the best way for motivating them is.

3. RESEARCH RESULTS

The research was based on the manager's task to build a highly motivated environment, favorable organizational climate and conditions in which the employees can fulfill their own needs and wishes, and therefore do their best for the success of the company. The educational background of the interviewees is as follows: most of them 49% have high-school education, while only 1% has a PhD degree, 17% with a college degree, 28% with a university education, and 5% in total with a MSc degree. The employees, 67% compose the majority of interviewees, then managers with 33% out of which 1% reflects top management, and 32% middle management.
Whether the manager's motivation abilities are important for the individual performance, 90% answered with yes. Management should influence the employees, motivate them so that they can do their best for the wellbeing of the company. 58% of the interviewees said that the best way for a manager to influence employees is by combining three factors: knowledge, personality and position; 28% though that manager's knowledge is most influential, 13% his personality and only 1% considered position as the main factor. This means that interviewees are aware of the fact that the best way to influence the employees is by combining all of the three factors.

	Percent	Cumulative Percent
Management influences employees by combining all three factors	58,0	58,0
Management influences by personality	13,0	61,0
Management influences by knowledge	28,0	99,0
Management influences by position	1,0	100,0

Motivation is very important for fulfilling certain results and for making efforts though various motivation techniques. Out of the provided motivation techniques 35% of the interviewees pointed out raise as the best motivator. Allocating challenging tasks is not such a motivating tool according to interviewees, so only 9% voted for this one; 15% selected the public praise, 30% promotion and 11% allocation of more responsibilities.

Motivation techniques	Percent	Cumulative Percent
Allocating challenging tasks	9,0	9,0
Allocating higher responsibilities	11,0	20,0
Promotion	30,0	50,0
Raise	35,0	85,0
Public praise	15,0	100,0

Employees are satisfied with the work if they are working with colleagues with whom they already have good personal relations and if the working environment is healthy. It is logical that healthy environment and the absence of conflicts represent an important factor for being content with work, which is even more important than the payment. Therefore, 41% said that their motivation was diminished by conflicts at work, 19% said that small wages decreased their motivation, 27% said that their motivation was decreased by the fact that there were no possibilities for promotion and 13% said that their motivation was decreased by bad working conditions.

	Percent	Cumulative Percent
Motivation is decreased by conflicts	41,0	41,0
Motivation is decreased by small wages	19,0	60,0
Motivation is decreased by the lack of possibilities for promotion	27,0	87,0
Motivation is decreased by bad working conditions	13,0	100,0

To what extent the employees were content with the applied motivation techniques in their organizations, 64% replied that they were not satisfied with motivation techniques, while only 13% were satisfied with the applied motivation techniques. Others did not reply.

4. CONCLUSION

Employee motivation depends a great deal on the management's capabilities, behavior and actions, ability to stimulate employee motivation, to create the organizational environment which will result in the employees being motivated. In such an environment the employees build up self-esteem as individuals and as employees. They are ready to make additional effort for the sake of the company's success.

Contemporary ways of doing business make the management focus on motivation and employees being content. The organization can improve its competitive advantage on the market only by establishing a healthy motivation system. Of course, one should get to know all of the key elements in detail if he wants to put them in practice. Thus, that is why the research is important. Practical research can help individual companies but it can also define a general behavioral pattern for the management in relation to employee motivation and their content so that they do their best for the company's wellbeing.

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THE CREATION OF SUSTAINABLE COMPETITIVE ADVANTAGE IN MARKETING

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Abstract: *Competitive marketing strategy relates to seeking for a favorable competitive position in an industry, through creation of profitable and sustainable position against the forces that shape competitiveness in the industry. The challenge facing local companies is to overcome superficial attitude towards marketing and gaining firm and long-lasting competitive position in the market that will yield profit and shareholder value. It is necessary to develop marketing strategies that will be based on firm understanding and knowledge of the market in order to determine the competitive position that will be possible to defend and which will be supported by constant learning and the customer value improvement. In the creation of the competitive position there are two priority tasks – deciding on the focus of the business and market segment. The competitive advantage in chosen business could be gained by either cost leadership or differentiation. In order to create a strong and defensible market position a company has to differentiate its offering from competitors' offer on some form of value for customers and it has to be performed with least possible costs, whereas a duty of marketing management is to ensure that employees have necessary skills and characteristics. Organizational structures, methods and formal "traps" of marketing can and should be changed in order to reflect new development trends and market opportunities, marketing concept and philosophy. This certainly includes competing on the basis of new business models, many of which are based on the Internet. The paper presents results of the study conducted on the use of the Internet and computers for marketing purposes.*

Keywords: *competitive advantage, marketing, Internet*

1. INTRODUCTION

Whereas ten years ago many managers who claimed that their business was market oriented wrongly interpreted marketing, regarding it just as a new term for sales and advertising, today's managers are familiar with exact textbook definition of marketing, which is based on identification and fulfillment of customers' needs accompanied by profit-making. Marketing has successfully evolved from a function to a concept of how a business should be organized. It has become a principal function of a successful company, with a focus on superior value for customers, with the notion that no innovation can provide a long-term advantage. It is necessary to invest in long-term relationships with suppliers, distributors and employees, besides the customers, as well as continual training, innovating, improvement and development of effective supply-chains and information technologies that will result in superior business performances.

Marketing strategies will certainly include competition through new business models, many of which will be based on the Internet. It depends on the ability to comprehend and react effectively on new market requirements, through definition, development and offering of value for customers, successful implementation of marketing strategies and management of organizational change. Marketing processes of a company should define the position that will enable it to get better understanding of marketing environment in which it operates its business through market research, study of customers' needs, buying behavior and product usage in order to get deeper understanding of its resources and capabilities and define its position in value-chain and through economic analyses and monitoring systems assess its value creation. Value creation processes relate to the creation

of value through value-chain, procurement strategy, new product development, planning of distribution channels, the choice of vendors, strategic partnerships with service providers, pricing strategy and finally development of unique selling propositions. Value creation for customers includes the provision of services, customer relationship management, distribution and logistics management, market communications, customer services and field selling.

A perspective market entry includes value creation and provision as well as continuous value improvement. The aim is not only to find solutions for today's challenges, but to create an approach that will enable companies to change and adapt to new situations and threats that can emerge in the era of new marketing strategy based on resources. The aim of this study is to provide a serious analytical framework for the development of an effective and reliable marketing strategy, suitable for today's and future circumstances.

2. STRATEGIC MARKETING MANAGEMENT ORIENTED TOWARDS THE MARKET

Marketing concept implies that in evermore dynamic and competitive market conditions the perspective of success is on the side of the companies that are able to recognize customers' expectations, desires and needs and fulfill them better than competitors. They are aware that customers will not buy goods and services of a company if its offering is not in some way superior in comparison with competitors' offer. New definition of marketing, proposed by the American Marketing Association, which describes marketing as an „organizational function and a set of processes for creating, communicating and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders" provides support for the notion of beneficial exchange, whereas the focus in the development of marketing strategy is on value, processes and customer relationships.
Considering the whole network of new challenges that have emerged over the recent years Kotler suggested a more integrated perspective of marketing named „holistic" marketing (Kotler, Keller; 2007) based on four components: marketing relations, strategic partnerships, integral marketing, internal and socially responsible marketing. It is not easy to transfer from marketing textbook definition to what marketing operationally means in practice. Therefore among all the terms used in an organizations marketing has proved to be the most difficult to define, because it implies culture, strategy and tactic at the same time. Organizational culture implying marketing concept (Drucker, 1954) relates to the set of values and beliefs that motivate the company through fundamental commitment to satisfying customers' needs as a means of achieving sustainable profitability.

As a strategy, marketing tends to develop an effective reaction to changing marketing environment, through the identification of market segments and development and positioning product offerings for target market segments. As a tactic it relates to everyday activities of product management, pricing, distribution and market communications, such as advertising, personal selling, publicity and sales promotions. It is very extensive and requires marketing orientation development (culture), value and competitive positioning (strategy), and to develop detailed marketing actions (tactics). In practice, marketing of an organization often fails to meet all those requirements.
The essence of the new marketing concept implies orientation towards the customers, listening to the customers, dealing with distinctive competencies of the company, defining of marketing as a marketing intelligence, orientation towards profit and not sales volume, being guided by the value for customers, building customer relations and loyalty,

orientation towards continuous innovations and improvement and alignment of organizational culture to the strategy and structure. Examination of marketing resources can be based largely on the success of previous marketing activities (tactics), marketing as a matter of focus on customers and competitive positioning, having in mind that marketing is generally very effective in tactics, but less effective in the field of strategy. The process of marketing should not be regarded as an obligation of marketing department only, but as multidisciplinary activity due to the fact that superior services and value as well as innovations necessary for building defendable competitive position rely on coordinated activities of many functional departments and people within the organization.
It is very important to know what consumers think about competitors in the market. The observation of products or services from the consumer standpoint is not an easy job, but without looking from that viewpoint, marketing strategy remains vulnerable to unexpected sources of attack from the competitors. It is important to highlight that marketing as a culture of an organization (marketing concept and market orientation) should be considered in the context of other stimulating values and attitudes of the organization. A culture that places emphasis on consumers, as key factors in the organization, is not inconsistent with the culture that respects the needs and interests of shareholders, employees, managers and the wider community in which the organization operates, which is in line with already mentioned Kotler's 'holistic' perspective.

There are three main alternative approaches to competitive marketing strategy today-*Push strategy*, whereas company's activities are focused on existing products and services and they seek ways to encourage customers to but them – we have good product or service which is different in comparison with competitors' offer. The most important thing is to convince a customer to want what we are good in making. Marketing oriented towards the customers whereas companies are oriented to find out, at any price, what customers want. This can cause problems, because it brings a huge expansion of products and complex promotions can confuse consumers, retailers are also displeased due to the wide assortment they are expected to hold on the shelves. Expansion of product lines can lead to chaos and logistical nightmares, whereas the company is losing its leadership position in the industry because of "too careful" listening to what their customers say.
Marketing based on resources is an ideal strategy, because the company bases its marketing strategy taking into account the demands of the market and its ability to satisfy them. Therefore, long-term observation of customer needs is viewed in the context of market considerations (e.g., competitors' offer and supply and the real situation in the supply chain) while planning company's resources and capabilities in order to align them. This approach takes into account the centrality of consumers, but also a need to be selective in the choice of markets to serve, so as to choose markets which, according to the company's resources and capabilities, provide an opportunity for leadership. Marketing based on resources actually tends to achieve long-term alignment of market requirements and organization's ability to compete. This does not mean that the resources of the organization are considered fixed and static, the market demands evolve, and the profile of resources of the organization must constantly be developed to enable the company to compete and ultimately take advantage of new opportunities.
There is growing evidence that companies that do well in the market are doing well financially, there is a direct link between market orientation, customer satisfaction and financial performance of firms (Lafferty, Hult; 2001). Outstanding market orientation implies that all functions of an organization are focused on their role in the creation of superior value for consumers and their contribution towards this goal. This affects management of the functions and priorities on which they insist. For example, management and staff training are often focused on understanding and serving customers and a reward

scheme is created which encourages satisfaction of customers' needs. Outstanding market orientation is correlated with employee satisfaction and job commitment, which results in motivated workforce focused on customer needs ("Knjaz Miloš", before the privatization, where employees were proud on their jobs and focused on providing superior service, which yielded satisfied customers and better services).
Well-developed marketing resources and capabilities, when applied to the market, can lead to superior performance. Satisfied and highly motivated staff (primary marketing means) can give a great contribution to creating satisfied and loyal customers and therefore increase sales volume and market share. The role of marketing as a driver of value creation is to choose target markets and create differential competitive advantage in serving these markets and create appropriate marketing mix. Market success is the most efficient way for partners in the supply chain to achieve desired performance and profits. Greater success through partnerships and alliances can help that our organizations achieve greater stability and predictability in the supply chain and distribution, as well as concern for consumers and employees, social justice, fair employment and other social priorities, by insisting on corporate social responsibility ('holistic ' perspective).
The first principle in marketing of our companies has to be related to marketing concept, whereas long-term goals of an organization, either financial or social, are best achieved by reaching high degree of customer focus - but not blind focus! In order to best meet customers' needs there is a need to study customers' needs and desires. Customers are the best arbiters of quality of meeting consumers' needs and desires, assessing the quality of goods and rendered services based on how they meet consumers' requirements. Quality of products or services from a consumer's perspective is what meets or 'fits the purpose', and not what provides unnecessary luxury. The better the company in serving customers and more adaptable in comparison with competitors, the higher the probability that it will succeed in the future. Selection of markets is one of the most important tasks of each organization – the choice of where to compete and engage its resources. Many factors influence selection of markets, including market's attractivity. In competitive markets, particularly important question relates to company's capability to compete. Many times our companies targeted attractive markets, however faced with high competition they realized that they lacked distinctive features they could use as a basis of competitiveness.

Consumers do not buy products, but what products can do for them, or a solution to their problems. In other words, consumers are less interested in technical specifications of a product or service, but they are interested in benefits they can gain from using them. Observing from the perspective of the consumer may indicate a very different view of market opportunities and threats to our competitive position. It is important that marketing managers consider products and services as a 'bouquet of benefits', or a combination of attractions, all of which add some value to consumers. Mission of marketing management in our country should be to ensure that the organization motivates itself to solve the problems of consumers, not just to promote its current (and often transient) solutions.
Marketing is in our companies increasingly regarded as everyone's job in the organization and as such, being everyone's, it can easily become no one's. Organizations employ marketing experts that can be outstanding in analyzing market data and the calculation of market share with an accuracy of three decimal places, but who really have very little impact on products and services that the organization offers to consumers. Marketing department is considered to be the only department in which 'marketing is done' while other departments deal with their plans and their own goals. As bureaucracy and barriers between functional departments are increasingly being eliminated within the organizations, it becomes increasingly clear that marketing is a duty of all employees, not everyone's job,

to put it bluntly, and that this issue of central importance for survival and prosperity of an organization can not be confined only to the marketing department.
It is increasingly clear that most markets are not homogeneous, but consist of different individual consumers, sub-markets or segments. While some consumers, for example, buy cars as a means of cheap transportation from place A to B, others buy them for comfortable travel, and third buy cars as status symbols or to project their own image. Attempts to satisfy segmented market by means of standardized product often fail, being endangered by clearly oriented competitor. Segmentation on the basis of benefits sought for is one of the best ways to segment markets, because it ties segmentation of the real reasons of its existence – need for different benefits.
Markets are dynamic and virtually all products have a limited lifecycle that ends when new or better way to meet specific wants and needs, another solution or benefit is found. The fate of the logarithm and logarithmic tables before that is a classic example of how the problem (the need for quick and easy calculation) is better resolved with a newer technology, such as a pocket calculator. The notion that products are not everlasting, that they have a lifecycle, stages such as introduction, rise, maturity and decline, has to induce our companies to plan on a long-term, so that when the current winning product reaches the pre-decline phase in the portfolio there are new products that will take its place.

There is a need for continuous improvement of goods and services in Serbia. With evolving expectations of consumers, who even more insist on the benefits expected from a given product or service, organizations must continually improve their offers in order to maintain and improve its position. There are two basic processes of improvement. The first is through innovation which implies a relatively large step at a time (discovery of pocket calculator or changes in technology, such as the discovery of color televisions and compact disc, which changed entire industries in the short term). Another approach to improvements is a more permanent approach which implies minor changes made on continuous basis, which is the largest contributor to the success of Japanese businesses in the world market since the beginning of the fifties, continuous improvement, which is called Kaizen system and considered as an integral part of business life. Technological innovations had the largest effect on computer industry. A computer, nowadays integral part of everyday and business life, was invented after the Second World War.

3. USE OF ORGANIZATION'S RESOURCES FOR THE CREATION OF SUSTAINABLE COMPETITIVE ADVANTAGE

Each organization may specify a long list of resources, but some are more useful than others for the creation of competitive advantage. Research indicates that there are three basic characteristics of resources which, when a match occurs, help in creating sustainable competitive advantage: that they contribute to the creation of value for customers, that they are rare or unique and that they cannot be easily imitated or copied by the competitors (Collis, Montgomery; 1997). Even resources that are unique to the organization bear the risk in the long run of being replaced or imitated by competitors. Competitors may find ways to obtain critical resources (key personnel of an organization could be attracted by a competitor offering higher salaries, better working conditions, etc.). There is a danger of losing customers when key people move to a competing organization.
The basis for superior and defendable position is the market is the possession of unique and valuable products and services, created through the application of rare and valuable resources of an organization, the goods customers want and are eager to pay for. Identification of key differential variables is essential for such an offer. The uniqueness can

arise from the use of superior protected technology, superior raw materials or differentiated tangible and augmented elements of an offer. Unique products cannot stay unique forever. Sooner or later unique products will be copied. Therefore, our companies that want to keep their unique position have to innovate constantly and look for new ways of differentiation. By studying customers' needs and communicating with customers companies have to ensure that their products and services are unique and appreciated by consumers. This in turn requires a clear understanding of consumers and how they can be approached.
The main problem of the value of a resource for our organizations lies in the answer to the question of whether that resource contributes to creating value for consumers. Value can be created directly, such as benefits resulting from new technology, better service, significant brand differentiation, etc. Resources that contribute to these benefits (professional-technical-technological-economic-educated, capable and motivated personnel, brand name and reputation and distribution coverage) directly create value for consumers. Other resources, in turn, can have an indirect impact on value for consumers (effective cost control is not valuable for consumers in itself, however it adds value when it results in lower price or when the organization is able to offer additional benefits to consumers through achieved cost savings).

