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Strategic and tactical measures to overcome real sector competitiveness crisis in Serbia

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This edition of our Review is devoted to the project financed by the Ministry of education and science titled "Strategic and tactical measures to overcome competitiveness crisis in the real sector of Serbia". All papers are structured in a way to suggest solutions to the previous challenge.

The introductory paper by D. Đuričin and I. Vuksanović questions the orthodox model for conducting broad economic policies, which prevailed during past period of transition. The model was dominated by the monetary policy exclusively focused on CPI control with limited results. The authors suggest the new heterodox model in which industrial policies lead and broad economic policies with automatic stabilizers (monetary and fiscal) follow. Also, they introduce the flow diagram for exit from the crisis. The diagram suggests implementation of unambiguous industrial policy support in sectors with strategic importance. Monetary and fiscal policy represents the "oil" which lubricates the wheel of economic progress. They suggest implementation of the currency board with competitive FX rate. Finally, adequate competitiveness and regional policies are the remaining layers for making development strategy succeed.

In the second introductory paper D. Malinić and V. Milićević performed in-depth performance evaluation of real sector in Serbia with disturbing implications. The authors examined causes and consequences of real sector competitiveness decrease as well as its long-term financial stability position with respect to results of the analysis of liquidity, indebtedness, as well as assets and equity management efficiency.

In their article, S. Janošević and V. Dženopoljac examined the impact of intellectual capital as a prerequisite for growth on financial performance of hundred most profitable companies from the real sector in Serbia. Despite empirically proved positive correlation between intellectual capital and financial performance, the results of econometrical tests imply its statistically insignificant influence on financial results in real sector in Serbia.

D. Lončar and V. Rajić-Čojbašić performed the competition analysis in the confectionary market in Serbia. By using three typical scenarios they concluded that the calculated concentration ratios indicate that Serbian confectionary market is relatively unconcentrated to moderately concentrated. These insights are profoundly important having in mind that confectionery products make up a significant part of the consumer basket in Serbia, which makes them a strategically important segment of the consumer living standard.

The paper prepared by D. Mijačic and B. Paunović presents a legislative and institutional framework of regional development in Serbia, as well as the analysis of regional disparities across different geography, elaborated through six selected indicators (population and population density, regional GDP, employment, unemployment, business demography and budgetary revenues per capita). The results show that, despite introducing the Regional development strategy 2007-2012, very high regional disparities in Serbia remain, particularly at the local and NUTS 3 level.

Đ. Kaličanin in his paper analyses one of the sectors with highest strategic importance for sustainable development in the coming period, energy sector. The author suggest formulation of energy strategy at the level of business units by using strategy map and Balanced Scorecard techniques. He points to the connection that could be made between strategic decisions on the national and the enterprise level with affirmation of modern strategic management techniques.

Finally, the last paper by M. Todorović, V. Kuč and I. Vuksanović analyses quality of the corporate governance in the state sector in Serbia. Having in mind the high share of the state sector in Serbian economy, its poor performance seriously undermines the competitiveness of the whole economy. The authors, thus, briefly analyze the current situation of corporate governance legislation and practice and offer recommendations for improving the efficiency of the boards of directors as the only active mechanism of corporate governance in the Serbia's state sector.

SUMMARY OF ACTIVITIES 2007-2011

Members of the Serbian Association of Corporations initiated the establishment of the Serbian Association of Corporate Directors. The Association was formally established by a decision of the Government of the Republic of Serbia on June 8, 2007.

Nowadays, the Association has more than 70 members and candidates who accept the Statute, the Code of Ethics, and the Rules on Acquiring and Renewing the Status of a Corporate Director. Acquiring and maintaining a membership status with the Association requires participation in the Programme of Education and Training. The Programme of Education and Training consists of general training in economics and specialized training in different areas of corporate governance. Furthermore, the Center organizes "Director to Director" program.

The general training has included conferences, organized by the Serbian Association of Economists – Kopaonik Business Forum, Milocer Economic Forum (2007-2008), and SEE Management Forum (since 2009). The specialized training included seminars in five areas of corporate governance: strategic management, financial management, managerial accounting, business law, and investments. The Association has organized over 20 seminars in different areas of corporate governance within the Center for Corporate Governance and in cooperation with renowned international companies which are operating in the Serbian market such as Deloitte, Telenor, SAP, Stanton Chase, Socius, Insomnia, Citi Group and others. The lecturers were prominent professors who are engaged in corporate governance theory and practice, or related areas of scientific research: Prof. Dragan Đuričin, Prof. Dejan Malinić, Prof. Nikola Stevanović, Prof. Boško Živković, Prof. Goran Pitić, Prof. Jelena Perović and Prof. Ana Trbović. The lecturer Prof. Helmut Sihler, one of the most prominent names of corporate governance captured a great attention with his presentation. The Japanese economist and critic, Prof. Katsuhito Iwaialso, has also visited our organization. Following the actual economic problems, the Association has participated in the organization of round tables with representatives of the Serbian government and businessmen, where they discussed problems faced by companies in terms of the permanent crisis, as well as important economic laws, for example, the Law on Protection of Competition and the Companies Law. The guest speakers at the seminars have also been the most prominent names from international organizations, such as H.E. Ambassador Vincent Degert, Head of the European Commission, Ms. Hildegard Gacek, Director of the European Bank for Reconstruction and Development and Mr. Bogdan Lissovolik, IMF Resident Representative.

ACTIVITIES IN 2011

During this year the Serbian Association of Corporate Directors has continued organizing trainings for candidates and members (in general and specialized disciplines of corporate governance). In cooperation with the Serbian Association of Economists, the Association actively participated in the organization of The 2011 Kopaonik Business Forum and The 2011 SEE Management Forum in Opatija.

The 2011 Kopaonik Business Forum was held from 1-3 March, with the topic "Sustainable Reforms for Sustainable Development". The first day of the forum was dedicated to the new vision of development, the second to the new business model, while the third day dealt with the strategic initiatives, investments in priority sectors and choosing appropriate models of funding. The subject of the 2011 SEE Management Forum, which was held from 9 – 10 June in Opatija, was "South East Europe and the EU - Looking ahead". The organizers of the Forum were the Serbian Association of Economists / Serbian Association of Corporate Directors, IEDC - Bled School of Management and the Croatian Economic Association.

Besides the general trainings in economics, the Association has been actively engaged in specialized trainings in different areas of corporate governance.

Shortly after the completion of the Kopaonik Business Forum on April 12, the Association organized a seminar on the subject "The Direction of Economic Development in Europe after the Crisis." The presentation was held by Prof. Simon Commander, a partner at the Altura Advisers and a Senior Advisor at the European Bank for Reconstruction and Development, where he had acquired extensive experience in the Central and Eastern Europe and the former USSR. The introductory presentation held by Prof. Ana Trbović, director of the FEFA Centre for European Integration and Public Administration, was on "The Process of Serbia's EU Accession".

On May 11 the Association organized the lecture "Corporate Finance Priorities in Post Crisis Environment" within the "Director-to-Director" program, and in cooperation with the Citi Group. The seminar lecturers were Chavdar Rissin, Central Europe Trade Cluster Head, Citibank Europe Plc, and Paolo Galli, Director, Strategic CEEMEA Coverage and M & A EMEA team, Citi Group. The keynote address was given by Vladimir Čupić, President of the Executive Board of Hypo Alpe Adria Bank.

In cooperation with SBC "Privrednik", members and candidates of the Association have participated in discussions with the internal business departments of the Government of Serbia in the context of the announced measures for improving business activities and mitigating the impact of the crisis. The interviews were conducted

with Nebojša Ćirić, Minister of Economy and Regional Development, Verica Kalanović, Deputy Prime Minister and Vuk Jeremić, Minister of Foreign Affairs. The Association also encouraged members and candidates to participate in other programs outside of the organization of the Association.

Recently, there have been three more courses. The first training course on the topic "Possibility of Financing Investment from International Sources" was held on October 25. The special guests were Mr. Bogdan Lissovolik, IMF Resident Representative in Serbia and Ms. Hildegard Gacek, Director of the European Bank for Reconstruction and Development in Serbia. The keynote speaker and moderator was Prof. Goran Pitić, Chairman of the Board of Societe Generale Bank of Serbia.

On November 23 a seminar on the subject "The New Company Law: the Legal and Economic Aspects of the Application" was held. Mr. Luka Andrić, manager of the working group for drafting the Companies Law was talking about the concept of the new law, differences compared to the previous law and the specifics of the new approach, Mr. Nenad Popović, a partner at the JPM Law Office presented the legal perspective of its application, while Prof. Dragan Đuričin, president of the Serbian Economists Association indicated the specifics of the business and legal management of the new legal framework.

At the end of the year, on December 7, the Association organized a seminar on the topic "Monetary Policy for 2012 and Possibility of Adaption to Financial and Real Sector." After the introductory remarks, Prof. Dejan Šoškić, NBS Governor, held a panel discussion attended by relevant representatives of the real and financial sector.

After the seminar, the Association held a regular Electoral Meeting. Toplica Spasojević was re-elected the President of the Association. New management bodies were also elected. The Executive Committee members are Dragan Đuričin, Nikola Pavičić, Dragoljub Vukadinović, Ana Trbović, Ilija Šetka, and Miloš Macura. Total 61 members renewed the Certificate of Corporate Directors for the period of two years, while 16 candidates will be proposed for the Certificate in the same period.

The Diploma awarding ceremony was held in presence of members and candidates of the Association, members of the Serbian Association of Economists and distinguished guests. The Serbian Association of Economists awarded two great men of Serbian economic and business scene with the Charter for Excellence. The Charter for Outstanding Contribution in the Field of Business Economics and Management was awarded to Dragoljub Vukadinović, Chairman of Metalac, while the Charter for Outstanding Contribution in the Field of Economic Theory and Policy was awarded to Prof. Ljubisa Adamović.

ORIGINAL SCIENTIFIC WORK
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FROM MACROECONOMIC STABILITY TO INDUSTRIAL POLICIES AND BACK: THE CASE OF SERBIA*

Od makroekonomske stabilnosti do industrijskih politika i nazad: slučaj Srbije

Abstract

After the 2008 economic crisis in the whole civilized world the orthodox model of macroeconomic policies has been under revision. Although the last crisis wave in Serbia was not triggered primarily by macroeconomic policies, it forces economists to question the framework for conducting broad policies in conditions of transitional recession. Without automatic stabilizers broad policies lose their purpose, particularly when massive privatization and financial deregulation take place. Hidden fractures of the uncompleted transition and mistakes inherent to the economic policies force us to develop conceptually wider framework applicable during the crisis as well as in the post-crisis period.

In the emerging heterodox model industrial policies lead over broad policies (monetary and fiscal, primarily) with extended set of tenets instead of monetary determinism of orthodox model focused exclusively on two tenets, inflation and output gap, both low and stable. In the orthodox model consumer price inflation (CPI) is approximation for inflation and output gap is defined as the distance from the level of output that would prevail in the absence of nominal rigidities of the economic system. Change of the policies framework is an imperative especially for economies that entered the 2008 economic crisis with structural imbalances and low competitiveness. Main manifestations of structural imbalances in Serbia's economy are twin output gaps (transitional gap +gap by definition) and continuous and strong inflation pressures. Unfortunately, structural imbalances could be easily deepened due to financial crisis and the "run" on the governments and banks in the EU. The shift from the orthodox model to the heterodox one in case of Serbia is not the matter of economic prosperity in terms of output expansion and competitiveness improvement but the matter of survival.

Unlike broad macroeconomic policies that affect the whole economy, industrial policies are sector specific. Namely, industrial policies are directed towards output expansion of industries with tradable goods, by promoting certain sectors for import substitution and/or subsidizing certain export oriented sectors. After output increases through industrial policies, broad economic policies come into play. In many ways, in heterodox model the broad policy measures should remain the same. The main promising routes for improvement are new combination of traditional monetary policies and prudential financial regulation and design of better automatic fiscal stabilizers. In monetary policy automatic stabilizers could be developed in many ways. This article suggests currency board as monetary model for Serbia's economy in which stable and competitive exchange rate play the role of automatic stabilizer.

This is what this paper tries to do. Consequently, it proceeds in four steps. The first reviews the genesis of the economic crisis in Serbia and identifies the causes of today's vulnerability. The second and most tentative, takes a new heterodox macroeconomic policy framework (industrial policies lead, broad policies follow). The third identifies industrial policies as an important tool for elimination of structural imbalance causes. The fourth identifies the road map for exit from the crisis.

Key words: *Serbia, transitional recession, "J" curve, jobless recovery, heterodox model, real economy, industrial policies, currency board*

Sažetak

Posle globalne ekonomske krize 2008. godine u celom civilizovanom svetu ortodoksni model makroekonomskih politika je pod preispitivanjem. Iako poslednja kriza u Srbiji nije bila uzrokovana primarno makroekonomskim politikama, ona je navela ekonomiste da preispitaju okvir za vođenje osnovnih ekonomskih politika u uslovima tranzicione recesije. Bez automatskih stabilizatora, opšte ekonomske politike gube svrhu, naročito u uslovima masovne privatizacije i izgradnje liberalnog finansijskog sistema. Skrivene pukotine nezavršene privatizacije i greške u vođenju ekonomskih politika teraju nas da razvijamo konceptualno širi okvir koji se može primeniti u krizi kao i u periodu posle krize.