The value of a resource in creating value for consumers must be determined in relation to competitors' resources (e.g., strong brand name as is the case in sports clothes delivers greater value than some less known brand). In order to contribute to sustainable competitive advantage, resource they must serve to distinguish the offer of an organization from its competitors. Each activity in the value chain (primary and supportive) can be used to add value to the final product or service. This added value is usually in the form of lower price or valued uniqueness (and responsiveness, courtesy, contact, informing customers as well).
Economies of scale are probably one of the most effective regulators (controller) of costs in many industries, because it stems from more efficient performance of tasks. Greater scope allows balance of purchases in order to provide cheaper and better quality (less waste) materials and their timely acquisition when they are in limited quantities. It is normal that there are some limitations with economies of scale, because scope can bring with it greater complexity, which itself can lead to bad results. For most operations, there is a scope which is optimal, whereas higher or lower volume causes inefficiency. The effects of economies of scale can be observed more frequently in the manufacturing sector than in services.
Cost reduction can be achieved through learning and experience effects, because the increase in efficiency is achieved at a given level of scale because the employee performed the required task many times before. Boston Consulting Group has applied learning curve out of the sphere of production and realized that increased efficiency can be achieved in all aspects of business (marketing, advertising and sales) due to experience. BCG has empirically estimated that in many industries costs can be reduced by 15 to 20%, each time the volume of production doubles. This finding indicates that companies with larger market share, by definition, have an advantage in costs through the experience, assuming that all companies operate on the same curve experience. Experience can be brought to a company by hiring experienced personnel, but also strengthen through the training. At the other side, competitors may benefit from attracting skilled personnel, which makes learning curve unpopular.
It can be seen that capacity utilization has the greatest impact on unit costs. PIMS study showed a clear positive relationship between capacity utilization and return on investment. It is important that the relationship is stronger for smaller than for larger companies. Large disruptions or changes in usage can significantly increase costs, and it is therefore essential that our companies make good plan good plans of production and supplies in order to

lessen the effects of seasonal fluctuations as much as possible and avoid market segments where demand varies widely.
Quality control procedures can significantly affect the cost of services and expenses related to recovery of bad products. Our companies should be aware of the fact that superior quality does not lead to higher, but actually shrinking production costs. Relationships with suppliers of inputs or distributors of final products can also result in lower costs. Development of 'just in time' (JIT) - at the right time - production and delivery can significantly affect the cost of inventories and ongoing work. In addition to cost equation, closer relationships with partners also bear broader marketing implications (to function effectively JIT requires close cooperation between companies and suppliers, it often involves a mutual exchange of information, a mixture of forecasts and plans, as well as creating long-term relationships), and it helps to create high switching costs (costs of searching for another supplier) posing thus a barrier to entry for competitors.

Although it cannot always be controlled, timing can lead to cost savings, because the company that first moves in an area can achieve a cost advantage by providing the best location, cheap and high quality raw materials, and/or technological leadership ("Radenska"), the one that follows her („Knjaz“) often uses newer technology to push aside the first company. As with other factors so far processed, the value of timing is not solely in cost savings, because as the most important element of any marketing strategy it opens a 'strategic window' (chances and opportunities in the market that can be used). Successful strategies are timely strategies (e.g., cost-effective cars on the market after the oil crisis and fuel price increases).
Factors that significantly affect costs are location (geographical location in order to exploit lower cost of distribution, assembly, raw materials or energy), and institutional factors, such as government regulations (e.g., larger trucks on the roads can reduce distribution costs). In an attempt to achieve cost-leadership position, each of our organizations should be aware of, first, that there can be only one leader, and second, that there are countless ways to attack this position (e.g., through the use of other factors-cost controllers). Cost advantage may be difficult to achieve and defend when there are strong and determined competitors, however, the management of our companies should always aim at reducing costs, because they significantly affect customer satisfaction through prices.
Most of the factors previously mentioned, such as cost controllers, can be used as "unique" if the company seeks to differentiate itself from competitors. The most actual problem, however, is the choice of policy (product differentiation, price differentiation, distribution, promotion or brand differentiation). The value of products or services to consumers increases through differentiation. Our companies should realize that quality is the most important factor in differentiating the product or service from competitors. Quality refers to the purpose for use (including durability, appearance or class, in the service industry it often relates to the tangible elements of service, reliability, responsiveness, speed of service, value of service and empathy and taking care of customers), but it is also reflected in raw materials and the degree of quality control during production and delivery. User’s perception of quality is of primary importance, and it usually differs from the perception of the manufacturer.
Three conditions are of utmost importance in deciding which elements to use: First, what consumers expect in addition to key, generic product? Second, it has to be something that is unexpected, but valued by the customers. These additions beyond what is normally expected often make the most efficient way to differentiate the company's offer, although costs of offering additional benefits are essential, because increase in price must be lesser than the extra benefit (value) to consumers and consumer should be willing to pay premium prices. Differentiation should take into account economic value for the

customers. Third condition in the choice of product differentiation is the ease with which differentiation can be copied by competitors. The most successful differentiation is the one that uses a key capability, competence or marketing capabilities that competitors do not have and find it difficult to develop them.

When deciding on the type of differentiation that will be adopted, several elements should be taken into account - added value for consumers, the cost of differentiation in relation to a given value, the likelihood and speed of copying by competitors and the extent to which differentiation relies on marketing capabilities of the company. Differentiation of distribution results from the use of different points of sale, possession of a different network or different coverage of the market. The advent of the Internet has brought with it significant changes in distribution and promotion strategies. However, when it comes to domestic companies, the advantage in the area of distribution and communication cannot be easily realized, due to the lower level of application of new technologies, as indicated by the results of the study conducted by Technical Faculty in Bor in 2010, on a sample of 100 companies operating in Serbia. According to the results, 75% of respondents use Internet for marketing purposes.

When asked about the usage of the Internet and e-mail address for business purposes, 62% of respondents gave affirmative response, which indicates lack of computer literacy. Enquired about having web page, 35% answered affirmatively, which indicates that a few companies have their own website. When asked about communicating with business partners via the Internet, 32% replied affirmatively. This research and practice have shown that successful companies have already based their business on computers and the Internet. When asked about future plans for using computers and the Internet for business purposes and whether they think that the company needs training regarding the use of computers and the Internet in marketing purposes, 93% of respondents gave an affirmative response and expressed high interest in education of employees.

Lower costs as a means of differentiation may be the basis of a successful strategy only where the organization has an advantage in price (cost) or where there are price barriers to competition. Starting price war may be a disastrous route, the greater the degree of differentiation of products or services, there is a greater scope for premium prices. When there is little basis for differentiation price competition becomes stronger. Differentiation in terms of promotion relates to the usage of different types of promotion (communication mix), promotion of different intensity (e.g., very intensive promotion during launch and re-launch of the product) or other content (e.g., with clearly different advertisements). Our companies use the potential for public relations weakly. It basically relates to creation of relationships with media and use of media to build positive attitude. Press releases and interviews with key managers on important issues can help organizations to promote themselves more reliably than through advertising. PR has two great advantages in comparison with advertising: it is much cheaper way of gaining popularity (some companies would never be able to pay the normal price in the media), and articles that appear in newspapers get credibility because they are written more as independent news, not advertising.

Creating a closer relationship with customers through improved service can help a company to capture more easily a defensible position in the market, moreover consumers need closer ties. The stronger the relationship, the more difficult it is for newcomers to enter the market. Strengthening relationships with consumers reduces their likelihood of buying from other sources of supply. Brand and reputation (credibility) of the company are among the most easily defensible properties, provided good management. Technological and market changes happen at a fast pace nowadays and the products being transient, consumers find security and continuity in least tangible asset - reputation and corporate brand.

Customer is in the centre of building sustainable brand positioning. Second market player usually has half of the business of leading company, whereas third competitor has half of the business of the second company. This relates also to profitability and return on investment, whereas in the long term profitability follows market share. Leading companies can achieve cost-effectiveness in promotional activities, and this is because the first one is easiest to remember. Market leaders take advantage of being first, such as Nike sports shoes, Coca-Cola in soft drinks in coffee and Nescafe, but it creates unsolvable problems for smaller brands. Brands, styles and products evolve over time, people however still want Nike, Mercedes, Levi's and Rolex and this is because they buy corporate brands, not products. Those brands have managed to build distinctive position in consumers' minds, in spite of competitive pressures. This has been achieved by sending consistent message and unique selling proposition.
Building competitive advantage calls for identifying unique differentiating variable, or those that offer best distinctive position built upon company's capabilities. If possible, differentiation should be performed on multiple fronts, value propositions should be taken into account, however barriers should be overcome by patents, retaining key people in the company and rising switching costs that would prevent customer churn.

4. CONCLUSION

In order to adapt to marketing environment strategic management of our companies should be market oriented. The clearer the focus on one or several market segments, the higher the probability of successful goal fulfillment. On evermore segmented and fragmented markets companies that lack focus (clear and precise definition of aims) have lower chances of exploiting market opportunities and avoiding threats. The aim of marketing is threefold. First and foremost, identifying customer needs and making others in a company acquainted with the needs (relevant market research is expected to indicate who the customers are and what makes them satisfied; it is not always clear who the customers are and the difference should be made between the buyers and customers).
Customers expect some benefits from purchasing goods and services. Customers can have higher expectations, however due to monetary constraints or some other reason they can still be willing to accept less than desired and be satisfied with less than ideal goods and services. Companies capable of offering what the customers want are in a position of making satisfied and even delighted customers. Customer expectations, desires and needs have to be understood and clearly transmitted to those in charge for production and delivery of goods and services.

The second task relates to deciding on competitive positioning. Markets are heterogeneous and comprise different segments with differing requirements, therefore there is a need to clearly target one or several segments. Decision making should be based on two groups of factors – the attractiveness of potential goals and capabilities to satisfy them relative to competition. The third major task of marketing is to collect all relevant resources of the organization for planning and implementation of consumer satisfaction. Efforts of all organizational members should be coordinated towards customer satisfaction and potential failures in production, design and delivery of value should be eliminated. The central role of marketing is to minimize failures and ensure customer satisfaction through the delivery of high quality services which are fit for purpose.

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GREEN BUILDINGS FOR NEW ECONOMY

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Abstract: *Green building, intelligent control systems and software building systems in households can contribute to savings in heating up to 30%, while energy savings can be up to 5%. Intelligent or a smart house is a house that has a built-in central control system. Such a system is able to integrate multiple systems (heating, hot water, cooling, lighting, and security). One of the essential functions of this system is the optimization of energy consumption in the home. The system can regulate the temperature in every room in the house in a given mode, be it winter or on the fly, can control the lighting in some areas, on or off electrical appliances, ventilation systems, exterior shutters and fire alarm system.*
In this paper the analysis and architecture for the green buildings and Cisco® Connected Real Estate for intelligent or smart house is presented.

Keywords: *Environment, Software system, Management technology, Green buildings, Cisco® Connected Real Estate*

1. INTRODUCTION

THE POWER OF TECHNOLOGY to transform societies is a cornerstone of our history. In the last 150 years, scientific exploration and invention led to huge technology infrastructures that transformed built environments and the way we use them. Technology led to metropolitan, then national and international infrastructures for power, water, transportation, and communications. These advances added value to real estate by creating environments that liberated human activities from site and climate, intensified space use, and facilitated urban development.
Information System (IS) is a set of activities for the processing of information. The new millennium marked a new Knowledge-Based Society (KBS) or shorter Knowledge Society (KS). The basis of the society mainly consists of non-material software and technology. Research in the field of environment is becoming more attractive with the increase of the number of inhabitants on Earth. Many services which are being used at the moment represent a simple IS expansion of Web internet service [1,2].
Environmental management system (EMS) presents a decentralized system set up in the areas of pollution control, central and offshore ecology, bio-degradation of wastes and environment management, toxic chemicals, environmentally sound and appropriate technology, etc.
The scale of development concepts and technologies for Environmental Management System (EMS) and the application of ISO 14000 series of standards is shown on figure 1.
The system by that ensures environmental information collection, collation, storage, retrieval and dissemination to all concerned. EIS provides environmental information to decision makers, policy planners, scientists and engineers, research workers, etc.

Intelligent control systems and software building systems in households can contribute to savings in heating and up to 30%, while energy savings can be up to 5%.

2. GREEN BUILDINGS

New building rating systems, such as the Leadership in Energy and Environmental Design (LEED™), better evaluate a building's environmental and energy performance. Green building products certification programs strengthen the growth of green building practices by making it easier to identify and evaluate options for buildings.

Why not green? Sustainable buildings cost less to heat, cool and light. That means lower operating costs for the owner. Sustainable buildings have shown improved comfort and performance for the occupants. That translates into higher sales prices and rents for the builder and developer.

Sustainable buildings produce less pollution because they use less energy. They make wisely use natural resources in their construction by lowering the consumption of building materials. Most importantly, they are healthier spaces to live and work.

Many builders are reluctant to consider constructing "green" because they believe the marketplace is not interested. The fear the public views sustainable buildings as "something strange." Moving off the "tried and true" path is always uncomfortable; however, those builders willing to take the risk have found a very responsive audience. Take, for instance, the Four Times Square commercial structure in New York City. The developer and builder of this 48 story, 1.6-million-square-feet green giant, committed to environmental responsible design. This building includes high energy efficiency features, indoor air quality, sustainable materials and responsible construction, operations and maintenance. As a result, Four Times Square commands top dollar from its willing occupants and is 100 percent occupied.

3. FIVE BASIC PRINCIPLES

Sustainable building practices consider environmental factors, human health and well-being, in addition to the traditional criteria of function, cost and aesthetics. According to the Primer on Sustainable Building by the Rocky Mountain Institute; there are five "must do" principles an architect, developer and builder should consider before starting a sustainable project.

1. Green is a building philosophy not a building style. It's not the green features that dominate the architecture. Energy efficiency and sustainable measures are basically invisible and can be blended into any design.
2. Thorough planning. There is no substitute for taking enough time to "think through" all the sustainable features you want included in the structure. Sustainable buildings are front-loaded - extra work must be done in the planning stage to incorporate green features into the design.

Green buildings are not after-thoughts. The green agenda is an ambitious one and, at first glance, is intimidating. Today, these building types require more planning and thought for the developer and builder. More lead time is needed to understand new information and become comfortable with new building products and approaches.

3. Sustainable buildings aren't necessarily more expensive or complicated. You could spend more, and it certainly would be justified with all the quick paybacks from reduced operating costs; however it's not necessary. The success of sustainable buildings comes not from what mechanical features are included but rather, which ones are left out. The best systems are the ones you no longer need.
4. An integrated approach is critical. You cannot design a conventional building and then decide to add efficient technologies, natural daylighting, and green materials as an afterthought. You cannot design a green building without considering the site, the placement of the building or its impacts on the surrounding environment. Try that approach and what you get is a building that ends up as an expensive, piecemeal mess that performs only slightly better than a conventional structure that appears as a wart on the landscape.
Integration is the name of the game. For instance, upgrading windows to super efficient ones can reduce the size of the heating and cooling system you need. By spending more up front, you will have lower operating costs down the road.
5. Minimizing energy consumption is the central goal and organizing principle. Design elements fall into three categories: energy-saving architectural features, an energy-conserving building shell and energy-efficient mechanical devices such as water heaters and lights.

Remember, going green is not a yes or no, all-or-nothing proposition. Once you make the decision to move down the sustainable path, do what you can handle. A building that has thoughtfully incorporated a few well-designed sustainable features is far better than one that doesn't. So, as the Rocky Mountain Institute suggests, "Go as green as your time, skills, client and project allow. If your decisions save some lumber, some energy, or even water, you're definitely doing the right thing."

4. CISCO® CONNECTED REAL ESTATE

IN THE 20TH CENTURY, new technologies in the form of the steel frame, curtain wall, elevator, electricity, and air conditioning led to buildings as we know them today. Here in the 21st century, digital technology continues to accelerate our ability to increase real estate values.

Technology is again changing how we design and construct buildings and the building fabrics themselves: both how we operate and maintain them as well as how their occupants experience and use them.

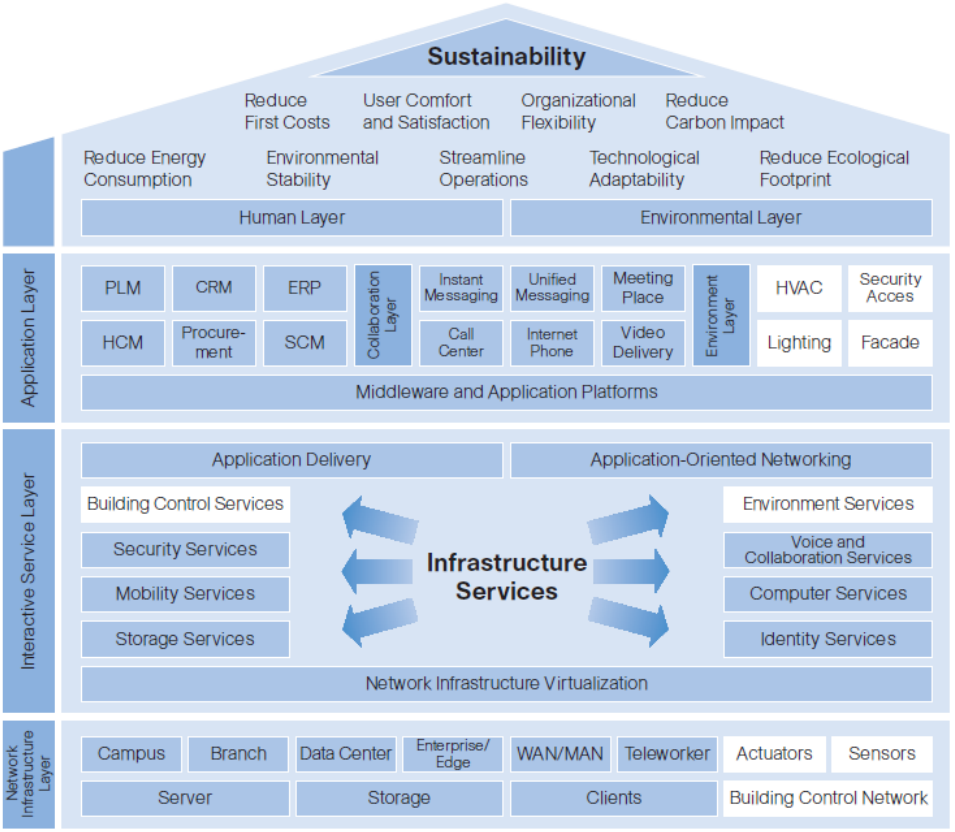

Figure 1: Integration of building systems (white) in the intelligent information network architecture
CRM = Customer Relationship Manager, ERP = Enterprise Resource Planning,
HCM = Human Capital Management, HVAC = Heating, Lighting, Air Conditioning,
PLM = Product Lifecycle Management, SCM = Supply Chain Management.

Critical to the success of Information Technology-Enabled Sustainability is the convergence of building systems and information technologies. This diagram illustrates the integration of building systems (white) in the intelligent information network architecture. The resulting networking benefits for humans and the environment are shown in the top triangle.
Source: Carnegie Mellon University, 2006.

As the digital Building Information Model takes hold, we expect new ecosystems of partners to emerge that are better able to meet client demands. The detailed databases created during the design-build phases of the building lifecycle have additional value for the operations and maintenance phases. Handing off these databases to operational organizations provides a strong, real-time knowledge base for day-today operations. It also assists them with simulating user requirements.

Future sensor and sensor network systems must successfully address the following factors:

- User needs and decision support to create comfortable, healthy, and productive settings;
- Organizational requirements for flexibility;

- Technological adaptability to ensure easy introduction of new technology, and the removal of outdated technology, without waste;
- Energy and environmental effectiveness in operation and maintenance throughout the building's lifecycle.

Cisco Smart+Connected Real Estate Advisory Services (Figure 2)
Cisco adopts an end-to-end lifecycle approach to Cisco Smart+Connected Real Estate. It starts with initial advisory consulting, which covers understanding the vision and key value drivers, identifying key services that help realize the vision and targeted goals, creating business cases for the services, and specifying the underlying architecture to enable the desired services. Cisco advisors can continue by providing Master System Integrator (MSI) support and RFI/RFP selection, as well as additional aspects of implementation and testing, operations, and optimization.

Cisco Smart+Connected Real Estate solutions are the building blocks for the real estate of the future. The converged network becomes an intelligent building infrastructure and the foundation for change in any development project.

Cisco Smart+Connected Real Estate can increase profitability by providing additional revenue streams and enabling new, differentiated opportunities. It can provide end-customers with a superior standard of living while maintaining environmental sustainability [19].

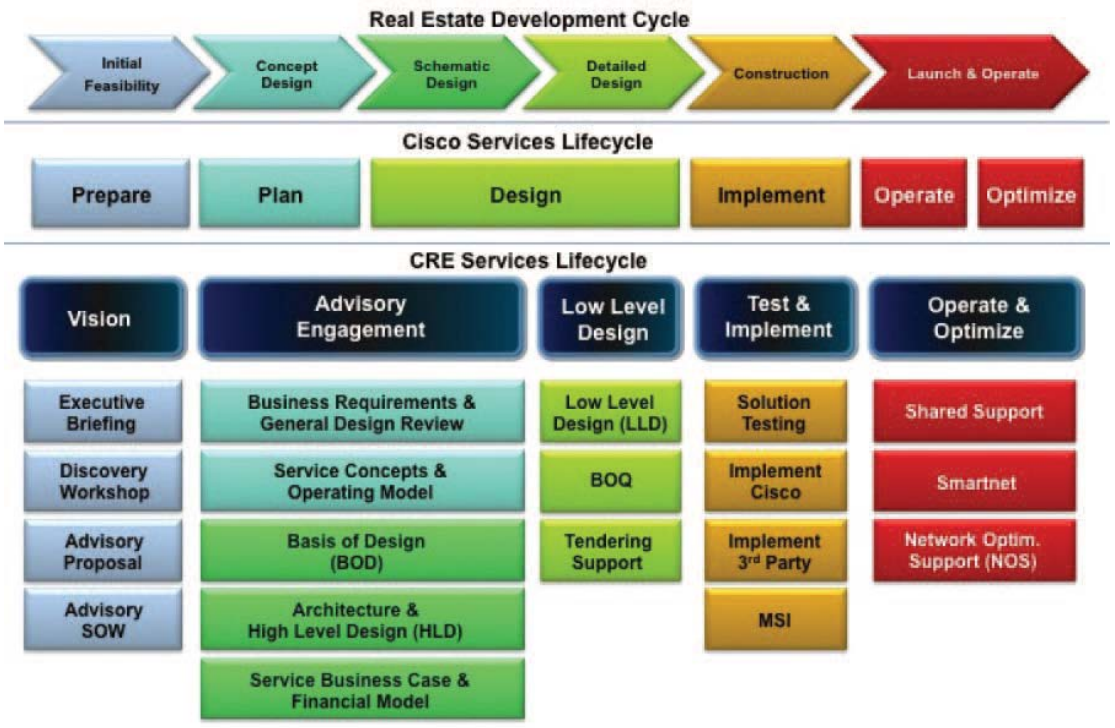

Figure 2: Roadmap for Success Cisco Smart+Connected Real Estate

5. CONCLUSION

Set of activities for the processing of information, together with associated organizational resources such as human, technical and financial, to provide and distribute information in the field of environment, which is called the environmental information system.

The term eco-efficiency is based on the concept of creating more goods and services while using fewer resources and creating less waste and pollution.

Integrated design stands on the pillars of human needs for healthful, safe, and productive environments; on societal needs for energy, resources, and security; and on environmental needs for healthy and diverse ecological systems. To develop a new model for integrated design, new metrics for accurately assessing the cost effectiveness of alternative design scenarios for enhanced health and productivity in high-performance buildings must be developed, including cost-effective monitoring tools and control strategies that can be integrated into the next generation of automated building control systems.

Therefore, in close cooperation with the industry, is developing ubiquitous, flexible, re-addressable, and wireless sensing systems, combined with advanced logic concepts. These systems have to be integrated with flexible, adaptable, and responsive building technologies, such as those that have been realized in the IW. These new sensing systems require advanced decision making processes that have distributed intelligence. The distributed intelligence aspect could then be a major gateway to advance the entire field of sensing systems.
This vision is now realizable with advances in IT infrastructures and software innovations. Every fixture in a workspace can be addressed: lights, air diffusers, radiators, blinds, window openers, PCs, printers, radios, and locks. The IW is pursuing this future vision as the Information Technology Enabled Sustainability Test bed (ITEST).
Intelligent control systems and software building systems in households can contribute to savings in heating up to 30%, while energy savings can be up to 5%. Intelligent or smart house is a house that has a built-in central control system.

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THE CONCEPTS, METHODS AND MEASUREMENT OF EU REGIONAL DEVELOPMENT

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Abstract: *Today, the world is increasingly facing with serious differences regarding the level of economic development. Problems have surpassed the national frames long time ago and have taken a wider, global character. The undertaken measures and activities, generally, did not provide the expected effects, and regional differences continue increasing instead of decreasing.*

Discrepancies in economic development are also present in the EU. The differences are visible both, on the Union level and in individual states. The situation became more complex after the enlargement of the Union along with accession of the countries of unequal levels of development.

Spatially balanced, harmonious and stable development is one of the priorities of the EU. In this sense, the status of the region is defined normatively (NUTS methodology), strategies and methods of regional development have been adopted, and at the Union level identified as "Strategic Guidelines for Cohesion", while the member states have brought the "National Strategic Framework", or regional development programs. In addition, for this purpose many funds were established to finance business goals and priorities.

Keywords: *regional development, concepts, methods, strategies, measurement of regional development.*

1. INTRODUCTION

The development of production processes, increasing market liberalization and increased competition, resulted in creation of significant differences on the level of development, both between different countries and within countries. Accelerated expansion and promotion of the territorial approach to development in mid-fifties, had resulted in formulation of the regional science as a discipline and a research framework for the complex of geographical differences among the various segments of uniform national space, especially in the developed and industrialized countries (Devetaković S., 2002). Accordingly, the interest of economists and policy makers on regional issues and their implications, contributed to the formation and development of regional policy as one of the most complex segments of economic policy.

The term region is derived from the Latin word *regio* which means a regional area, region, zone, and the like. In the context of a particular state, regardless of its size, the region represents a rounded part of its territory. It has, on the one hand, a set of characteristics that link it with the whole country, and on the other hand, a set of (other) characteristics that make specific (Mirić O., 2009). In addition, the notion of the region may have a transnational dimension and can include the territory of several countries such as the region of Southeast Europe and some parts of the territory of different countries as Pannonian region.

The period after World War II is characterized by the appearance of a large number of regional economic integrations. Certainly one of the most important and most successful is the European Union (EU). The basics of its creation, lies in the aspirations to overcome historical rivalries, especially France and Germany, along with encouraging economic growth and development of Member States (Ilić – Gasmi G., 2004). Soon after its

establishment, the EU, due to a number of economic successes and the benefits it provides to its members, has become attractive to other European countries and an increasing number of them tried to become a part of this Union.

The economic prosperity of the Union greatly contributed efforts in order to overcoming structural disparities, both in the Member States and between them. The initiative for involving in the field of regional development was launched by Italy in mid-seventies, due to their problems with the underdeveloped South. In these efforts it had a significant support of the United Kingdom, which was itself confronted with regional problems in Scotland, Wales and the "old" industrial centers that were economically lagging behind compared to the rest of the country (Devetaković S., 2002). With the admission of new members, particularly Greece, Spain and Portugal, the regional problems were increasingly gaining the upper hand.

The idea of creating and developing the unique EU regional policy is dating from the very beginning of European integration. Namely, even in the Preamble of the Treaty of Rome the 1958 was stated that "the state - members of the European Union seek to ensure harmonious development by reducing differences in the degree of development of certain regions and the backwardness of less privileged regions" (Međak V., Majstorović S., 2004). Whereas, the regional policy of the European Union implies not only a regional development in the narrow sense, but also attempts to make connections at the Union level by reducing the existing differences in development of certain regions. Therefore, EU regional policy is often called the *cohesion policy*. It is not a substitute for regional policies of member states, but their amendment. It is the reallocation policy of major importance in almost exclusively regulatory project of European integration (Lajh, D., 2006).

2. REGION IN THE CONTEXT OF EU REGIONAL POLICY (NUTS METHODOLOGY)

The functioning of the regional policy and the system of resources redistribution from rich to poor regions directly depends on the existence of a standardized system of territorial division of the Member States in order to provide measurable and comparable data about the level of regional development. Accordingly, the EU has established a unified classification of territorial units *Nomenclature des unités territoriales statistiques – NUTS*, in order to create a uniform system of regions within the European Union. The units NUTS system are the statistical regions, which may not be an administrative unit, although the border of such units in EU Member States follow their own administrative division (Jakopin E., Perišić A., 2008).

The European Commission is based on the following principles in applying the NUTS methodology (European Commission, 2007):

1. *NUTS classification gives priority to existing administrative units.* The existing administrative units within countries are the first criterion used to define the statistical territorial units, for practical reasons related to the already existing and available information about them and with more efficient implementation of regional policies.
2. *NUTS classification favors regional units of general character*. Member States, in its regional organization, may provide territorial units specific to certain areas of activity (mining, agricultural regions, the regional labor market, etc.). NUTS favors regional units of general character in compared to this particular unit.
3. *NUTS classification is a hierarchical classification with three levels.* Namely, the NUTS classification introduces the division of each Member State on a certain number of NUTS 1 regions, each one is further divided into the corresponding NUTS 2 regions,

and those at some regions of NUTS 3 level (V. Pavlovic, 2007). Thereby, as the criteria for the classification of administrative units in any of the NUTS categories, it is applied the standard related to appropriate number of inhabitants.

Table 1 – NUTS classification

Level	The minimum number of inhabitants	The maximum number of inhabitants
NUTS 1	3,000,000	7,000,000
NUTS 2	800,000	3,000,000
NUTS 3	150,000	800,000

Namely, the first criterion from which the establishing NUTS classification starts, is the existing administrative units. If for a given NUTS level an appropriate administrative unit does not exist, then the NUTS level is constituted by connecting the required number of smaller territorial units, which takes into account other relevant criteria such as geographic, socio-economic, historical and geopolitical conditions, natural and cultural circumstances (Međak V., Majstorović S., 2004).

The classification levels, formed on that way, are used for different purposes. NUTS 1 level is used for the analysis of regional problems of the Union (effects of a customs union and economic integration at a level lower than the national), NUTS 2 level is a basic framework for the implementation of national regional policy so, therefore, it is used as a starting point for regional analysis, NUTS 2 level is a basic framework for the implementation of national regional policy, therefore the starting point for regional analysis, and NUTS 3 level mainly includes regions that are too small for complex economic analysis, but can be used as an area for the implementation of specific regional measures (Jakopin E., Perišić A., 2008).

Besides these basic levels, there are two additional levels called LAU 1 and LAU 2 (*Local Administrative Units – LAU),* which represented, before the 2003, NUTS 4 and NUTS 5. However, these units are not subject to the NUTS Regulation. The territory of the EU is divided into these levels and accordingly regions were formed in each country, also regional and sub-regional units.

Such regions set an objective basis for monitoring of regional development on the territory of the Union, for identifying those areas where it is necessary to implement instruments of regional policy, and for determining the appropriate part of the EU budget funds intended for the reduction of structural differences.

3. CONTEMPORARY CONCEPTS AND METHODS OF REGIONAL DEVELOPMENT OF EU COUNTRIES

Contemporary concepts of development underline the fact that development can not be reduced to economic development, but it includes various social and an institutional change, quality of life, human development, education and so on. Economic growth is a key factor of development but not the only one. The development is also a social phenomenon, not only increase productivity expressed by increase in GDP per capita (Bârgăoanu, A., Călinescu, L., 2009). Therefore, during the practical implementation of regional policy, coverage of the regional development concept was constantly expanding and because of that it was added to economic components (Adžić S., 2011):

1. area (in terms of detailed planning purposes and conditions of use of space),

2. natural conditions,
3. protection and improvement of environment and
4. problems of demographic, social, educational, cultural and political development.

In this way elements were added of other policies, into the domain of EU regional policy, which were not included in the traditional concept of regional policy, such as elements of social, demographic, educational and technology policy, spatial planning, policy of protection and improving the environment and the like. According to this, the modern conception of the EU regional policy complex is based on the triad:

Prerequisites - Catalysts – Accelerators

Their specific meanings are given in Table 2.

Table 2 - The key elements of the contemporary concept of EU regional development

Prerequisites	Catalysts	Accelerators
• Macroeconomic stability • Competitiveness • High level of education • Developed physical, IT and business infrastructure • Protection and improvement of the environment	• Single market • Trade policy • Structural Funds • Cohesion Fund • Common financial institutions	• Entrepreneurship, Small and Medium Enterprises • Education and training • Research and development, innovation and technology • Spatial planning

In the context of the interaction of these elements, in Table 3 the current conception of the formulation and implementation of EU regional policies complex is schematically shown.

Table 3 - Horizontal and vertical measures of the Regional, Structural and Cohesion Policy and institutional aspects of EU regional development

Horizontal measures of the Regional, Structural and Cohesion Policy	Vertical measures of the Regional, Structural and Cohesion Policy	
	Dynamic stimulation:	Pulling:
Competition policy	*Competitiveness of companies, products and processes*	
Trade policy	*Intra-branch trade*	
Industrial and Technological policy (Policy on research and development)	*IT technology* *innovative industry* *Generic growth poles* *Business networks and alliances* *Macro-clusters*	*Steel* *Textile* *Shipbuilding*
Labor market and social policy Politics of education and training	*Improving workforce performance*	
Spatial planning	*Industrial zones and technological parks* *Rehabilitation of gender development (industrial districts)*	
Policy (strategy) of infrastructure development	*Trans-European highway* *Power engineering* *Gas industry* *IT infrastructure*	
Policy for development of entrepreneurship, small and medium enterprises	*Entrepreneurship* *Innovative small and medium businesses*	
Ecological policy	*Reducing consumption of resources* *Reduction of waste* *Renewable energy sources*	
Institutional aspects:		
Single market		

Structural funds, Cohesion funds
Strengthening of business and inter-regional cooperation
Institutional connections with other forms of economic policies
Social dialogue

Source: S. Adzic, Regional economy of the European Union, University of Novi Sad, Faculty of Economics Subotica, 2011.