U novom heterodoksnom modelu koji je u nastajanju industrijske politike vode, a opšte ekonomske politike (monetarna i fiskalna, pre svega) slede, sa proširenim skupom ciljeva umesto monetarnog determinizma ortodoksnog modela koji je fokusiran na nizak i stabilan output gap i nisku

* This edition is dedicated to the project financed by the Ministry of education and science titled "Strategic and tactical measures to overcome real sector competitiveness crisis in Serbia"(n. 179050, period 2011-2014)

i stabilnu inflaciju. U ortodoksnom modelu indeks potračkih cena predstavlja aproksimaciju za inflaciju dok je output gap predstavljen kao razlika između postojećeg nivoa proizvodnje i nivoa koji bi se ostvario u odsustvu nominalnih rigidnosti u sistemu.
Promena u okviru za vođenje ekonomskih politika je imperativ, posebno za privrede koje su u krizu iz 2008. godine ušle sa strukturnim neravnotežama i niskom konkurentnošću. Osnovne manifestacije strukturnih neravnoteža u Srbiji su output gap blizanci (tranzicioni + gap po definiciji) kao i trajni i snažni inflatorni pritisci. Nažalost, strukturne neravnoteže se lako mogu produbiti usled finansijske krize u EU usled nelikvidnosti banaka i države. Prelazak sa ortodoksnog na heterodoksni model u slučaju Srbije nije pitanje ekonomskog prosperiteta u smislu povećanja proizvodnje i konkurentnosti, već pitanje preživljavannja.
Za razliku od opštih makroekonomskih politika koje utiču na privredu u celini, industrijske politike su usmerene na pojedinačne sektore. Naime, industrijske politike su usmerene na ekspanziju grana sa razmenljivim dobrima promovišući određene sektore u cilju supstitucije uvoza i/ili subvencionisanja izvoza. Pošto se poveća nivo ekonomskih aktivnosti, na scenu stupaju opšte politike. U više aspekata osnovne ekonomske politike ostaju nepromenjene u heterodoksnom modelu. Kombinacija mera tradicionalne monetrane politike i finansijske regulacije kao i izrada boljih automatskih stabilizatora u fiskalnoj politici su osnovne putanje promene. U monetarnoj politici automatski stabilizatori se mogu razviti na više načina. U ovom radu se sugeriše upotreba "monetarnog odbora" u kome stabilan i konkurentan devizni kurs predstavlja efikasan automatski stabilizator. Prethodnom okviru razmišljanja je posvećen ovaj rad. U prvom delu analizirani su uzroci ekonomske krize u Srbiji kao i glavni indikatori ranjivosti njene privrede. U drugom, i najvažnijem delu, predlaže se nov heterodoksni okvir za vođenje makroekonomskih politika. U trećem delu se identifikuju industrijske politike kao važno sredstvo za eliminaciju uzroka strukturnih nestabilnosti. U četvrtom delu dat je dijagram toka izlaska iz krize.

Ključne reči: *Srbija, tranziciona recesija, "J" kriva, rast uz nezaposlenost, heterodoksni model, realni sektor, industrijske politike, monetarni odbor*

Orthodox transition policies and their results

After onset of the 2008 global economic crisis the question of feasible economic solution for Serbia's transitional crisis came into the foreground. After the EU has parked Serbia's accession appeared the doubt that all economic solutions were coming from empty space.

Two important facts underpin the last dilemma. First, Serbia has been excommunicated, more or less, for a longer period of time and this fact crucially affects viability and performances of its economy. Second, the EU, the guiding star of Serbia's transition architects in the last decade is slowly going dark. Namely, the ongoing "run" on banks and governments in the EU has increased vulnerability of the system. Eclipse of the EU influences its potential for further absorption and, consequently, the likelihood of Serbia's accession to the EU. Parking aside the problem of Serbia's accession to the EU in 2011 might be understood as a new manifestation of excommunication.

Transition toward the capitalism in Serbia started in 1990, the same year when transition started in other socialist countries. The transition was followed by disintegration of Yugoslavia and the chain of civil wars for its heritage. In 1992 Serbia was imposed sanctions. Sanctions largely caused *Serbian factor* to become irrelevant in transformation of republics of former Yugoslavia into independent states and their successive geopolitical repositioning. Whether it was the tenet set up from the outside centers of power or the consequence of wrong internal policy, or both, is left to historians and politicians to argue. Nevertheless, the economic consequences of such situation were significant. After disintegration of Yugoslavia and the break-up of the State Union of Serbia and Montenegro, as one of its temporary successor, Serbia got the status of land-blocked country. Because of the sanctions Serbia also became a land-locked country.

From the economic perspective, the main consequence of sanctions was structural instability manifested in continuous and strong inflationary pressures and transitional output gap.[1] Concretely, in 1993, the first year of sanctions, the output dropped for 60% compared to pre-transition 1989 along with record inflation of 313 million %, second highest in the monetary history. To compare, in the Great Depression during 1929-1933 at the bottom of the downturn in the US, the output gap was 40% compared to the pre-crisis level, with unemployment rate of 25%, and, interestingly, 27% deflation. Evidently, the transition output gap in Serbia was more devastating than the output gap during the Great Depression. It is well known that transition process assumes transitional recession in the first stage and output recovery above the pre-transition level in the following period (so called output "J" curve). Contrary to the other economies in transition Serbia's economy has never left transition recession it entered at

1 See more in Đuričin, D., Vuksanović, I. (2010):"The World After the Crisis: Lessons for Serbia's Exit Strategy from Permanent Crisis", *Ekonomika preduzeća,* jan-feb, pp. 1-14 Đuričin, D. (2011):"Anti-crisis Program and Sustainable development: An economic practitioner's Perspective", *Ekonomika preduzeća,* sept-oct, pp. 201-218

the beginning of the process. For the year 2011 transitional output gap amounts to 30%.[2]

In the period 1989-2011 the unemployment rate in Serbia increased from 12% to 23%. Today many economists, for example, *J. Stiglitz*[3], point out that the unemployment rate more colorfully depicts the health of national economy than the GDP growth.

During period of sanctions, *Milosevic's* regime tried to play chasse with the EU by buying time and sacrificing interests of Serbia's economy for the sake of regime's proclaimed interests of Serbian nation. Yet, the EU played geopolitical poker game instead, often bluffing and even playing its trump card when it takes. The bombing campaign in 1999 wasn't just the last round of the game in which the regime lost credibility and left the game without the entire initial political stake. More importantly, it was the final blow in systemic devastation of the economy.

During the whole period of geopolitical transition Serbia stayed stuck in the middle between main strategic players. Economic transition is not effective, without geopolitical transition completion. After political changes in 2000, there were signals that Serbia would be able to quickly complete its geopolitical repositioning toward the EU. However, although the level of foreign investment increased they mostly had the wrong focus (acquisition of best positioned local monopolies instead of producers of tradable goods). Consequently, the deficit in tradable sector was inevitable. In the meantime great majority of transitional countries successively completed transition (geopolitical and economic) and their process of catching up to the EU started. Compatible institutional settings, productivity improvement and sufficient level of tradable goods triggered the EU expansion. Former socialist countries now newcomers of the EU entered the 2008 global economic crisis fully geopolitically repositioned and with economic performances stronger than before transition. According to *Eurostat*[4] the average level of GDP in 2008 relative to 1989 in these countries was 1.4 times higher followed by significant improvement in productivity. Interestingly, the unemployment was not a victim of radical reforms. The average unemployment rate for these economies stays close to EU27 average of 10%.

After political changes in Serbia in 2000, despite accelerated economic reforms and clear signals of geopolitical repositioning toward the EU, economy still remains impotent and relatively isolated. The results of reforms are disappointing. The low of gravity holds in the economy (when you lose velocity, altitude should be rapidly lost and regained with difficulties). To be precise, after 21 years of transition Serbia still has significant inflationary pressures and output gap. In the last two years anemic growth along with rising unemployment took the character of jobless recovery. In 2011 growth rate of 1.5% was followed by 15% jobs lost compared to the previous year. Restructuring of the public sector has not been completed yet and epicenters of inflation pressures have not been eliminated. Widespread use of wage and pension indexation regardless the productivity growth, magnifies inflationary shocks, reduces investments and leads to the slowdown of the rhythm of transition. The justification for this behavior maybe lies in the fact that due to the consequences of the sanctions up to 2000 the living standard was at the absurd level. However, in the period succeeding the abolishment of sanctions there was no excuse for mistakes in the economic policies that manifested, primarily, in exclusive focus on maintaining macroeconomic stability through monetary measures without adequate industrial and regional policy, public sector restructuring and fiscal reforms. In a word, Serbia's transition architects obsessed with social cohesion were biased toward monetary policy measures and quick privatization completely neglecting business and fiscal perspective of reforms. Consequently, reforms' achievements as well as reforms were reversible.

A quick look of macroeconomic indicators for 2011 shows that the economy is full of imbalances. Transitional output gap is on significant 30% level. The share of real economy in GDP during transition decreased from 70 to 40%. The share of tradable sector also fell down to 20% of GDP. For the countries of similar size and level of debt this share is supposed to be 50-70%. The share of public sector in diminishing GDP stayed on considerably high level, more

2 The level of output in 2011 compared to the level of output in 1989

3 Stiglitz, J., Sen, A., Fituossi, J. (2010): *Mismeasuring Our Lives: Why GDP Doesn't Add Up*, New Press, New York

4 European Commission Eurostat, available at http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq_urgan&lang=en

than 40% of GDP. Investments are insufficient, 22% of GDP and FDI partake only 3%. Considering the social safety net, things went from bad to worse. From the financial perspective, the social safety net is not sustainable when the ratio of pensioners to working population is 1.1: 1.0.

Previous problems trigger unfavorable vicious circle. Without industrial policies and public sector restructuring, real appreciation of the local currency and high cost of capital deepened structural imbalances. High value added industries disappeared (aircraft, tool machinery, vehicles, project engineering, ship construction, military equipment, etc.), traditional exporters lost competitiveness (hard and soft chemistry, confectionary, durables, etc.), while the infant and lead edge industries haven't appeared (renewable energy, life science, etc.).

Real economy and financial sector are two different stories. Real economy and tradable goods stayed bellow radar of policy makers. Well-positioned local companies from that sector were privatization targets of multinationals. The capital market served only as an infrastructure for privatization. On bank-centric financial market local entrepreneurs and companies from public sector were forced on debt financing. The whole institutional settings, from laws to regulatory bodies, readjusted to that fact. The capital market, shallow as explained, went into a retreat with the slowing pace of privatization. Economic theory teaches us that capital market is a brain of an economy. Does it mean that Serbia's economy during transition was left with no brain?

Despite exclusive focus of broad economic policies on macroeconomic stability reduced to CPI control, reform achievements are not encouraging. Behind these policies were hidden fractures like real appreciation of local currency and high cost of capital. Namely, the cumulative inflation for the period December 2001-November 2011was 174% while in the same period cumulative nominal depreciation of local currency was 43%.[5] Real appreciation of local currency was primarily the consequence of massive capital inflow in a form of privatization proceeds and FDI. Large appreciation may squeeze the tradable sector and make difficult for it to grow back when the FX rate returns to normality.

On the other hand, the lack of confidence in local currency due to unfinished geopolitical transition caused more than 70% of business transactions to be euro denominated. Since the FX rate fluctuated significantly in the last decade, periodic depreciations when majority of domestic contracts are euro denominated caused severe balance sheet consequences (FX gains/losses) and, consequently, negative impact on the level of activity. It is not logical that the cost of borrowed capital is so high (the average interest rate in 2011 is around 10%) when currency convertibility and tools for FX hedge exist. It is partly the consequence of the central bank prudential policy (high level of obligatory reserves, high policy rate, high repo rate, classification of risky assets, etc.) and partly the result of commercial bank's policies. Paradoxically, interest rates and appreciation as the main consequences of the broad policies are, actually, the main stress factors for the real economy. Their combination leads to a final blow to tradable sector competitiveness.