On the basis of this table, one can have insight into the basic directions of the regional development of European Union for 2007-2013. Namely, at the EU level, for this programming period, it was introduced a document called *Community Strategic Guidelines – CSG* which is the starting point for defining the national versions of Member States regional policies, based on so-called *Integrated Guidelines for Growth and Jobs – IGGJ.*

On the basis of such *Community Strategic Guidelines* Member States have enacted their regional development programs named *National Strategic Reference Framework – NSRF* which highlights the investment priorities for the new generation of regional and sectoral programs, which will be supported by the EU in the coming seven-year programming period. It defines in detail the national strategies and methods of regional development, for each member state separately, the target regions and expected effects (European Commission, 2007). In the second part of this document there is a list of operational plans for implementation of the regional policy (in the programming period 2007-2013 over 420 operational plans are planned to be implemented).

National strategic frameworks for all Member States are formulated in accordance with one of the following approaches:

1. *Top-down approach* - Government prepares, appropriate documents and their final shaping is done in consultation with representatives of the region. National authorities set the limits of authority to the lower levels of government. The main disadvantage of this approach is reflected in the fact that the central national government does not take into account the objectives and efforts of lower levels, while the advantage of this method is that it is less time consuming (Kocziszky G., 2009). This approach to creation of national regional development strategy is used in Spain, Denmark, Greece, Holland, Ireland, Luxembourg, Portugal and the new member states.
2. *Bottom-up approach* - The lower levels of government are engaged in making preliminary plans of regional development, in line with the real needs of the region and the central government on that basis make the final version of these plans. This is a democratic approach of making the operational plans, but the process of plan making is more time consuming. (Kocziszky G., 2009). Unlike the previous approach where the planning process includes several people, this approach involves a large number of persons whose interests may be opposed. Besides that, this approach requires a greater expenditure (Thierstein A., Walser M., 1997). The countries where this approach is applied are Belgium and FR Germany.
3. *Counter-flow approach* - This approach combines the two previous approaches which allow to overcome disadvantages and highlight the benefits of the previous two approaches, through the interoperability of higher and lower levels of government. This approach is typical for Austria, Finland, France, Italy, Sweden and the UK.

4. MEASUREMENT OF REGIONAL DEVELOPMENT IN THE EUROPEAN UNION

The European Union, despite many measures of regional policy, is still characterized by significant differences in the level of development among member states as well as within them. The most frequently used indicators in the regional analysis are GDP at Purchase Power Standard – PPS, in absolute terms and as certain indices and coefficients, and the unemployment rate.

When establishing the Union, it was thought that the existence of any regional policy is not necessary, because the free flow of goods, capital; people and services would automatically reduce disparities between Member States and their internal regional disparities. But, very soon it was turned out that these forecasts were too optimistic. At the time of initiating the common regional policy in 1975, the biggest difference in GDP per capita (calculated according to domestic purchasing power parity) between regions amounted to 7:1, between the Free City of Hamburg in Germany and the area of Calabria in Southern Italy (Adžić S., 2011). Over time, such a situation was even more deteriorated, especially after the next three accession rounds. Disparities in the level of development of some regions in the EU, in 2006, before the fifth round of enlargement can be seen in Table 4, which gives an overview of GDP per capita (PPS) at the EU-27.

Table 4 - GDP per capita (PPS) in some European regions in 2006

Region	GDP per capita (PPS)	Index GDP per capita (PPS) EU-27=1
The narrow London (UK)	79,400	335.9
Luxembourg	63,100	267.1
Region of Brussels (Belgium)	55,100	233.3
Hamburg (Germany)	47,200	199.7
Groningen (The Netherlands)	41,000	173.7
Ile de France (France)	40,100	169.7
Prague (Czech Republic)	38,400	162.3
Lombardy (Italy)	32,000	135.3
Corsica (France)	20,300	85.8
Scylla and Cornwall (UK)	18,300	77.6
Campaign (Italy)	15,600	66.1
Southwestern Region (Bulgaria)	13,500	57.1
The southeast region (Bulgaria)	7,400	31.5
South-West Oltenia (Romania)	7,200	30.4
South Central region (Bulgaria)	6,600	27.8
North Central Region (Bulgaria)	6,400	26.9
Northwest Region (Bulgaria)	6,000	25.4
EU-27	23,600	100.0

Source: Eurostat

According to the data from Table 4 it can be concluded that the differences in GDP per capita (PPS) between observed regions in 2006, before the accession of Romania and Bulgaria, were very large, even 13:1 between the best and worst ranked regions. In addition, some authors point out that these differences were larger, even 20:1. GDP per capita (PPS) of the most developed regions (Inner London in the UK) was over three times higher than the average of the Union, while GDP per capita (PPS) of the most undeveloped regions (North West region of Bulgaria) was only a quarter of EU average.

Besides the differences among individual regions in different Member States, there are great differences in GDP per capita (PPS) within each of the Member States. In most

countries, these differences were greatest between capital city regions and the peripheral regions. This rule can be applied to the developed old members (Britain, Germany, France, Italy, Spain and others), as well as the transition economies, with "traditional" unbalanced development, which have recently accessed the EU. A number of countries of the Union are characterized by disproportion of development greater than 2:1. Thus, in the UK, a country with the largest disparities, London as the most developed region has 4.3 times higher income than most undeveloped Cornwall. In France and Italy, Ile de France and Lombardy, are twice more developed than Corsica or Campaigns. In Bulgaria, these disparities approximate and Southwestern region was 2.2 times more developed than the poorest Northwestern region (Todorić J., 2009). The development disparities are large also if the differences are considered among Member States, especially after the fifth round of enlargement in 2007, when Bulgaria and Romania accessed the EU. Table 6 presents the indicators of development in the Member States after the fifth enlargement of the 2008.

Table 5 - Basic data on the development the EU Member States in 2008

Countries	GDP per capita PPS (in EUR)	Unemployment rate (in %)	Index GDP per capita EU-27=1	Index of unemployment rate EU-27=1
Belgium	32,200	7.0	1.15	1.00
Bulgaria	4,500	5.6	0.40	0.80
Czech Republic	14,200	4.4	0.80	0.63
Denmark	42,400	3.3	1.18	0.47
Germany	30,400	7.3	1.16	1.04
Estonia	12,000	5.5	0.67	0.79
Republic of Ireland	40,900	6.0	1.39	0.86
Greece	21,300	7.7	0.95	1.10
Spain	23,900	11.3	1.04	1.61
France	30,400	7.8	1.07	1.11
Italy	26,300	6.8	1.00	0.97
Cyprus	21,700	3.7	0.95	0.53
Lithuania	10,200	7.5	0.56	1.07
Latvia	9,600	5.8	0.61	0.83
Luxemburg	80,500	4.9	2.53	0.70
Hungary	10,500	7.8	0.63	1.11
Malta	13,800	6.0	0.76	0.86
Netherlands	36,200	2.8	1.35	0.40
Austria	33,800	3.8	1.23	0.54
Poland	9,500	7.1	0.58	1.01
Portugal	15,700	7.7	0.75	1.10
Romania	6,500	5.8	0.46	0.83
Slovenia	18,400	4.4	0.90	0.63
Slovakia	12,000	9.5	0.72	1.36
Finland	34,800	6.4	1.15	0.91
Sweden	35,400	6.2	1.21	0.89
United Kingdom	29,600	5.6	1.17	0.80
EU-27	25,100	7.0	1.00	1.00

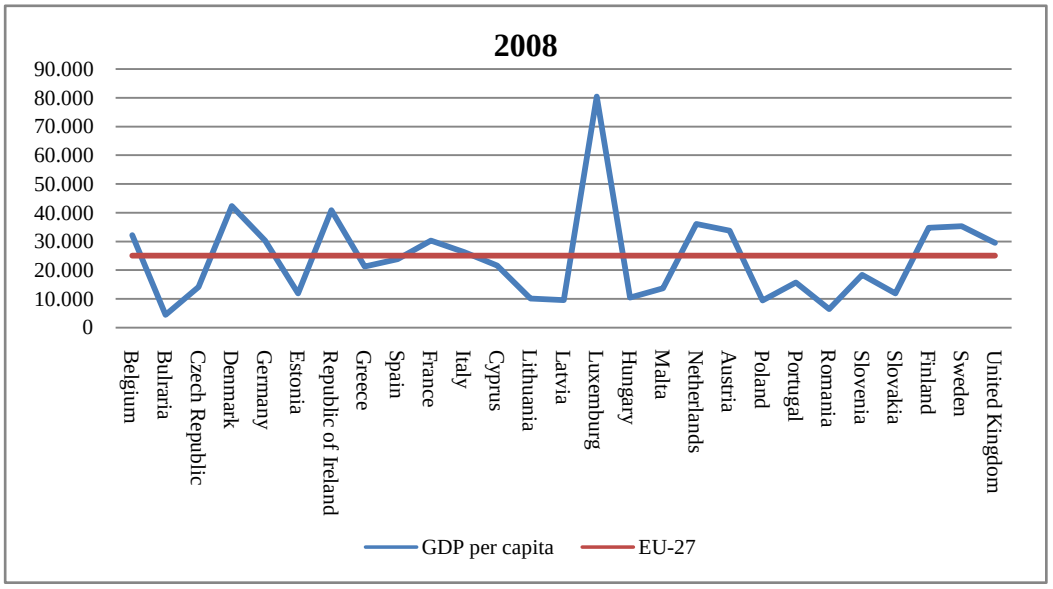
Source: Eurostat

After the fifth round of enlargement, regional disparities in the EU have increased significantly. In Luxembourg, realized GDP per capita was 2.53 times greater than the average of the EU, while in Bulgaria it was only 0.4 of EU average. GDP per capita in Luxembourg was, at the same time, about 18 times higher than that achieved in Bulgaria. Beside that, it should be noted that even 14 countries had a GDP per capita below the EU

average, which suggests that measures of regional policy have not provided the expected results yet.

If analyzing the unemployment rate in the Member States it can be concluded that there is less variation than in the case of GDP per capita. In nine Member States the unemployment was above the EU average, but only in Spain and Slovakia the difference was much greater. In the remaining seven countries, these differences did not exceed 12%. In the Netherlands, the unemployment rate was 60% lower than the average of the Union, while Spain's unemployment rate was 60% above average, and the relationship between unemployment rates in these countries was 4:1.

In order to come to a conclusion if the regional policy measures achieved some improvement in the period after 2008, the figures 1.a and 1.b shows the variation of GDP per capita compared to EU average in 2008 and 2010.



Based on the presented chart one can notice that in 2010 the situation has not changed significantly compared to 2008, given that these two graphs are almost identical. All this suggests that EU regional policy measures still do not give the desired results and that the disparities among Member States are still high.

5. CONCLUSION

The common EU regional policy aims to level the economic development of countries and regions in the territory of the Union. For several decades, it has been one of the most important policies, as an instrument of financial solidarity and cohesion of the EU, which accounts for a large part of its budget.

Knowledge, technology and capital are the factors of success in the European countries and their regions are increasingly developing. However, economic and human resources are limited and often insufficient in many areas and regions. In this situation, the competitive struggle for these key resources becomes more intense. Global competition, investment in R & D and education, reduce the competitive advantage of European regions. Therefore, to remain among the leading countries in the global knowledge economy, European regions have to cooperate among themselves, but also with their competitors. In accordance with the EU, along with the implementation of traditional measures of macroeconomic policy,

new methods of regional development based on microeconomic theory have been developing. In this sense, four regional development methods were singled out, which are the basis for measures of regional policy: encourage and support intensifying entrepreneurial efforts and activities, improve the market competitiveness of enterprises, encourage and support entrepreneurial efforts and intensifying activities, improve the market competitiveness of enterprises, support the emergence of new (driving) industry in the region and improve the business infrastructure. The implementation of these methods requires of a European region to create new and enhance existing links between research centers and entrepreneurial firms to invest in science and education, R & D, business infrastructure, technology transfer and facilitate access to resources (particularly financial resources and information).

Despite significant investments in the balanced regional development, there are still large regional differences not only among regions but also among the EU member states. The differences are, of course, the largest between the developed old members and those that have only recently joined the Union. However, the impact of regional policy should not be underestimated, nor overestimate. It has never represented the driving force of the economic development, but assistance to the effects of free single market. Only synergistic effect of these and other national and supranational policy creates opportunities for prosperity across the region, Member States and the EU as a whole.

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TECHNOLOGICAL KNOWLEDGE – CONDITION FOR THE DEVELOPMENT OF BORDER AREA[1]

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***Abstract**: It is no longer in disputed that the twenty-first century will be the century of further rapid development of civilization in which are the basis of technological change. Also, it is not disputed that the base of the large number of technological changes will find knowledge. Among other things, this will have far more impact on the regional development of each country and the wider spatial entities, and even continents. Particularly interesting will be the impact on the development of border areas at a time when it comes to so-called soft limits, on the other hand, areas along the border are becoming more and more demographically empty and technologically lagging.*

***Keywords** : technology, knowledge, development, border area.*

1. INTERDUCTION

It is very known that knowledge, beloved and priceless gift of nature, has always been the only power which increases by its usage, so people tend to conquer it and persistently keep it when they get it. If that treasure is made of pure matter, it will never rot, because it occurred in the form of the explosion of light that blinded the whole world around it and left it in doubt with an open question, which is actually, what moves it. The answer was given by Victor Hugo, saying: "***What leads and controls the world is not locomotives, but ideas***", because the locomotive itself was created thanks to an idea.

Ideas were transformed into actions and created the various technical perfections - television, radio receivers, computers, robots... The ideas have led to a sharp rise and stood one step next to the future, they have enabled the human race to meet the impossible, to reach infinity and be familiar with new space, that was very unknown by then. However, along with a magnificent upsurge into "***the sky***", people still have not solved many problems, which are inherited from the ancient, not quite vanished epoch. Hunger, poverty, wars, a variety of diseases, unjustified social differences, and many other problems cannot be solved only by the technical and technological development, no matter how impressive it is. To solve these problems there are some other technologies, which in addition to technical and technological requirements and many other conditions and restrictions on the development of man as civilized beings, technology in which a man is center of the world, starting and finishing point of life in general. And in order to survive and remain in that world, we should hear and follow the ideas and sagacity of those who have created so long ago, and whose works still live.

"ASK AND IT WILL BE GIVEN TO YOU;
SEEK AND YOU WILL FIND;
KNOCK AND THE DOOR WILL BE OPENED TO YOU.

[1] This article was done under the project 179013 - "Sustainability of the identity of Serbs and ethnic minorities in border municipalities in Eastern and Southern Serbia" which was funded by the Ministry of Education.

- FOR EVERYONE WHO ASKS, RECIEVES;
AND THE ONE WHO SEEKS, FINDS;
AND THE ONE WHO KNOCKS, THE DOOR WILL BE OPENED".
TOLSTOY

2. THE FIRST - THE RIGHT THINGS

2.1. The feedback of technological and manmade changes

A new epoch of the civilizational development is called scientific and technological revolution. The essential features of the third technological revolution, as its modern phase, reflects in the fact that automation and robotics replaces the physical functions of human being, and Intellectual-executive function is replaced by informatics and telematics. It is sometimes identified with the IT revolution, as futurologists announce that this millennium will have the fourth technological revolution that will be based on knowledge - scientisation. The transformation (of technical progress into the scientific revolution) occurs on the basis of fundamental and radical changes in the content and conditions of human work, and ways of organizing and managing production. Cadres as a defining and imitating factors of development, high technology as a reflection of technical progress, science as a fundamental productive force, and modern organization as a generator and the resultant administrative-management relations are the segments of civilizational changes in scientific and technological revolution.

The global economy could not be recognized. The new tools of communication are stunning us. Family is not any more the fundamental group unit of the society. Children begin to have their own income in their early youth in their homes. Traditional economic and political theories become outdated. The century-old foundations of industrialism are being broken. The mass society of industrial period, relying on mass production, mass education, mass communication and mass political thought, begins being no more mass. The uniformity of the industrial world is beginning to replace the diversity of values, forms of life, communication, spiritual activities etc. Manifestations of the third technological revolution take an increasing hold, and act in terms of new institutions, associations, unions, transnational alliances etc. All of this cause the appearing of ***un homme noveau*** (the new man).

The debate of the future of our civilization, which belongs to the new "mileu" of so far unimagined and unprecedented scientific-technical progress, is more and more "inflaming" around. The future of human being and civilization becomes a major preoccupation of all "creators" of the development. It is expected that primary industrial branches, which will radically restructure the entire economy, in the future include:

- electronics with extreme attention on microelectronics, microprocessors, etc..,
- universe exploration,
- exploration of the seabed in the function of providing new sources of food,
- robotics and
- biotechnology and genetic engineering.

In a word, the third technological revolution will be really different from the previous ones. It surely derives from the knowledge and education. Moreover, if the first technological revolution was put forward by the technical services, (technology dominated), the second by financial services, (the power of capitalism), but the third technological revolution will be presented by personnel services, therefore, the knowledge

will rule. A qualitative improvement in the level of productive forces will be far greater than the transformation of the ox-drawn carts and manual production to internal combustion engines and electrical equipment. So, scientific and technological development is becoming a basic condition for economic and social development. [2]

Technological responses to the civilizational crisis of classical industrialism have been characterized in two ways since the Sixties. At the first stage, a tendency, carried out by the development of microelectronics, telecommunications and transport container mainly, was manifested toward the fragmentation of complex production processes into narrow segments, which can perform low-qualified staff. The second stage, thus, labor-intensive processes are transferred by the system of transnational corporations into those parts of the world where the working potential is, with equal productivity and quality, from 5 to 15 times cheaper than in the developed countries.

Big structural changes in technology and manufacturing are happening in this entire process. The main material prop of scientific and technological revolution becomes the basic technology. Different terms, as well as high-tech, generic, propulsive, super technologies, nowadays are used to describe similar content of which determination is important. These technologies are determined by two bases: first, how they are being created and produced; second, what their effects on other productive activities are and other spheres of society (e.g., services, administration, consumption, etc.). In fact, it is considered that these are technologies that have characteristics such as:

- above-average scientific intensity of production and products,
- shortness of validity of products and processes,
- little or none of harmful effects on the natural environment,
- high flexibility of consumption by profit.

However, according to the usage, they cause the following effects:

- possibility of wide application and diffusion in very different branches of production and both economic and non-economic activities,
- improving the quality of the products' functionality which are built in,
- increasing efficiency and reliability of the system,
- reducing consumption of energy and materials per unit of product,
- reducing the destruction and pollution of the environment,
- increasing humanization of work,
- decrease in production costs per unit.

There are four types of characteristic of modern technological development.

First, it developed unexpectedly many new directions which are made or could make technological changes in the whole range of areas, and thereby created the possibility of satisfying various criteria that can be set by the various operators in the technology choice.

Second, it has been directed and oriented towards military and space necessities and commercial criteria, and satisfying the broad masses' needs determine far less criteria of development. Everything indicates that technological changes do not occur by accident and they cause cumulative effects (occurring in clusters).

[2] Peter Druicker – *Managing in the Next Society*, New York, 2002, (13)

Third, until recently, completely unrelated areas (e.g., biology and electronics) produce and will produce in the future, an entirely new technically unpredictable solutions and products, thus realizing a synergetic effect. In one word, "everything depends on everything."

Fourth, all the technology, just like technological hypothesis, connect into the unit to which any factor is relevant on principle of already mentioned synergistic effect. This causes very big organizational changes at all levels throughout the whole society.

Scientific and technological revolution has not only resulted in the creation of new manufacturing industries and products. It is including the basic top technologies in traditional industrial branches (e.g. automobile, textile, leather and footwear industries) started the process of revitalization in which it is proceeded from the rationalization of the consumption of material, energy and labor and ended with their completely techno-economic and organizational transformation. In this process it should especially mark automation and robotization of production, individualization of products and establishment of permanent and returning link between producers and users.

2.2. With the knowledge to the (new) technologies

The general development of every specific environment primarily depends on the impact of new knowledge which is constantly getting rich and being fulfilled by brand-new innovations, by which demographic growth, capital accumulation and economic resources as a factor of development, put aside. The strongest weapon of each country is reached wanted rate of economic growth, which basically depends on the expansion of manufacturing industries and effective use of new technologies. New technology, if is successfully used in the economy, will show ways of further progress, which will even less-developed countries lead to expansion and open their doors of the "***technology age***", which represents the future for all.

At the time when the modern world is at the crossroads of civilizational course, and when we walk into the new millennium by larger steps, without any modesty, we can say that we used knowledge to run over time and to go in front of it**.** The new age begins in the spirit of progress, which every day gives birth to new achievements in all fields of human activity.

Computerization and robotization, as synonyms of the third technological revolution, are only part of what has been achieved and what characterizes new world, because technological innovations have got into all aspects of life and work. There are significant innovations in the fields of electronics, telecommunications, robotics, the universe, but the value of biotechnology, genetic engineering, and new materials, which will change the world, must not be underestimated.[3]

2.3. The knowledge in technology, as a factor of overall economic development

Scientific research and development article, and development of science, as basic levers of development, now represent one of the strategic aims of overall development and conditions of permanent transformation of economic, social and cultural life of modern humanity.[4]

For the overall progress, of particular interest is the economic function of science, as a direct productive force, where productive assets for labor, raw materials, energy,

[3] More about this I wrote in my textbook *National Economy*, Faculty of Science, Nis, 2011, (75 -85)
[4] See: Dr S. Pokrajac – *Menadžment*, Alfa-graf, Novi Sad, 2011

technology, organization and management are based on. Through scientific research we can find out about the needs of customers and market; using scientific methods we can research possible directions of development; Science is the foundation of needs for personnel profiles, educational content, methods of assessment of business performance; Using science we discover new products and services, new activities i.e. new "***fields of labor***". Science, as a force of production, is not only its element of particular importance and power, but also an integral part of all other elements of the force; It is not just a process of cognition of objective laws of nature and society, the process of acquiring knowledge, but also the process of educational activities of people, and along with it, the technology becomes a set of knowledge and a way of materialization of scientific achievements in the economic and general life in society. Scientific, technological and economic progress, along with the population, capital and natural resources, and already known dynamic factors of economic development, provide to entrepreneurs a new logic of choice in developing and satisfying the needs. By making decisions about the use of available resources in ensuring rapid economic development, many new factors, including a particularly strong technological factor, the factor of knowledge and education, require the possession of a new logic and philosophy of progress, require knowledge and ability most of all, to use it for fast growth, "growth in depth", growth per capita.[5]

By the progress, our world is in a very short period of time, changed, and reduced its size. Reduction of distance, speed of spreading of information, access to knowledge, comparisons of critical analysis by the enlarged number of scientists and policy-of-development makers, significantly increased the chances for dynamic progress in all areas, technology and organization of progress in all areas seem to be rational, so that skip over even dozens of years and enter the world of the future, using the experiences of those who have had ideal initial conditions of development, and those who have "***used wisely***" these conditions. While on the one hand there are still regions that are privileged, due to different historical conditions, by abundance, and on the other hand, they are deficient and not favored, the world in general is "***convicted***" of progress, growth, development and prosperity. The only problem is in the change in the way of thinking and decision making about the speed of the progress which creates a dramatic gap between the opportunities offered by science and the real possibility that it reaches, to participate in its courses and achieve optimal development. Inequalities in scientific and technological efforts, along with the historical conditions by which nations have developed, not only caused huge differences in wealth, but also crucial for the dynamics of further growth, which, by all the advantages of science and technology, threatens to make the gap between developed and underdeveloped countries.

That is why the prerequisite about achieving accelerated growth and prosperity through knowledge, the existence of a general creative mentality organized and creative environment, is very important, because, new dimensions of science and its opportunities in achieving overall growth do not allow the existence and operation of the traditional concepts.

In order for economic development achieved up with the pace of change, modern economy should be subordinated to the development and transfer of new technologies especially among strategies of their own development.[6] Appropriate transfer of technology requires first of all highly developed their own knowledge and also creative environment where advanced technology can be created. No country in the world is able to provide new technological developments on its own and also without the transfer of technology from

[5] Dr A. Dedijer - *Za napredak, pomoću napretka u znanju*, "Tehnika", Beograd (81)
[6] More about this: Dr V. Stefanović - NT *promene i razvoj*, Nis 2000

other countries. That is why nowadays technology transfer takes place internationally, among developed countries, where the main channels of circulation are gigantic economic organizations - transnational companies. As the country is more developed, import and export of technological knowledge is increasing, and by that, the prices of imported technology is covered by increased productivity of work, by quality, by new products, by modern organization and by rationalization of work processes. By the transfer of technology among developed and developing countries, developed countries are motivated by strengthen competitive abilities of the economy, while the main motive for of developing countries is more rapid industrialization and technological higher quality, which is mainly based on imported technology. An efficient, functional, balanced and, above all, dynamic economic development, it is not possible to provide without accurate and timely responses to questions about who will choose the technology, then, how the choice will be made, what technology to choose, which aims and for what time, what changes it needs to cause, and on what scientific sources its development will be drawn. Problem of choosing a particular technology, one of the most important existential questions for the majority of people in all countries, especially in developing countries, will depend on many circumstances, which are defined by economic, social, international political, cultural and other occasions, and basically starts of overall development goals. ***"The choice, among technological alternatives, traditional and new, indicates the possibility of compromising solution, where reconciled extreme alternatives and found the best ways of enriched and increased development will be reconciled, if not always individually, but at least it all together.".***[7]

In order to achieve a fusion of ***"scientific world"*** and ***"developing world"***, it is necessary to make in all areas enormous efforts which should ensure the dynamic equilibrium between ***"securing the present"*** and ***"preparing the future***" on the basis of achieving the goals which basically define the progress and overall development. Concern to provide the best general development, is the concern where future developments anticipate and upgrade new discoveries that can be expected, and that could increase its chances for securing to the highest possible level.[8]

3. THE SECOND - THE RIGHT THINGS AGAIN

After a decline in religion and contempt for politics, the whole humanity turned and focused on the development of science, so that it subordinates all the social processes to itself and its needs. Thus, the basis of science and technology were created, based on mental and physical strength of people who are about to create a new world order, modeled by the latest technological measures. But the goal has not been reached yet, because the fronts of that infinite space are too wide, and new technical and technological possibilities seek new knowledge, more science and much creative ability, in order to give much more than what they provide now. The exceptional efforts to balance the advantages and disadvantages are still needed, and thus give a chance to knowledge to become basis for prosperity and for the common good, which will be within reach to all. That is why the main goal in all countries, regardless of the different objectives of development, physical features, culture and tradition, is training an increasing number of people for change, which will bring a better future for the majority, and on the field of expansion and adoption of new knowledge and beliefs, as basic connecting link and cooperation at the global level.

[7] Dr S. Pokrajac – *Tranzicija i tehnologija*, TORU, Belgrade, 2000
[8] Dr S. Pokrajac – *Tehnologizacija i globalizacija*, SDPublik, Belgrade, 2004, (10)

"- El diablo sabe mucho, porque es viejo" (- The devil knows much, because he is old)- It is an old Spanish proverb, which for centuries has pointed up years and age as an advantage, but nowadays, things have a different look, innovations are brought into life everyday, and everything that is old is used only as a real guide mark to the future. Challenges of the "new" have powerful influence on the man, so the code of success on the way to technological and scientific excellence is in the benefits of the new beyond the old and traditional. Thus the civilization at the edge of the new millennium is on the verge of technological climax.

Modern science has many information systems which are able to collect data themselves, so they can deliver those data to those who are useful for further development of theory and plans for scientific system and its subsystems and their mutual relations, and also connection among them and other social systems. New institutions, associations, federations and transnational companies represent a new form of the third technological revolution, of which products are mass production in industry, quick and easy transmission of news from one to the other side of the world and the increasing use of machines instead of physical human labor. The door leading into the new era has just been opened, and this era's synonymous are scientific and technical boom, and its one and only indicator is intellect of personnel, their ability and readiness to change this world, but also to discover another one.

Along with technological sphere, the transition also occurs in the mental sphere of man, which involves the transition of value judges, value of tradition and experience, value of customs and habits, value of principles and aims and everything that form intellectual, moral, cultural, political, esthetic, and even religious profile of modern man, whereby it becomes a fundamental thimble in the chain that links science, as the embodiment of knowledge and new technological developments and also their all interactional relationships.

At the present stage of development, it is certain that the world of the 21st century will be the world of information, which will be transferred by electronic media as the latest technological developments. Computerization of almost all production and business brings a new resource in all areas of human activity, which is unlike other traditional resources not spent, but even increased, and this is information.

In order to provide effective exchange of information, it is necessary to have a huge number of computers, which are slowly entering into all areas of human life and work, and properly connect them, because the behavior and the relationship between the entities, and way of their life and activity depend on efficient communication links. Computerization allows the storage and processing of information, telecommunications allow their universal availability, and robotization in the manufacturing process enables the submission of information to pass from human to robots, while a human will have creativity and invention.

Therefore, the decisive factors in the development of modern conditions are made by the development of science and technology, management, theory and practice of the use of information, organization of work, and especially the development of human capabilities, capacity, cooperation and the characteristics of modern human personality, which placed a double task to a man.

The first task is to train and educate personnel for work in IT systems, and the second is related to the minimum knowledge required for optimal use of information, because each worker, in not so distant future, will be able and will have to read on the monitor and to always stay informed of all stages. Human-computer ratio in the last

decades has changed much in the direction of the increasing liberation of man and many other functions, whereby he has always changed himself too.

However, the most powerful computers are still just machines that even the most complicated operations do pretty fast, but only if they are data-supplied by man and only if a man "***orders***" what to do, in one word, only if a man operates with their immense power.[9]

4. THE THIRD -SERBIA AND THE RIGHT THINGS

During the 21st century, modern societies are becoming societies that pave the way forward in the present, because from past to future can and must go through the present, in which the abundance of ways only separate certain roads as real ones, and give a chance for success and a shortcut. The key to their proper choice is the ability and capability to develop and use knowledge and thus, faster and richer conquer their future. With the assistance of science and technology are included in the new, preferred and exemplary social and economic content, in the new and richer future. So, to reach and keep pace with countries of which pace is more rational, faster, and longer, all its forces Serbia must bind to progress in knowledge, science and technology.

While "***time flows like a river***", Serbia seems to have more time than others, like it-s sclerotic, and unable to open a perspective future better and richer than the present, and it seems like Serbia has no ability and strength to fight for the right goals and to achieve them successfully. Although the impact of knowledge, which is constantly getting rich by increasing number of innovations, the only alternative for the selection and advancement of the developed countries, Serbia's creativity, science and technology are still perceived as events that take place inside the "***black box***".[10] However, historical circumstances did not allow Serbia to take advantage of the first industrial revolution, and the second, scientific-technical one, it only partially utilized, and it is at the threshold of the third technological revolution, which must not be missed. It must be confronted with all innovations given by science and technology, and fully overcome the old-fashioned concept based on a naturally predetermined continuation of linear growth, where reproduction flows have been built, simply, must go the way of progress in knowledge and education.

Serbia, as one of developing countries, hasn't achieved the level of highly developed countries, which can be considered as centers of making progress. That is mainly caused by its closure to the outers, because of some, already known, political reasons. That is why, in recent years, it has been forced to establish its development on its own strengths and resources. One might say that in terms of the need to win the future, our forces are so weak, but to ensure a better future, it is necessary to have much more work, knowledge, skills but also creativity. We have a large amount of raw materials, energy, requirements for food production, but to move in step with the world we should make significant transformations in the field of social reproduction, the current economy, the structure, power relations of development. However, when it comes to scientific research, only forces are insufficient, because science is a creative activity that has an international character and its results have to be public domain.

Serbia is known for the number of young scientific personnel, but also for "***exodus of brains***",[11] which has been abruptly increasing in recent years. On our way towards a

[9] More about this: Dr V. Stefanović –*NT promene i razvoj*, Nis, 2000
[10] Dr A. Dedijer - *Za napredak pomoću napretka u znanju*,"tehnika", Beograd, 1981
[11] More about this: Dr V. Stefanović - *Produktivnost znanja*, magazine: *Opredeljenja*, Sarajevo, 11/ 89

better future, all restrictions on the growth and development will still depend on the psychological, cultural and organizational factors, or on the general, international, adverse relations in exchange of goods, but also on the development and use science and new technologies. Therefore, all our attention should be paid to scientific and technical knowledge and their increased use as a basic source of power, and according to them to reduce dependence on limited national and local sources of other resources necessary for development. Economic development should be generated by increasing investments in research and development, branching technology and institutions, as well as industrialization and modernization on a global scale, in order to be able to perform at "***world market***".

The following condition of progress is the increasing role of literacy and role of formal education and an increasing number of intellectual activities and activities of those who prepare and make decisions, as well as behaviors based on knowledge, as opposed to direct personal experience and classical work.

Serbia has always conflicted with many problems on all sides and in all dimensions, from technological to off-technological objective and subjective, but it has always, in a more or less creative way, found a way out and provided a progress, so there is no reason to not be like this in the future.

So, the words of Professor Ostojic could be our guide to the future:[12]

- **we cannot have more money if we do not work more;**
- **we cannot print more money if we do not produce more goods;**
- **we cannot have more jobs if we do not invest more;**
- **we cannot invest unless we can create greater savings;**
- **we cannot have greater savings if we do not trust in Dinar;**
- **we cannot trust in Dinar if we do not have sound Dinar;**
- **we cannot have sound Dinar if we spend above our capabilities;**
- **but, we cannot improve our capabilities if we do not work more.**

Instead of conclusion

If people do not deal with science, or if they deal with it but with no success, they should not despair and should not stop; if people do not ask enlightened people about some things that they do not know, or if they ask but they do not get enlightener, they shouldn't despair; if people do not differ right and wrong, or if they differ them but have no clear idea about them, they should not despair; ; if people do not make good things, or if they do but not devote them all their strength, they should not despair; what others could do in once, they would do in ten times; what others could do in hundred times, they would do in thousand times.

The one who will keep this rule to always make efforts, no matter how letterless he is, he will surely become enlightened; no matter how weak he is, he will surely become strong; and no matter how unhallowed he is, he will inevitably become virtuous.