Table 1 presents specific interest rates. Evidently, there is a positive trend in a way that the total average

5 National Bank of Serbia available at www.nbs.rs

Table 1: Interest rates in 2011 (by duration of credit period, by purpose, and total average), in %

Duration of credit period					Purpose of credit								Total average interest rate
					Credits in dinars					Credits in foreign currency			
Month	Up to1 year	1-5 years	More than 5 years	Total	Working capital	Export	Invest ment	Other	Total	Import	Other	Total	
Jan	13.01	9.22	7.30	10.29	12.40	11.89	8.15	10.44	10.49	7.56	5.77	6.65	10.77
Feb	13.41	9.22	7.34	10.48	12.79	11.30	8.21	10.57	10.69	7.74	5.87	6.82	10.92
Mar	13.44	9.32	7.37	10.48	12.81	9.87	8.19	10.70	10.67	7.67	6.00	6.81	10.87
Apr	13.83	9.47	7.46	10.66	13.19	9.05	8.25	10.88	10.86	7.84	5.94	6.87	11.09
May	13.61	9.54	7.48	10.59	13.17	8.16	8.28	10.60	10.78	7.96	5.99	6.95	11.04
Jun	12.63	9.46	7.54	10.10	12.21	7.66	8.26	10.37	10.28	7.63	5.71	6.65	10.53
Jul	12.49	9.51	7.66	10.02	11.96	7.70	8.27	10.43	10.18	7.80	5.70	6.79	10.41
Aug	12,28	9.46	7.45	9.70	11.65	7.67	8.26	9.76	9.84	7.93	5.59	6.85	10.11
Sept	12.06	9.38	7.38	9.55	11.35	7.44	8.24	9.59	9.70	7.48	5.50	6.57	9.99
Oct	11.84	9.27	7.40	9.40	11.05	7.23	8.16	9.46	9.53	7.53	5.64	6.67	9.86

Source: National Bank of Serbia

interest rate for the corporate sector is slightly falling in 2011, from 10.77 to 9.86%. Still, this decline does not match with policy rate decrease in the same period (for 2%). Another positive trend refers to the export loans. Interest rate on the loans assigned to export is in decline, it fell for more than 5% in the last year, from 12.26% to 7.23%. To compare, interest rates for the loans assigned to import in the same period went from 8% to 7.53%. Such costs of borrowing capital raise risk aversion for investments in the real economy.

In labor market there are too many people of the wrong kind and not enough people of the right kind. Refugee influx, brain drain, population concentration in urban areas and desertion of rural areas dramatically increased population risk.[6] In tradable sector, controversially, despite of high level of unemployment, human capital is a scarce factor, which determines its inflationary rather than deflationary character. It is a labor market paradox in a sense that due to adverse structure good news from the labor market is a bad news for competitiveness.

Besides the human capital, Serbia also has insufficient deposits of ultimate resources (energy, food and capital). Growing strategic dependency of the country regarding these resources hinders the capacity for reindustrialization. Also, unsustainable character of contributions to the social funds decreases additionally overall level of labor force motivation as a prerequisite for human capital development.

In a word, vulnerability of Serbia's economy is high in absolute and relative terms. The absolute vulnerability could be depicted by key performance indicators presented in the Table 2, structured in three segments: operational performance, financial performance and competitiveness. Reference points for each indicator are available in the last column of the figure.

Relative vulnerability is presented in Figure 1 with Serbia vs. the EU benchmark analysis of key performance indicators. Referent points above which the economy enters the increased vulnerability zone are: 4% for current account deficit, 3% for fiscal deficit, 60% for public debt, 60% for external debt, 60% for trade openness, 80% for foreign funding of banks. Vulnerability can be estimated as extremely high (considering foreign funding of banks, trade openness and external debt), moderate (considering current account deficit and fiscal deficit) and low (considering public debt). Also, radar diagram portrays that the most vulnerable positions are those that are direct consequences of broad economic policies. Paradoxically, Serbia's problem does not stem from the gaps up to the reference points. The problem is generally low level of activity at which balance is achieved (18% of EU27 GDP pc).

As far as activity level is concerned, in the Figure 2 one can observe the trend for industrial output in Serbia compared to the same indicator for EU 27 for the five-year period. The period encompasses both years before as well as after the first crisis shock.

Serbia's industrial output is highly correlated to the EU's industrial output. It can be seen on the upper figure that the ups and downs in industrial output in the EU are

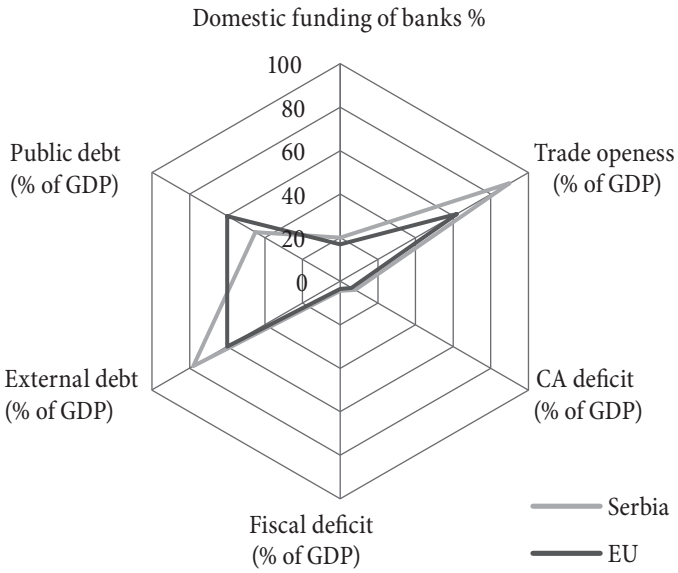
Table 2: Serbia's vulnerability indicators, 2Q 2011

Performances	Indicator	Reference point
Operational performance		
· Transitional output gap	30%	0%
· Unemployment	22.2%	<10%
· Inflation		
· Core	13.6%	<10%
· CPI	12.7%	<10%
· Okun index	34.9%	<12%
· Twin deficits		
· Current account	7.7%	< 10%
· Budget	4.5%	< 3%
Financial performance		
· Indebtedness		
· Public debt/GDP	46%	<45%
· Foreign debt/GDP	78%	<90%
· Foreign debt/Export	206.2%	<220%
· Credit rating		
· S&P	BB-/Stable/B	investment rang > BB
· Fitch	BB- out. neg.	investment rang > BB
Competitiveness		
· Export (goods)/GDP	27.3%	>50%
· Currency depreciation		
· Nominal	3.9%	< 5%
· Real	9%	< 3%
· Global competitiveness index	96th (139)	65th (CEE average)
· Corruption perception index	78th (178)	59th (CEE average)
· Ease of doing a business	89th (183)	60th (CEE average)
· Economic freedom index	101th (179)	62nd (CEE average)

Sources: Ministry of Finance Republic of Serbia, National Bank of Serbia, World Bank, Heritage Foundation, Trans World Economic Forum & Transition Report

6 Đuričin, D., Vuksanović, I. (2010): *"Population risk and sustainable development in combined economic crisis: The case of Serbia"*, Facing the future of South-East Europe, Croatian Academy of science and arts and Croatian Institute of finance and accounting, Zagreb

Figure 1: Serbia's vulnerability indicators compared to the EU's reference points



followed by ups and downs in industrial output of Serbia. Things complicate furthermore the "run" on banks and governments that overmasters the entire EU. Namely, the latest credit crunch and sovereign debt crisis in the EU predicts no good future for Serbia, and it is already observable in industrial output fall in 2011 compared to 2010 (0.9% in October 2011).[7] There is no better indication that the new crisis wave is about to strike.