CHINESE WISDOM

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UDK: 691.6:502.171 ID: 190792972 1.01 Original Scientific Article

INFRARED THERMOGRAPHY FOR BUILDING INSPECTION

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Abstract: *Modern thermography is based on the ability of an infrared camera to register the heat emitted by the surface of the body, detect any irregularities surface radiation temperature, and it turns into a picture, so called thermogram. IR thermography is now displayed as an extremely useful tool in the study and advancing energy efficiency in buildings. Thermal imaging systems are used by the military to detect, recognize and identify enemy personnel, equipment and buildings. Simply put, they can be used to evaluate the „health"of any electrical or mechanical component. This paper presents infrared inspection surface of insulation (TIM) and the temperature on the outside wall. (Skylight in this paper) calculated values in the software package MatLab 7.12.0.635 (R2011a), taking into account the counting errors, were compared the measured data with thermal cameras Wöhler IC 21 and shown on the IR thermogram. The results of this calculation method of energy at the surface are compared with the values obtained by IR measuring.*

Keywords*: Thermography, energetic efficiency, energetic loss.*

1. INTRODUCTION

Thermographic images using parts of the structure can be quickly identified disadvantages associated with thermal characteristics, to discover the causes and recommend remediation. The possibility of contactless and remote recording of the total observed surface temperature field facility offers great advantages compared to conventional analysis of the structure. The application is just as useful on existing facilities, facilities under the protection and new facilities.

2. TESTING METHODOLOGY

2.1. Thermal imaging system

The thermal imaging system (Figure 1) creates an electronic picture of the scene. The picture may be converted to color (pseudo color or false color) where reds indicate hot areas and blues represent cool objects. When presented in black-and-white, the brightness (more white) indicates hotter objects. When the electronic picture is printed, it becomes a thermogram. A thermogram is simply a map of thermal energy where shades of gray or colors represent different levels of radiant energy.
The conversion back to black-and-white does not provide the original gray scale.

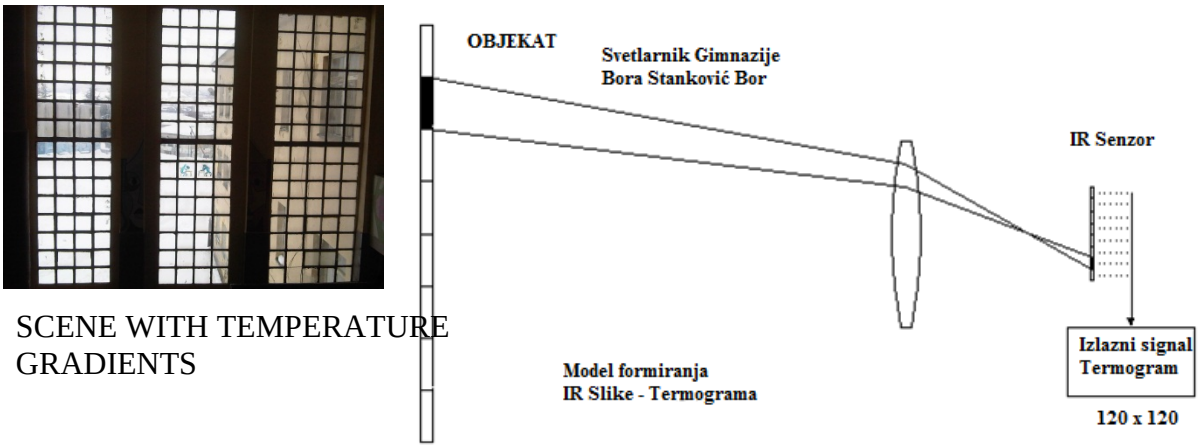
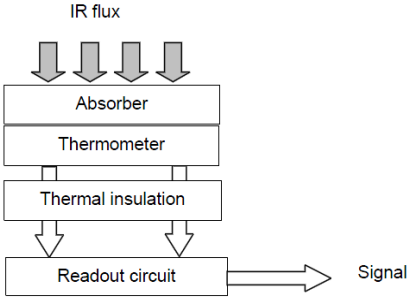


Figure 1. The process of making thermograms –
Thermogram and visible image of the window Bora Stankovic in Bor

2.2. Thermal detectore structure

The schematic structure of an uncooled thermal detector is shown in figure 1. As a general rule, these detectors measure the temperature rise due to IR radiation absorption by a thermally insulated element. For this purpose, thermal detectors are mainly composed of an infrared absorber embedded in closed contact with a thermometer element. The thermometer element senses incoming IR induced temperature rise and converts it into an electric signal. The most common detection mechanism is the resistive bolometer whose resistance changes with temperature, but various other mechanisms can be used, such as pyroelectric effect, thermoelectric junction, P-N junction conductivity or thermal stress induced mechanical deflection. Considering a two dimensional array of detectors, a readout integrated circuit (ROIC) is generally designed to measure the resistance of each bolometer and to format the results into a single data stream for video imaging purpose. Finally, due to the strong correlation between thermal insulation and sensitivity, the high performance uncooled IR detector must be operated under vacuum – typically 10-2 Torr – in a specific package supplied with an infrared window [5].



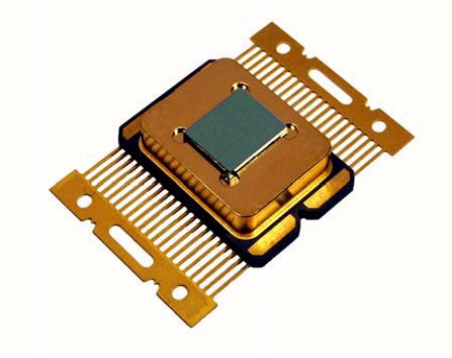


Figure 2. Schematic structure of thermal detector Figure 3. ULIS ceramic package developed for 160 x 120 microbolometer IRFPA

3. RESULTS AND DISCUSSION

In the experiment, we thermovision recording facilities of public importance, IR images of windows, provided by Bora Stankovic high school in Bor. The original image is 120x120.

Equipment and software for thermal imaging

In the experimental part of this paper used a digital thermal imager Wöhler IC 21, whose operation is based on uncooled germanium thermo-electric line detector. It formed the thermal image by measuring infrared radiation of the entire body or a particular scene. The software, which contains a camera, makes the necessary corrections when converting the thermal image in the corresponding thermogram, which is the accurate approximation of the temperature recording facility, or the temperature distribution in the scene. One advantage of the camera IC 21 is a wide temperature range, or it can in a single picture to show large differences in temperature. Running on standard batteries for video cameras. The images are displayed on a color LCD screen diagonal 10.2 cm.

Digital thermal imaging camera, by American standards, represents high technology. In this case the used thermal imager IC 21 producers Woehler Woehler GmbH. This camera belongs to a class of digital infrared thermal imagers. With these cameras one can measure temperature without touching the object whose temperature we want to measure. Thermal Imager is a very effective tool for measuring the temperature and is easy to use. [1]

Digital Infrared Thermal Imager is based on patents electronic thermal and covers the range of effects from -20° C to 3500° C, where the thermal sensitivity < 0.1 °C.

Measurement accuracy

Range of measured temperatures :	- 20 °C do 1200 °C
Measurement accuracy:	± 2 °C
Thermal sensitivity:	< 0.1 °C
Detector type:	FPA, 320 x 240
Spectrum:	3.6 □m □m
Set of batteries :	4 metal hydride batteries
Operating temperature:	- 15 °C do 50 °C
Weight :	2 kg
Dimensions :	220 x 132 x 140 mm

thermogram is shown as a matrix of 120 x 120

1 120

10,86	10,92	10,79	10,66	10,46	10,2	10,14
11,7	11,25	10,99	10,86	11,05	10,66	10,53
11,83	11,83	11,31	10,79	11,05	10,79	10,79
12,09	11,96	11,7	11,64	11,7	11,05	10,59
11,83	12,09	11,51	11,57	11,18	11,05	10,99
12,35	12,03	11,64	11,64	11,57	10,99	10,53
12,03	11,96	11,96	11,7	11,25	11,05	10,92
11,9	11,77	11,38	11,31	11,25	11,05	10,46
11,38	11,38	10,73	10,59	10,92	10,53	10,46
11,31	11,25	10,92	10,86	10,73	10,33	10,33

120

I Histogram

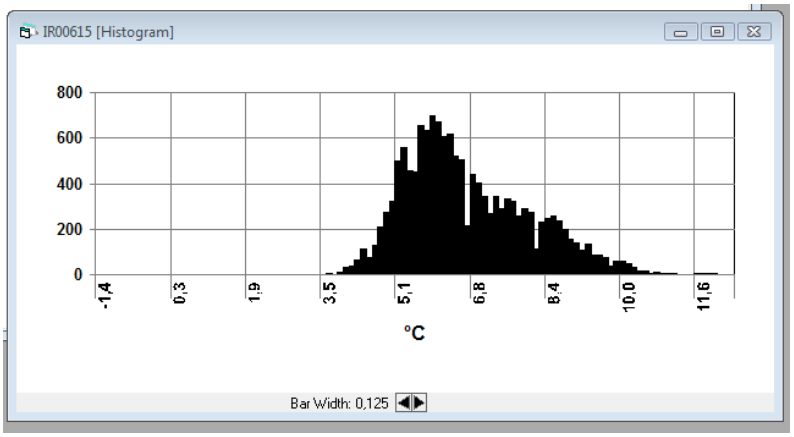


Figure 3. Histogram IR 615

Software package was used SnapViewPro Version 2.1. to generate thermograms:

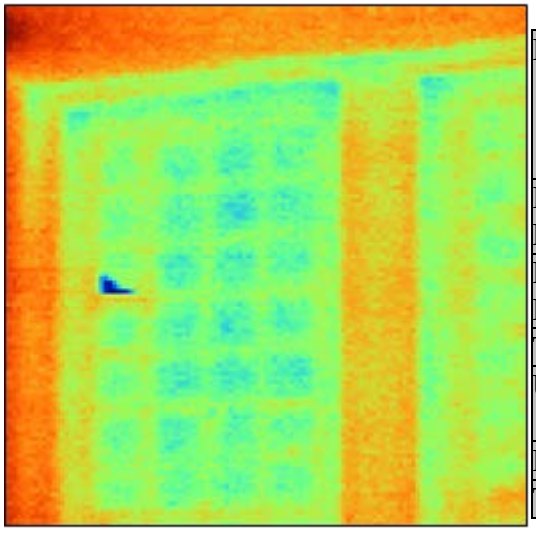


Image Path	D:\ZVONKO\TERMOVIZIJA \TERMOVIZIJA GRADJEVINA\GIMNAZIJA BOR\IR00615.ISI
Image Date/Time	11/02/2010 17:49:29
Report Date/Time	23/05/2011 17:37:23
Temp Unit	Celsius
User	Bora Stankovic high school in Bor
Location	SRB-19210 BOR
Target	

Figure 4. Report prepared in IR 615 SnapViewPro software package Version 2.1

Data processing in the software package Matlab results are obtained as in Figure 5.

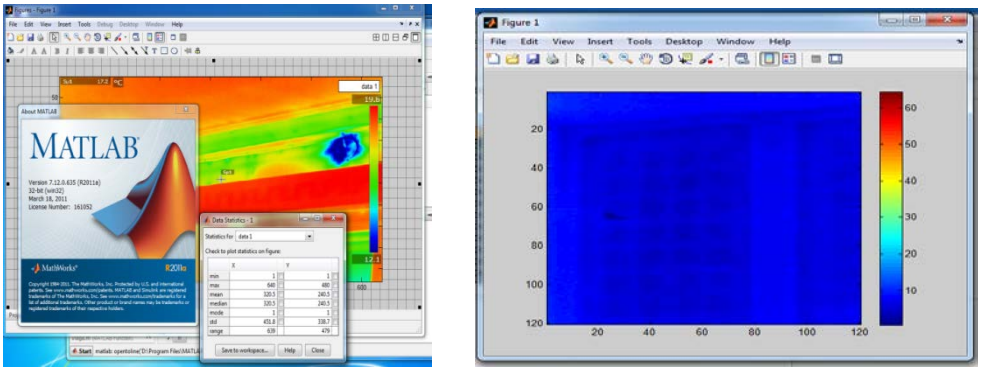


Figure 5. Report IR 615 was prepared in the software package MatLab ver. R2011a.

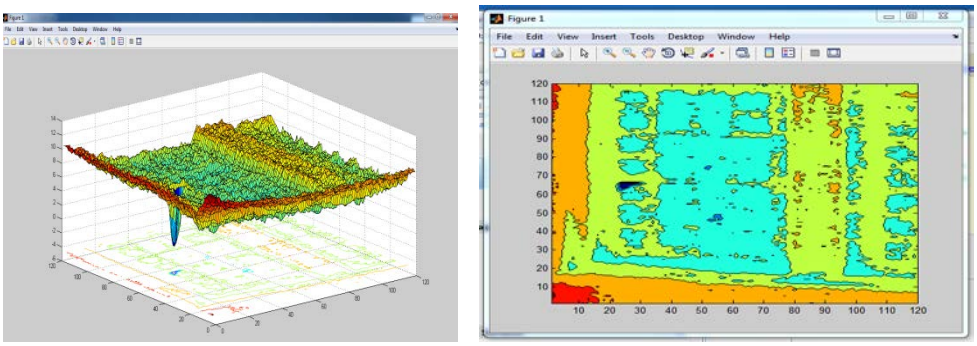


Figure 5 . Report IR 615 was prepared in the software package MatLab ver. R2011a.

4. CONCLUSION

A large part of total energy consumption in the exercise of thermal comfort in buildings. Infrared thermograph I proved to be an extremely useful method for visualization of heat loss through the construction elements of the research potential of increasing energy efficiency in buildings. Thermal imaging of buildings and subsequent expert interpretation can locate design flaws and focus interventions on the rehabilitation of the optimal improvement of energy efficiency building systems.

Shortcomings in the structure that can determine the thermographic recording are: inhomogeneity of the material of the wall, irregularity or lack of thermal insulation, moisture in construction, problems of flat roofs, thermal bridges, culverts open-air ventilation system, joints and the like, as the concentration in the wall installation. In addition, infrared thermograph can detect small leaks or damage the system in terms of leaking installations built into the walls and / or energy channels, but also the possible defects and damage to the built-in installation of insulation that can not be established ordinary visual inspection system.

In developed countries Thermography is increasingly common method of controlling the required transfer facility, followed by regular monitoring and maintenance of facilities, especially facilities for public use. Analysis shows that the introduction of modern principles of energy efficiency in construction provides energy savings 50-80%. In the long term, with expected increased prices of energy and raising the awareness of energy saving and environmental protection, infrared thermal imaging method will certainly find a large application in the construction industry in the preparation of the building energy passport.

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WORLD ECONOMIC CRISIS: POSSIBILITIES AND THREATS FOR UKRAINE

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Abstract. *The paper reveals an improving of theoretical approaches, which lead to the development of practical recommendations for strategy development and realization of innovative development for Ukraine in the conditions of integration into the world economic system. Methodological basis of scientific research is a dialectical method of cognition, principles of system analysis, methods of statistical assessment and analysis of information, design, theory of market economy, results of researches of Nobel laureates in the field of economics, conception of civilization changes, globalization, sustainable development, domestic legal framework about innovative development, publication of structural subdivisions of EU, UN, other international organizations. The level of scientific and technical policy in Ukraine is described in the paper. Principal reasons of the negative phenomena are disrobed for development of science and technique in Ukraine: subzero efficiency of domestic R&Ds; failures of public institutions to compete in the sector of patenting and licensing of intellectual ownership rights; lack of development of innovative infrastructure; absence of effective economic stimulus for companies modernization by its top-management (we understand company modernization as replacement of capital productive assets for new technologies); declining of stimulating role of salary for scientists; insufficient support from state authorities, export companies, domestic hi-tech producers for Ukrainian scientists. Structural changes are observed in engineering as a basis of industrial complex of the state including the conditions of economic crisis in 2008–2009. Ukrainian export potential reference-points (products of engineering, metallurgy, chemical industry, agricultural complex) are important while choosing the segments of international markets. The necessity of further expansion of trade and economic cooperation are emphasized with EU countries including the Baltic countries (Lithuania, Latvia, Estonia), with CIS countries, and BRICS countries. Also traditional trade and economic partners, and neighbor-countries are priority for Ukraine especially.*

Keywords: *crisis, efficiency, engineer, export, globalization, industry, innovations, management, strategy.*

JEL Classification: E24, F34, H12.

1. INTRODUCTION

Competitive economy as a guarantee of providing people's welfare. *"Amat victoria curam (Lat.). – Victory loves effort"*

Ukraine is drop behind the developed countries by technological development due to inconsistence of realization and subzero efficiency of public scientific and technical and innovative policy. Ukraine occupied the 73rd place among 131 countries in rating of global competitiveness of the states for 2007–2008 (GCI). Ukraine took the 89th place (3,90 point) among 139 countries in rating of 2011–2010. The countries of the former USSR have been ranked in such sequence: Estonia (33rd place), Lithuania (47th), Azerbaijan (57th), Russia (63rd), Latvia (70th), Kazakhstan (72nd), Ukraine (89th), Georgia (93rd), Moldova (94th), Armenia (98th),

Tajikistan (116th) and Kirghizia (121st). Belarus, Turkmenistan and Uzbekistan are absent in rating of WEF. GDP reached 65.9% in 2010 compared the level of 1990. The GDP increase due to using of new technologies in Ukraine and reached 0.7%. This index arrives at 60–90% in the developed countries (Mazur 2009; Galchinskiy 2011).

The Forbes magazine published a rating of the worst economies in the world (06/07/2011). Among them are Madagascar, Armenia, Guinea, Ukraine and Jamaica. Forbes formed the rating on the basis of official statistics of GDP, inflation for last three years (including the prognoses of IMF for 2012), GDP per capita and trade balance of countries. Ukraine took the fourth place between Guinea and Jamaica. Forbes underlines that the country‘s richness in mineral resources and fertile lands would make it a leader by the economic indicators in Europe. However, in fact Ukrainian GDP per capita does not exceed the indexes of Serbia and Bulgaria. Annual inflation in Ukraine is about 10%. GDP of country is shorted on 15.1% in 2009. According the data of State Department of the USA, Ukraine does not develop because of the corruption, state maladministration and weak judicial system which do not provide implementation of laws.

So, the economy of Ukraine is characterized by the insignificant volume of GDP per capita, by the largeness of national debt, by the low level of quality of people life, by sustainable tendency for reduction of quantity of population, by brain drain, by ineffective use of natural resources, by intensifying of ecological problems. The structure of economy is characterized by the energy intensiveness and labour intensiveness productions, lack of development of internal market, subzero competitiveness of national production, weakness of the state administration of the economy, worsen the prospects of development of its innovative system, removes Ukraine from the group of developed countries (Grigoryev *et al.* 2009).

2. GLOBALIZATION AS A PARADIGM OF TRANSFORMATION PROCESSES IN THE WORLD ECONOMY. *“Mundus vult decipi [ergo decipiatur] (Lat.). – The World wants to be deceived, [so let it will be deceived]”*

The Paradigm of globalization changes in the civilization structure represents mobilization of world resource potential in the way of its rational using in modern time. Globalization generates some difficulties for interpretation and solving problems of political, economic, technological, informative, social and cultural, moral, religious, ecological character in development of humanity. Globalization is accompanied by the distribution of liberal democracy, market values predomination in economy, integration processes in the world economy, transformation of the system of production and labor-market, technological updating accelerating, revolution of mass media, dictate of ideology of consumption and enriching.

Globalization is used, first of all, by the world economic leaders for its strengthening and sufficiency (Chirkov 2005; Klinov 2008; Zgurovsky, Gvishiani 2008; Yankovskiy *et al*. 2009). 45.8% of the global GDP is related with G-7. Remaining part of global GDP is produced by other 226 countries. 90% of all world wealth is concentrated in North America, Europe, Japan and Australia. The ratio of income inequality for Western countries and the same index for other countries of the world differs 100 times. 10% of adult population from developed countries concentrate 85% of world wealth; in the hands of the richest pea pole (1 % of world population) concentrated 40% of world wealth. The half of population of the world is below the poverty line and owns only 1% global wealth (Dickanov 2005; The World… 2006). The 7.8 billions of habitants of the planet (90% population) will behave to the poor countries in 2025 by the estimations of UNO. Each country has to find the most successful strategy of improvement of the people’s welfare. During first decade of independence of Ukraine seven priority reforms of

socio-economic development of the country were announced (Skolotyaniy 2011), but nobody feel results of its in Ukraine.

3. SOCIAL DEVELOPMENT COULD BE PROVIDED IN CONDITION OF MORAL DOMINATION ONLY. *"Ibi pote populous, ubi leges valent (Lat.) – The people there are can prosper [only], where the laws are thriving"*

The moral is one of the basic methods of behavior of a man in society. The moral embraces life orientations and principles, aims and reasons of acts and relations. Moral basis defines limit between good and bad, honor and ignominy, justice and injustice, norm and abnormality, mercy and cruelty. The atmosphere of moral in society is reflecting on the level of corruption. The concept of "corruption" includes: "excessive payments, opaque financial structures and offshore areas". According to data of Transparency International Ukraine took the 146th place in world rating by the level of corruption in 2009 (2,2 point). In 2008 it was the134th place (2,5 points according to the ten-point scale of "honesty of power"). Ukraine shared the 146th place with Russia, Zimbabwe, Kenya and Cameroun. An oligarchy plays far from being a positive role in forming of the moral phenomenon in Ukraine. The oligarchy is the form of rule by the state, on which power is concentrated in the hands of narrow circle of persons (oligarchs) and reflects their individual interests instead of the public. The first is Aristotle, which used a definition "oligarchy" in a value of "power of rich", contrasting the oligarchy and aristocracy here. It is difficult to disagree with opinions of M. Honchar: "Base principle of essence and development of Ukrainian (***originally to the form, but not on meaning!)*** oligarchy is parasitizing in the economic organism of country". Therefore, development of Ukraine as state neither in industrial nor in post-industrial sense did not take place in a decade which is completed. The financial rise of few oligarchic business-conglomerates is occurs in the "zones of growth", first of all, in a gas industry, chemical industry and metallurgy due to the positive conjuncture of foreign markets and models of doing business with tax avoidance. A situation in Ukraine could be described by formula: cheap raw material and power resources which are included in a production chain + subzero payment of labor is charges on power efficiency + model of unprofitableness of enterprises + offshore zones + corruption = maximal income to oligarchs + minimum of taxes for the state + graft of public persons and parliament delegates + cheap beer with entertainment (TV shows, series, football and other spectacles for "little Ukrainians" (Honchar 2010). The situation needs to be changed.

4. UKRAINIAN INDUSTRIAL COMPLEX GROWTH TRENDS. *"Nil sine magno vita labored edit mortalibus (Lat.). – Life gave nothing to the mortals without large labour"*

The country can be developed only with the developed industry and developed modern engineering, which suppose development of engineers as key drivers of technical progress among personnel. During 1990–1999 the economy was in depression. Catastrophic, regressive, destructive transformation processes became its main reasons in public consciousness, moral, policy, right, economic relations. Beginning from 2000 Ukrainian average annual economy growth rate consists of approximately 7%. In the end of 2008 GDP obtain the value which consist of 70% of GDP of 1990 (1999 – 62%). The volumes of GDP reached 80.5% in 2008 compared to GDP in 1991. Further was a crisis. In 2008 the total GDP in Ukraine was about 179.5 billion USD. According to the IMF data, the index was equal to 115.7 billion USD in 2009. Real fall of GDP amount 35.6% after taking into account the dynamics of currency exchange rate presence. The worst fall of GDP in Europe and one of the worst in the world was in Ukraine. A State statistic agency published a value of GDP diminishing in 15.1% in relation

to fall of GDP in Ukraine in 2009 in national currency. In 2008 GDP per capita in Ukraine equaled 3.9 thousand USD, in 2009 it was 2.5 thousand USD. For comparing GDP per capita in Belarus was 5.1 thousand USD; in Russia – 8.9 thousand USD; in Poland – 11.1 thousand USD in the same year.

The crisis of 2008–2009 showed the considerable misbalance of development of the world economy and structural backwardness of the Ukrainian economy, which characterized with unavailability to counteract for the demand fluctuation and competition intensifying on global raw material market. In 2009 the most difficult tests was perceived by the industrial complex. Falling of industrial production volume attained 21.9%. It level felled to the value of 2003–2004 years. According to results of 2009 falling consist of: in metallurgy – 26.7%, in chemical and petrochemical industry – 23.0%, in machine building – 44.9%, in food industry – 6.0%. The almost double diminishing of machine-building production is related, foremost, with the considerable falling of investment demand in internal market. Ukrainian domestic products except some of them are uncompetitive both at the world and at internal markets. A reduction of R&D expenditures is one of the principal reasons. A lot of industrial enterprises stopped innovative activity completely. The general volume of industrial products which has innovation feature consists of 4.8% only. Its share on the world market of high-tech products is 0.05–0.1% only (in Russia – approximately 1%). Inattention to the innovations and engineering labor results in the decline of quality of products, deceleration of the extended reproduction process conquered earlier market positions.

Structural changes happening in the last decade are characterized by serious technological lag. For the goods production of third technological mode is 58%, fourth – 38%, fifth – only 4%. The state of engineering is characterized by the extraordinarily low level of technological processes. It is more than in two times below than in European countries. Level of automatization and complex mechanization is almost three times below of the level for industrial developed countries. An economic obsolescence of production assets in machine-building consists of 65–75%. The physical wear of capital production assets is on 26% exceeds a threshold value. Middle age of technological equipment and equipment consists of about 30 years. Density of machine-building products as bases of innovative development of Ukrainian economy is below in 2–3 times from the level of developed countries. The branch structure of Ukrainian industry is much overloaded with the production of primary sources of raw materials and semi-finished products. In the issue we will not research development (?) of space industry trends, shipbuilding, aircraft building and instrument-tools production. It's not encouraging.

At the same time, there are barriers of political, organizational, financial, legal character on the way of innovative development. Oddly, there is no Ministry of industrial policy among 16 ministries of Ukrainian Government as a result of the last structural transformations – administrative reform.

In Ukraine more than 400 legislative and normative acts were accepted and supposed innovative activity activation from 1991. But its results do not infuse optimism. A quantity of employees in innovative sector was reduced to 3.3 times during period of 1991–2009 in Ukraine. This index grew up 2 times in USA and Western Europe and 4 times in South-East Asia. Quantity of researchers in engineering in Ukraine diminished in 3.5 times. At the same time same amount increased in 5.6 times in political sciences, in 3.5 – in legal sciences. Development of new technologies diminished in 14.3 times. The amount of innovative industrial enterprises reduced (from 56.0% to 13.0%) in 4.3 times. In Russia its density consist of 10.0%, in Poland – 16.0%, in EU countries – 60.0% in average (Solovyov 2004; Egorov 2006; White Book … 2008).

Present state of Ukraine by value of innovative index confirms to value of 2006 (by the level of R&D development). Ukraine entered last fourth group of countries, which named "backward

countries". Consequently, emergency measures are needed to be done for Ukraine for passing to the group "medium innovator".

Explanations of the indicated phenomena are: inconsistence of realization of internal and external economic policy; absence of single strategy of innovative development; subzero efficiency of domestic R&D sector; subzero activity of public research institutions in patenting and licensing of intellectual ownership rights; low level of innovative culture of society; ineffectiveness of influence of the system of education on for increasing of innovation introduction efficiency; lack of development of innovative infrastructure; absence of effective economic stimulus for updating by managers of fixed production assets and for investment in innovative potential development; decline of stimulant role of payment of labor of innovators; insufficient support from the side of the state, exporters and domestic hi-tech producers (Popovich 2005; Petrenko 2006; Malitskiy 2007; Malitskiy *et al.* 2008).

5. KEY REFERENCE-POINT OF THE STATE IS LIFETIME AND LIFE QUALITY OF ITS CITIZENS. *"Salus populi suprema lex (Lat.). – Wealth of people let come a higher law"*

Different strategies, which developed and implemented last time, have different time points of 2017, 2020, 2039. It is necessary for strategy development, of course, for long-term period (10–20 years). There is another suggestion according time reference-points: 80 years. Why? Expected lifetime of citizens of Japan, Spain, Italy, Israel, Norway and other high developed countries hesitates within the limits of 80 years. In fact more expensive thing for each of us is life expectancy and quality of life. So, all strategies of development of each country under power of presidents, kings, premiers, princes, governors etc. must be oriented, on our opinion, for life expectancy – 80 years. 80! Or it could be more. Unfortunately, time life of Ukrainian people does not increase, and goes down: from 71 (1970) to 69 (2010). Quantity of population of country for the last 20 years declined to 45 million from 51.

Ukraine took a 45th place in the world rating by the human development index (HDI) in 1991. According to the data of 2008, country occupied 76th place from 177 countries only. According to Report on Human Development of 2010, Ukraine occupied the 69th position among 169 countries. First 10 countries in HDI rating in 2010 were Norway, Australia, New Zeeland, USA, Ireland, Liechtenstein, Netherlands, Canada, Sweden and Germany. The Eastern Europe and Central Asia have a relatively high level of profits per capita. People in the countries of this region earns 11 462 USD / per year. The index is varied from 20 thousand USD in countries, which are the members of the European Union (Slovakia and Czech Republic) to less than 3 thousand USD in Tajikistan and Kyrgyzstan. In Ukraine GDP per capita is approximately 6 535 USD. We will mark that GDP per capita in the USSR in 1990 was 9130 USD.

6. PRIORITIES HAVE TO BE IN DEVELOPMENT OF INDUSTRIAL COMPLEX. *"Quidquid agis, prudenter / agas et respice finem (Lat.). – Whatever you do, do it wisely and do not lose sight of the goal"*

The raw material share of production potential in Ukraine is related mainly on export (foreign demand). It results domestic industry extraordinarily dependency upon the conjuncture of foreign market and in the extremely inefficient using of limited natural resources. In Ukraine structural changes come forward the indicator of the state of scientific and technical potential in economy. It could be traced, in particular, on the changes of GNP structure. Density of industrial manufacturing in GNP during period of 1985–2007 diminished from 41.4 to 31.0%, agriculture –

from 19.4 to 9.0%, building – from 8.5 to 5.4%. Density of transport and telecommunications increased – from 6.3 to 14.6%, trade and logistics – from 6.0 to 27.2%. For period of 1990–2007 density of products of machine-building and metal processing in branch structure of Ukraine declined from 30.5% to 13.4% (Economic development … 2005).

According to Conception of industrial complex development of Ukraine for period until 2017 creation of institutional, infrastructural and economic principles of structural transformations is supposed. V. Heyts emphasized that the basis of the economic system and maintenance of the national sovereignty of Ukraine, have to become large a business. It means inevitability of subsequent concentration of capital and necessity of construction of new mutual relations between the state and business in order that the country did not grow in "country of shopkeepers and small shopkeepers" (Heyts 2005; Liberalism and … 2011). Industrial complex of Ukraine can be competitive in that case if the system is a single unit: from MNC to large, middle and small business. Until that Ukrainian companies were not found in annual ranking of the world's biggest companies Fortune Global 500. It is difficult to influence on a state of affairs of international markets in interest of small producers. It is almost impossible.

7. VECTORS OF TRADE AND ECONOMIC INTERESTS OF UKRAINE. *"Qui bene distinquit, bebe docet (Lat.). – He who distinguishes well, learns well".*

Ukraine has affairs of economic collaboration and development with majority of the world countries. Today such countries amounted – 207. The general strategic partners of Ukraine consider: 1) Russian Federation; 2) European Union; 3) USA. Together with these countries-prize-winners, in our opinion, it is necessary to add: 4) neighbor-countries (mutual lane and water borders); 5) countries-members of EurAzEU (Belarus, Kazakhstan, Kirghizstan, Russia, Tajikistan and Uzbekistan); 6) BRICS (Brazil, Russia, India, China, and South Africa); 7) countries-traditional partners (countries of former USSR, including the countries of the Balkan Peninsula). The basic partners of Ukraine in international trade are: Russia, Germany, Turkmenistan, China, Turkey, Poland and Belarus. Political interests of Ukraine have to be closely conformed to economic interests (Assel 1999; Cook 2007; Korinev 2001; Convergence of… 2010; O'Shaughnessy 2002; Revenko 2009; Tsigankova 2011).

The balance of foreign trade in 2006 had the positive value. The volume of export exceeded the volume of import. Presently the situation is reverse. We have the negative balance in realization of export-import operations with foreign partners in the last few years (2007: –7.2 b USD; 2008: –13.5 b USD; 2009: –5.7 b USD; 2010: –9.3 billions USD). It testifies to activation of commodity turnover obviously not in favor of our state. We will analyze the state of commodity turnover between Ukraine and EU by the index of balance, i.e. differences between the volume of export and import. E.g. 2001: +0.7 b USD, 2002: +0.7 b USD; 2003: +0.9 b USD; 2004: +1.7 b USD. Data for next years in euro are 2005: - 5.4 b EUR; 2006: –9.0 b EUR; 2007: –9.7 b EUR; 2008: –10.8 b EUR; 2009: –6.4 b EUR; 2010: –6.0 b EUR. Commodity turnover of Ukraine and EU in money expression grew up approximately to 35 b EUR in 2010. This amount is smaller than 20 billion USD in 2005. In two-way trade each partner is interested in own benefit. Clearly, the benefit reaches due to opposite side losses. Ukraine, unfortunately, continues to come forward as raw material supporter of Europe and as high and mid-tech European products consumer with the huge capacity market, which wide opened for European supporters. Domestic market of Ukraine has high consumer potential and occupies the 39th place in the world on the level of GDP by PPP. We emphasize that export of USA, EU, Japan provide 12% of GDP only. The developed countries care first of all about domestic market. The export of developed countries is orientated on the developed countries.

8. CONCLUSIONS. *"Quod erat probandum (Лат.). – Which was what we approved"*

1. Management improvement have to provide motivation for new knowledge generating, development of integral innovative infrastructure, systems of technologies transmissions, activation of innovative scientific researches, increasing of technological production level. It is necessary to create favorable terms for activation of activity of all participants of innovative process: from idea of research to the commercialization of production.