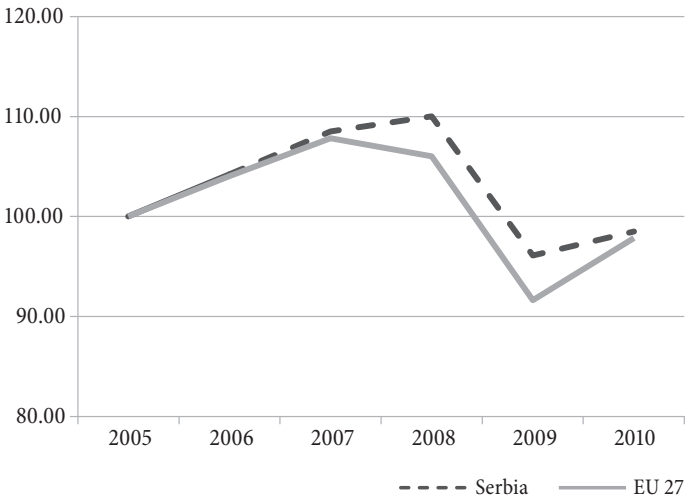
Economy that spends more than it produces is not sustainable. Twin deficits are clear manifestation of structural imbalances. In 2011 current account and budget deficits are 7.7% and 4.5%, respectively. Jobless recovery is partially a consequence of the fact that liquidity was used for debt repayment instead of investments. Jobless recovery along with slowing rhythm of investment can quickly bring Serbia's economy into recession, maybe depression.

Another major source of concern that reinforces the dilemma from the beginning of the article refers to possibility of Serbia's accession to the EU. New generation of Serbian politicians after 2000 behaves like the sailors navigated by the stars. The main, and probably the only one, guiding star has been the EU. However, the 2008 global economic crisis along with structural defects across the EU and implemented recovering measures undoubtedly indicate that this star is slowly fading away. Frequent use of "too big to fail" argument led to monetary expansion, massive bailouts, unselective fiscal stimuli, which along with fiscal chaos and confusion related to sovereign debt restructuring model increased euro volatility. All of this indicated serious system flaws and lack of adequate policies that together drive the EU into a double dip recession.

In the end of 2011 it has definitely become obvious that prevailing tenet of geopolitical repositioning of pro-EU Serbia has been call into question. The fact is that Serbia gave all on the EU card, while the EU parked Serbia's accession for the coming period. Besides the inertia concerning geopolitical solution that was imposed during the Yugoslav crisis, the new situation includes impotent Serbia's economy with high population risk, unable to cut dependency on capital, energy and food from abroad. Combination of previous facts with the "run" on banks and governments in the EU could postpone Serbia's accession.

On the other hand, ignoring Russia and China on the path of geopolitical repositioning turned political support of these countries, which always comes along with investments, into wait-and-see pattern. In a word, today Serbia is geopolitically stuck in the middle between important strategic players and this fact primarily affects

Figure 2: Industrial output for EU27 and Serbia, indices 2005=100



Source: Eurostat and Statistical Office of Republic of Serbia

7 Statistical office of Republic of Serbia, available at http://webrzs.stat.gov.rs/WebSite/

its economic performance and the outlook for the future. In the global world, especially in times of crisis, it is more important to whom you are connected than who you are.

Parking aside the problem of Serbia's accession from the EU does not imply lowering interest of Serbia for the EU and turning towards other conceptual extreme. The EU is going through changes, but compatibility with the EU remains imperative. That is something Serbia must accomplish not as a manifestation of the respect towards the EU and its values, but, primarily, in its own interest, in order to reach imperative of full compatibility with its near environment.

Heterodox economic policies framework and expectations

The conceptual grounds for economic transition in Serbia referred to neo-liberalism (or free-market fundamentalism), while the precise framework for conducting economic policies was Washington Consensus. The essential elements of the Washington Consensus[8], although there exist different interpretations, are: market liberalization (trade, capital and labor) and macroeconomic management focused exclusively on inflation control as a prerequisite for macroeconomic stability and sustainable development. In Serbia, this framework was extended to one more element, quick and massive privatization.

Previous analysis has shown that the orthodox model for conducting economic policies in Serbia was based primarily on monetary tools. As a result, prevailing policy tenet has been inflation control, and prevailing instrument policy interest rate, that is, the short term interest rate controlled by the central bank through open market operations. Fiscal policy plays secondary role with political constraints sharply limiting its usefulness while financial market liberalization was, simply, a consequence of value judgment of certain expert circles.

Inflation (stable and low) was presented as primary tenet of monetary policy along with maintenance of stability of financial system. Actually, it was flexible inflation targeting or returning of inflation to stable target over some corridor. The central bank's focus on inflation rather than on activity coincided with the IMF conceptual support as core reform sponsor as well as expert circles support provided by the New Keynesian model of inflation targeting embodied in Washington Consensus. Constantly repeated mantra was that low and stable inflation is good in itself and good for economic activity, in terms of low and stable output gap.

Also, architects of Serbia's transition forgot that countercyclical fiscal stance is extremely desirable for economies with limited number of automatic stabilizers. Partly it was the consequence of the fact that the buildup of the institutional settings and financial regulation were mostly outsourced to international financial organizations and advisors independent of local policy makers. Consequently, primary focus of broad policies did not go further than debt sustainability and fiscal rules to achieve such sustainability.

To conclude, the model of economic policies hitherto was embodied with some delusions. First, that the foreign investments are panacea for sustainable development. This standpoint ignores the reality. The net capital inflow is not permanent. In the last period the level of capital migration from CEE countries is significant. For example, in 2010 profit repatriation was three times higher than the FDI inflows. Second, the respect toward the IMF's advice regarding broad policies tenets is crucial for achieving macroeconomic stabilization. This standpoint neglects the fact that the IMF is, first and foremost, a creditor which pays attention to balanced budget in order to assure debtor will repay its debt. Third, that the EU accession guarantees massive fund influx for restructuring of public sector, social funds recapitalization and competitiveness increase. On the contrary, today the EU has its own problems, credit crunch and sovereign debt crisis. Furthermore, hypothetically speaking, Serbia's accession to the EU automatically leads only to nominal (or price) convergence. Real (or competitive) convergence is time consuming process with constant negative effects on twin deficits. Fourth, orthodox stabilization measures like budget cuts, tax increases, and improving of labor market flexibility are prerequisites for the sustainable employment. On the contrary, these measures lead to "fear from fear", risk

8 Williamson, J., Mahar, M. (1998): *A Survey of financial liberalization,* Essays in International Finance 211, Princeton

aversion increase, demand squeeze, which together leads to high and volatile output gap.

Keeping inflation low and stable predominantly with monetary measures was considered as a prerequisite for high economic expectations and investments that were supposed to lead to sustainable employment. Unfortunately, such policy was inappropriate for Serbia, primarily, due to structural imbalances and output gap. Moreover, the last crisis confirms that this policy didn't succeed even in some over-heated economies. In Serbia, as under-heated economy, this policy was boiled down to naïve liberalism in trade and capital flows and expensive policy of inflation targeting as a core policy for maintaining macroeconomic stability. These policies followed by appreciated FX rate and high cost of capital lead to the real economy destruction. Also, this policy was extremely costly because partially fluctuating FX rate was regularly defended with open market intervention of the central bank and high repo rate. Last but not least, these policies do not have automatic stabilizers and cannot be efficient in times when economic downturn reduces privatization proceeds, FDI and remittances.

For the long time Serbia's transition architects ignore the elephant in the room. Again, the rhetoric exceeded reality. Inflation control is necessary but it is not sufficient for sustainable employment. Moreover, the trade-off between inflation and activity is complex, especially in long-term recession. In case of output gap low inflation limits the scope of monetary policy. Also, low inflation is not a firm barrier to undesirable consequences of wrong financial regulation in real economy like other assets prices deviation from fundamentals, endogenous credit expansion, adverse composition of output, etc. Too high level of consumption, too large twin deficits, dominance of services against real economy, too high level of investment in construction and real estate triggered major macroeconomic adjustments later on. In a word, monetary policy is not well equipped for asset prices bust and demand squeeze typical for recession.

The new heterodox model is an epilogue of the repercussions of the orthodox one. New people create new mindset. The new mindset assumes that mistakes of policy makers from the past must be corrected. Also, the new mindset must respect prevailing geopolitical and regulatory trends. Current Serbia's economic model is impotent and unsustainable. This model was based on services, consumption, import, and credits. The new model requires new set of priorities: real economy, investments, export and savings.

As far as the economic profession is concerned, it is still valid that democracy and market economy are not incompatible. All national economies compete in global context in order to develop business friendly environment. Productivity of national economy arises as the consequence of combined influence of domestic companies and foreign investors. Productivity of domestic companies is fundamental for competitiveness since the competitive domestic business creates new jobs, generates satisfying returns on investments, increases purchase power of domestic currency and augments wealth of the nation. In that context, private and public sectors have different but complementary roles. Domestic business elite cannot be substituted with foreign technocrats.

Now the crucial question is how to avoid deadly interaction of large cost of capital and huge inflation pressure on real economy. Experience from prosperous economies is the blueprint for the new heterodox model. Unfortunately, today, majority of economies from the Western hemisphere does not belong to that group. The prosperous economies matched investments in tradable sectors with comparative advantages through industrial policies. Consequently, besides the invisible hand (so-called "Great Moderation") of the market, the visible hand of the state is also necessary. State plays primarily regulatory role. Also, with active investment policy state plays the automatic stabilizer role.

Without industrial policies and adjustment of broad policies to them, growth based primarily on privatization proceeds and expansion of services will stay anemic and unsustainable due to jobless recovery effect. For quick completion of transition and catching up to the EU Serbia has to change orthodox model with heterodox one. In order to eliminate jobless recovery effect, heterodox model has to be based on three pillars. The primary pillar refers to industrial policies. Industrial policies must be focused on the real economy, both in private and public sector. Regional and population policy follow. Finally, the third

pillar represents broad policies (monetary, financial, and fiscal). In developing world broad policies are not concerned as wheels of prosperity but as the "oil" which lubricates the expansion of output of tradable goods and renders the motion of tradable sectors, as a principal wheel of prosperity, more smoothly and easily. Automatic stabilizers referring to broad policies are correctors of possible imbalances because the ultimate tenets in the new context must remain the same, low and stable inflation and output gap. In order to achieve that, broad policies must have additional tenets.[9] The main purpose is to decide which instruments to allocate to which tenet, between monetary, fiscal and financial policies.

Why industrial policies are so important in the new mindset? In the conditions of recession, radical reforms in settings with appreciated currency and high cost of capital cannot be based on budget cuts and flexible labor market because these measures lead to further deterioration of activity level. Thus, the steps to be undertaken should take the following order. First, the overall level of economic activity is to be increased *via* industrial policies. Impotent economy with relatively high debt should firstly take into account investment with anti import tenets, and after that export ones. Generally, investments in tradable sector should increase output and productivity.

Standing between comparative advantage and possible competitive advantage built on innovation momentum, Serbia has no choice. Namely, policy makers primarily have to take into account the current level of economic development. With 18% of the EU27 GDP pc radical competitive advantage improvement based on innovation in new technologies and investment in infant industries is not feasible. Serbia has to found its economic growth on the strengths it already possesses, to boost investments and energize activities in the industries where comparative advantage already exists. The first precondition in the case of Serbia comes down to identifying sectors of the economy where comparative advantages exist. The list of priorities includes: (1) energy sector, (2) agriculture, (3) food processing, (4) telecommunications, (5) infrastructure and logistics, and (6) tourism.

Different industries offer different wealth prospects. On the low level of economic development, as in the case of Serbia, wealth prospects primarily depend on comparative advantage in terms of massive resource deposits, cheap factor prices, position rent, etc. Resource driven development is a logical choice. On the other side, industrial policy is almost always directed towards industries with capacity to produce tradable goods. Hence, industrial policy tends to centralize interventions on the country level.[10]

The notion of clusters offers similar but alternative view. The concept of clusters rests on a broader and more dynamic view of competition based primarily on competitive advantage. The source of competitive advantage is high perceived value as a superior difference between value created and cost of production incurred. In accordance with the notion of competitive advantage the effects of the cluster policies are evaluated based on productivity growth.[11]In this sense, clusters refer to interconnected companies, suppliers, service providers and firms in supporting industries as well as broader institutions such as universities, scientific institutes, trade and export organizations, etc.