2. According to forecasts of achievements of science and technique, it is able to give the powerful impulse of development of world economy. There are three aspects are distinguished: to find out progressive directions of development of innovations in near future; it have to be orientated in the spheres of the most effective use of innovations; it is important to define priorities of direction of investments in the perspective sectors of science and technique.

3. There are must be moral foundations in basis of economic transformations. A moral defines life orientations and principles, aims and reasons of acts and relations.

4. The general strategic partners of Ukraine should be: 1) Russian Federation; 2) European Union; 3) USA. It should be added to the row: 4) neighbor-countries (mutual land and water borders); 5) countries-members of EurAzEU (Belarus, Kazakhstan, Kirghizstan, Russia, Tajikistan and Uzbekistan); 6) BRICS (Brazil, Russia, India, China, and South Africa); 7) countries-traditional partners (countries of former USSR, including the countries of the Balkan Peninsula: Serbia, Bulgaria, FYROM, Greece etc.).

5. The special attention has to be emphasized to organizational and economic management mechanisms of innovations. It should be theory and practice of the programming. It is necessary to have a special purpose going near a decision very important for a country, for society problems requires the presence of authoritative leader (strategist) and programs (strategies) with providing of its command corresponding administrative and financial powers. Effective strategy of development of the national innovative system will allow substantially promoting the competitiveness of Ukraine, time life and quality of life of its citizens.

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DEVELOPMENT OF THE STOCK MARKETS IN TRANSITION ECONOMIES

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Abstract: *This paper presents an overview of major changes in the stock exchange market caused by the transition. The expansion of stock market operations and its impact on economic and social sphere are also investigated, as well as the impact of financial institutions restructuring to develop new products and services. Financial integration of new member countries is a positive process that leads to additional trade opportunities, commercial gains, lower transaction costs, improved diversification, reduced capital costs, etc. Greater integration may result in political and social benefits, which may be of substantial importance.*

Keywords*: stock exchange, market, transition, development.*

1. INTRODUCTION

Stock markets are the symbols of the market capitalism. The level of stock market activity gives instant insight into the socio-economic health of the nation. It is natural that the markets are managed as dynamic businesses, enabling them to meet market demands quickly and with its own resources and skills.

The role of the stock market becomes qualitatively different after World War II, when it experienced a great expansion. In the last twenty years of the twentieth century, the stock trading in securities and derivatives begins to play a significant role in international finance. The expansion of the regulated financial markets coincides with the trend of public sale of the stock shares at the end of the 90s. Many stock markets have gone to the cooperative business structure with members of the brokers and banks, as owners, for profit companies with limited liability, including the external owners. For most members of the stock market business goals have changed according to the new form of governance. One of the reasons for the stock market expansion is business dynamics, and other considerations are the operation quality and efficiency of listing and trading.
Nowadays, the World Federation of Exchanges (WFE) consists of 54 members. The total market capitalization of shares at the end of 2003 amounted to 31 202 billion dollars, while the amount of the total stock trading in the same 2003 reached 33 330 billion dollars. The presence of increasing trading of futures, options, warrants and stock funds is evident.

Several reasons contributed to transformation of the stock market operations [1]:
• increase in business profitability,
• increase in the number of privatizations,
• increase in initial public offerings,
• growth of index and derivatives, as well as
• growth of the market trading.

In the past decade, increased reliance on stock markets in financing was one of the major changes in finance. In numerous parts of the world, tracking changes of the stock exchange index has become integrated into everyday life. There was an expansion of the specialized press. The names of market indexes received their social importance and achieved the effect on public opinion that is rare to any actor on the public scene. Reliance on the public capital markets is present in many countries and includes an increasing part of economic life. There was a spreading of share ownership and market forces that shape a better corporate governance practices.

For all products, stock markets have separate, market-neutral identity within the financial services sector. Stock exchanges are not insurance companies, investment firms, banks or brokers. The stock exchange job consists of managing regulated markets of securities and derivatives markets. Market determines the value of assets through efficient price discovery, which allows citizens to know the value of the company which is in line with the latest information and perspectives [1].

Combining the knowledge, know-how and technology for transparent trading assets, which is worth a large part of the domestic product gross, stocks are taking over a big risk. Respond to the challenges means establishing the prosperity. Regulated stock markets provide solutions by creating greater efficiency along the entire value chain of the public capital markets and the diffusion of better financial information to support the work of all stakeholders.

2. FIRST INDICATORS OF STOCK MARKET OPERATIONS IN 2004.

In 2003, the world's stock markets have increased by 31.4%, which was very difficult to repeat in 2004. Despite this, all World FTSE Index has gained in value by 12.3%, which represents the highest level since February, 2001.

Also, there was a change in the performance of the sector compared to 2003. Hardware Information Technology, which was the weakest performing sector, resized by 3%, while the media recorded an increase of only 6%. Defensive sectors have gone better, so that the action of electrical companies recorded an increase of 22.6% and the tobacco companies increased by 21.2%. The biggest loser was the pharmaceutical sector, because the public worry about the safety of the medicines drop of the price level by 0.3%.

While the resource costs burden on greater stock market, stock market associated with goods made a good performance. In terms of dollars, South Africa recorded a growth of 47.3%, 24% in Australia and 23% in New Zealand. The decline in dollar was the main topic in 2004, recording the reduction in currency index of nearly 5% during the year and 10.5% of the peak reached in mid-May. Gold has generated substantial benefits, as a means against the dollar. The maximum value of the leverage in the last 16 years, from 452.80 dollars per fine ounce, was recorded in November. Strong demand in China resulted in a rise in prices of many metals to multi-year maximum.

U.S. market has recorded an annual growth of 8.9%, UK 14.5% and Japan 10.1% [2].
FTSE Euro-zone index increased by 16.2%, while smaller countries like Austria and Belgium recorded a growth of 61% and 41%, overtaking France and Germany, where the gain was 14.6% and 11.4%. European emerging markets achieved a remarkable year, primarily Hungary with growth of 86.5% and the Czech Republic with growth of 80.1%.

European performance has shown an annual productivity growth of 1.5%. Higher productivity growth in Europe was sacrificed to the other economic policies, such as the increase in employment. The share of employment in the European Union has increased over the last decade to 0.5%, the highest growth in the past five years. Labor market reforms encourage labor force participation and flexibility in the European Union. In the short term, the reform increases the rate of unemployment, while in the longer term such reforms are essential to reduce labor costs and labor market rigidities. Categories of permanent and temporary employees are growing as a share of total employment throughout the European Union.

Increase of the European Union includes 10 new members with lower labor costs, which causes changes in the wealthier nations in tendency of corporations to dislocate services or moving production to new EU countries, in order to obtain benefits from reducing costs with longer working hours, and without extra compensation.

Many European companies have invested massively in information and communication technology and proven the tendency towards the completion of corporate restructuring in order to maximize the return on investment. Strengthening the euro, the EU encouraged the company to focus on productivity, while reducing the cost of additional investment in equipment and communication technologies.

Apparently, the review process and re-organization of European capital markets is taking root. In year 2000, the London Stock Exchange shareholders have rejected a takeover bid for it. The good side to block the bid is to maintain and encourage competition of markets, bearing in mind that due to the characteristics of network trade platform, there is a risk of monopoly. One of the disadvantages of rejecting the proposal is in the decreased ability to reduce transaction costs. The payable trading costs to the stock markets are not high, and are lower than post trade costs, but significant costs are taking an investment bank to transfer the fragmented European market.

3. THE DEVELOPMENT OF THE BANKING SECTOR IN TRANSITION COUNTRIES

In 2004, eight former socialist countries became members of the European Union. Restructuring and privatization of banks that started in the 90’s resulted in modernized and sound banking systems. New systems are integrated into the European financial environment through a majority stake in many banks, found in the hands of financial groups within the European Union. In most new member countries, restructuring and privatization of banks that were once owned by the state, proceeded through consolidation, reducing the number of banks through mergers and acquisitions, and dissolution of smaller, private and problematic banks. The growing integration of banking and other financial services was done through cross-ownership of banks, non banking financial institutions and intermediaries in the capital market and the rapid development of new products and services such as mortgages, credit cards, e-banking, etc. The financial sectors in the eight new member states are still very small compared to the systems that exist in the 15 older member states, both in nominal terms and in relative terms in related to gross domestic product. The assets of the financial system of 15 senior members of the European Union exceed the gross domestic product of 5.6 times, while in eight new countries financial assets are 1.2 times greater than GDP. Aforementioned partly represents a result of higher development of non banking financial institutions and capital markets in the old 15

member states than in the eight new ones, where the financial sector is dominated by banks.

Development of non-banking financial sector should not be done in isolation from the development of the banking sector. Given their current dominance in the eight new EU member states and the predominance of universal banking in Europe, banks in these countries will remain major players in other segments of the financial system. While the total assets of the banking systems of eight countries grew rapidly in the last ten years, the growth rate of property has not significantly exceeded the growth rate of GDP. As a result, the assets of the banking system still accounts for less than 100% of GDP, compared with 300% in 15 developed countries, predicting that the difference in the coming years will not significantly reduce in the case where the banking systems of new member states grew faster than GDP. Banks play important role in financial intermediation in the older member countries, more important than in the new members. Thus, the aggregate bank credit to the private sector of eight countries, as part of GDP is stagnated. In Hungary, Estonia and Lithuania, these loans have risen significantly, but in the Czech Republic and Slovakia have declined or stagnated. In all eight new EU member states, domestic credit of the banking system remained below 40% of GDP, accounting for half or one third of the level most developed countries have. At the same time, non-bank financial institutions, although they achieved a rapid growth in recent years, continue to be poorly developed, making small but growing part of the aggregate total financial assets of the eight countries [3].

4. THE DEVELOPMENT OF STOCK MARKETS IN TRANSITION COUNTRIES

Stock markets in eight countries have achieved rapid initial growth, as a result of privatization of the corporate sector, while the growth of this segment in smaller countries of the new block was not stable, because a number of listing companies failed or have been taken over by strategic investors and privatized. Market shares have remained relatively small and underdeveloped in the eight new members despite the recent collapse of stock prices in 15 developed markets of the European Union. The share of market capitalization to GDP is one third of the values in developed countries. In 2002, in the group of new members, market capitalization amounted to 69 billion dollars. Poland, the Czech Republic and Hungary have the largest market. The market capitalization of developed states is generally between 10% and 120% of GDP. In eight of the less developed countries, liquidity is at a lower level, where the shares traded are less than 10% of GDP, while in developed countries of the Union this ratio amounts between 80% and 150%. Most of the stock market has been developed under the influence of the initial choice of privatization method. Countries that have used the method of voucher privatization (Czech Republic, Slovakia, Lithuania) began with a large number of listed companies insolvent from the beginning and gradually came to a massive off-list, since they were bought by foreign investors or sold to private owners.

In some countries, like Poland, the choice of privatization method (a combination of selling blocks of shares to a strategic investor with the sale of small investors) has proved to be suitable for the development of capital markets, although in some individual cases have resulted in the state remained a significant minority shareholder. Also, in all new EU member countries, the unique corporative problem has been created. Trend in the number of shares on the listing of the eight new member states, is different from the trend in developed markets. Generally speaking, share markets have not been in the position to take a stand as efficient mechanisms for financing the corporate sector. In some of these

countries (Lithuania and Slovakia) the market capitalization is smaller than the data suggest, since the shares of many companies are seldom trade or have a very small part in a free sale. In Poland, privatization through a sale of the large parts of capital to strategic investors in combination with small parts of the capital sold to individual investors, have resulted in low shares percentage in the free sale for the purposes of the public commerce. Low level of the share markets development partly resulted in the uneven structure of corporative sector in smaller countries of new block, which characterizes the presence of a number of smaller companies and small number of big companies. Middle-size companies have a little need for collections of funds that are considerably beyond the capabilities of these markets, opposite to the large companies. Such firms are often owned by foreign investor, so they can collect the money on the foreign market or across parental companies. Therefore, these large companies play small role on the home financial market of the eight new members. At the same time, domination of small companies demises chances for the capital markets development, mainly because it is too soon for such companies to come on market considering costs and requirements. With the development of middle companies and magnification of the more dynamic small businesses, home share markets in eight countries of European Unions are expected to grow along in next three to the five year. In spite of expectations of such growth, it is unlikely that the existing stocks in the region will be able to survive on their own. They are confronted with threats such as internalization of trading by large investment banks and brokers, who trade OTC and crossed listing, or migration of the largest companies in the major European financial centers. After the entry of eight countries in the European Union, these trends are gaining in strength. As a result, we can expect that many markets in new member states seek a solution in a strategic partnership with other EU markets (or possibly in other markets outside the EU), in order to survive. Such consolidation has already started in some of the quoted countries (Estonia and Latvia, where the Helsinki Stock Exchange has bought a strategic part of the stock exchanges in Riga and Tallinn). A number of exchanges in the European Union are integrating into larger trading platform to encourage turnover and efficiency. The development of the stock market can be stimulated by solving problems of corporate governance and accounting and auditing standards and practices in these domains. For larger countries (and/or in smaller countries on a regional basis) may be used to actively monitor the market development of small companies, possibly concurrently with the initiative to develop the venture capital industry.

Government bond market has evolved rapidly in most new EU members, but the conditions for the development of commercial papers and corporate bonds (for example, quality and reliable financial information, credit law and strong-functioning bankruptcy system) were not favorable, so that the corporate sector remained dependent on the banking system as the main source of credit. Debt markets in eight European Union countries (public and private sector), expressed as a percentage of GDP increased by 19% in 1996 to almost 35% in 2002., but that's just one-third the level in the 15 most developed countries, where the percentage is almost 100%.

Government securities market is dominated by the debt securities of which are traded in eight less developed countries of the Union. In fact the new member states, with fixed-income markets are still a significant source of revenue for the corporate sector. As for the private sector, as a significant amount of funds collected by the private sector in international markets and domestic markets.Until recently, the Czech Republic and Slovakia had the most developed corporate bond market, expressed as a percentage of GDP, which is partly a consequence of the limited growth of bank credit to the private sector (due to subsequent restructuring of the banking sector in these countries). While

Estonia has had active commercial market securities, in Poland and other smaller countries the corporate bond market is insignificant or nonexistent. In Poland, the availability of government securities made by high income contributed to this outcome. Market for government bonds should be a source of stable, though modest growth, in the next years since eight countries have to comply with the Maastricht criteria.

Growth in gross domestic product shows that sovereign debt will increase significantly in absolute terms and so it will create conditions for further development of commercial short-term securities and long-term corporate bonds, which needs liquid market for government bonds as a basis for pricing and infrastructure (clearing and settlement). Part of the volume of emissions can be placed on the more liquid markets of the European Union rather than the domestic markets of les developed countries, eight states, which is already happening today. A part of sovereign debt is in the form of euro bonds.
Further pension reforms that allow private pension funds to arise as important institutional investors, as well as the further development of the insurance sector, will contribute to market development by creating a strong demand for the securities of righteousness fixed income traded on the domestic market [4].

Poland - One of the best was the Warsaw Stock Exchange, which has attracted 36 companies on the listing, the highest in Europe after London Stock Exchange and Euro next. There are currently four foreign firms on the listing. Management hopes that the exchange will help the stock market to be able to surpass the results of the Vienna Stock Exchange, as the largest market. The huge event was the release of the stock market's largest bank PKO BP, in November. This is the partially privatized bank by the state. Selling it seemed supportive of the stock market and thousands of people standing in line to buy shares whose price rose 13% on the first day. Calculated in Euros, Warsaw Stock Exchange recorded a growth of 43% in 2004. Market capitalization of Polish companies amounted to 49 billion Euros, which was an increase compared to 29 billion Euros at the end of 2003. Officials said that the year 2004 was the best year in the history of the stock market [5].

Czech Republic - Prague Stock Exchange achieved a market capitalization of 31.6 billion Euros, which was an increase of 19.9 billion euro in 2004. Best stock index POX-50 has increased by 63% in 2004, and surpassed the 1000 points for the first time in history. Activities on the Prague Stock Exchange have received encouragement from significant dividends, as well as from two large issues of shares - secondary shares sale of the national telecommunications and initial public offering of shares of the pharmaceutical company Zentiva. Successful investments have attracted new investors and deepen the market [6].

Hungary – the year 2004 was also excellent for the Budapest Stock Exchange, where market capitalization increased by 35%, reaching 19 billion Euros. Almost the entire trading was concentrated on the actions of the four largest companies, reaching 90% of total market capitalization. Compared with rival regional markets, the Budapest Stock Exchange was faced with a less certain macroeconomic outlook in 2004 followed by an unstable currency under the influence of high budget deficits. Low liquidity budgets prevented the managers of funds to take a risk too. Average daily turnover was 50 million Euros. There were no significant initial public offerings in 2004, and no major IPOs planned for 2005, although the state announced several sales including any public sale of

national airline Maglev if a strategic partner was not found. Many analysts believe the shares are undervalued in Budapest rather than in Prague and Warsaw [7].

5. CONCLUSION

This paper presents the transformation of former socialist countries in the current market functioning, which has contributed to the development of stock markets and led to the increase of business profitability, the growth of privatization, the growth of initial public offerings and other positive changes. At the time when eight former communist countries became members of the European Union, there was restructuring and privatization of banks that started in the 90's and brought modern and healthy banking system in these countries. New systems are integrated into the European financial environment through ownership majority in many banks, which are found in the hands of financial groups with seats in the European Union.

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