Contrary to the classical industrial policy approach, cluster provides foreign firms participation since they contribute to a large extent to positive externalities and boost local investment and employment. Today, high perceived value as mark for uniqueness is hard to be found among countries like Serbia. Hence, strengths are to be found in unique connections among different participants in the value chain, both domestic, as well as from the near environment (CEFTA, for example). Serbia has many good companies and institutions, which are dominant exporters around which clusters could be made.[12]

Heterodox policy model needs some changes in terms of so-called "lubricators", first of all monetary policy. In the current setting the ultimate tenets of monetary

9 Blanchard, O., Dell' Ariccia, G., Mauro, P. (2010) "Rethinking Macroeconomic Policy", *IMF Staff Position Note, SPN/10/03*, 12 February 2010

10 Porter, M. (2000): "Location, Competition, and Economic Development: Local Clusters in a Global Economy, *Economic Development Quarterly 14*, pp. 15-34

11 Porter, M. (2011): *Competition, Competitive advantage and Clusters,* Oxford University Press, pp. 173-192

12 Tarkett in floor coverings, Imlek in dairy, MK Commerc, Soya Protein, Victoria Group in food processing, Pionir in confectionery, Fiat in automotive, Metalac in pots and pans, Bell packaging in can production, Belgrade Medical Center, Galenika and Institut Vinca in life science, etc.

policy should not be only CPI control but also sustainable employment. It means widening the policy tenets for the central bank from price stability to other asset prices (including currency) stability, structure of the output (in terms of real economy and private sector expansion), and sustainable growth rate, etc.[13]

Extension of the list of tenets requires monetary model change, a switch from inflation targeting to currency board monetary model. Currency board model with automatic adjustments ensures stable and realistic exchange rate correlated with the level of competitiveness. In the new mindset, the exchange rate is not a tenet but the instrument. Last but not least, if Serbia chooses the monetary policy of a currency board system, it will adopt the monetary policy of the euro zone.

Industrial policies: the road to competitiveness improvement

The purpose of industrial policy is to influence industry development, and consequently, national industry portfolio.[14] Unlike broad macroeconomic policies that affect the whole economy, industrial policies are sector specific. Namely, industrial policies are directed towards expansion of industries with tradable goods by promoting certain sectors for import substitution and/or subsidizing certain export-oriented sectors.

The crucial role of well formulated industrial policy was promoted in early works of development economics.[15] Yet, the rise and flourish of the free-market fundamentalism in the 1970s objected to any form of interventionism with much criticism, while glorifying in the same time the invisible hand of the market in conducting structural change.[16] That was prevailing mantra until the 2008 global economic crisis broke out. The undesirable scar that invisible hand left behind on the face of the economies (even the developed ones) around the world fostered endogenous growth advocates to stand for the role of state in correcting and dealing with negative externalities of market failures.[17]

In the world after the 2008 crisis, industrial policies are aimed at few important goals: to reduce unemployment and stipulate growth, to strengthen the share of real economy *vis-à-vis* financial sector, and to signal the governments' preparedness to cope with structural instabilities.

The only thing worse than the absence of any industrial policy when required for further growth is wrong policy choices or government failure in implementing good policy choices. The reasons for government failures range from lack of information and capabilities to conflict of interest due to symbiosis of political and business elite. The fact that industrial policies are supposed to correct invisible hand's mistakes does not mean that the allocation of resources provided for that purpose should not be market efficient.

Evidence indicates that vast majority of the most developed countries, but especially newly industrialized countries (BRICS and Asian tigers) were conducting industrial policies that selectively fostered activity in the real economy as well as technology transfer.[18]Interestingly, at the bottom of the first wave of the 2008 crisis, economic models of the newly industrialized countries served as universal blueprint for sustainable solution to the crisis. Moreover, most developed economies in the world (U.S, Germany, Japan, and France) reconfigured their after-crisis economic models in an effort to respond to apparently effectual industrial policies of China as the leader of the newly industrial countries. Since financial burden from previous period is tremendous, this policy is not fully effective.

Since the organizations that regulate international trade policy (like WTO) find certain industrial policies rather harmful in terms of protectionism and competition, majority of industrial policies today focuses on building the economy's strength *via* local clusters and value chain optimization.[19]

13 Blanchard, O., Dell' Ariccia, G., Mauro, P. (2010) "Rethinking Macroeconomic Policy", *IMF Staff Position Note, SPN/10/03*, 12 February 2010

14 Graham, O. (1994) *Losing Time: The Industrial Policy Debate*, Harvard University Press, pp. 3, 27

15 See more in Hirchman, A. (1958) *The Strategy of Economic Development*. New Haven, Conn, Yale University Press

16 See more in Blanchard, O. J. (1987) *The New Palgrave: A Dictionary of Economics*, v. 3, pp. 634-36

17 Robert, L., (1988)"On the Mechanics of Economic Development". *Journal of Monetary Economics 22 (1),* pp 3-42

18 Robert, W. (1992). *Governing the market*. Princeton: Princeton University Press

19 Porter, M. (2000): "Location, Competition, and Economic Development: Local Clusters in a Global Economy, *Economic Development Quarterly 14*, pages 15-34

One of the hottest issues considering industrial policies refer to weather industrial policies should be comparative advantage defying or comparative advantage conforming.[20] In other words, this question stands for the choice between infant industry protection and industries with current comparative advantage. The advocates of the first standpoint argue that comparative advantage, no matter how important, represents a base for economic survival of the country while economic development is possible only through technological development and innovations, and thus defiance of comparative advantage. In short, poor countries cannot become richer unless through the use and development of technologies.[21]The second point of view is much more grounded into current reality. The key is to make use of the country's current comparative advantage. It is important to base the growth on the production factors that the country possesses at the particular moment, not the factors that the country might have one day.[22] Previous is particularly important in the time when crisis threatens to further erode countries' existing economic position. By neglecting or distorting market signals and moving resources from sectors with comparative advantage to those without it, government policies redirect energy from productive entrepreneurship towards rent seeking which only contributes to corrupted institutions and slows down investments.

Sound industrial policy has to be based on real drivers of export and economic growth on the first place. The second important thing is tailoring that policy and its implementation in closest collaboration with private sector. Only by taking such approach can policy makers increase their odds of effective intervention without being too costly for already poor public purse.

Regardless previous considerations, we can conclude that competitiveness has two main connotations. First, it determines country's global market share, as it represents the attractiveness of a location for investments (institutions, legal and financial framework etc.), and capacity of local companies to compete regionally or globally. Second, it determines domestic market growth. Namely, economic growth is *inter alia* a consequence of creation and expansion of a domestic market. Only companies that can offer products and services in an efficient manner with attractive prices can create new jobs and increase productivity.

When it comes to industrial policies "one-size-fits-all" approach has no appliance. In Serbia, before establishing set of policy measures to boost growth and employment various factors should be taken into consideration. Serbia is a lower middle-income country with industry share in of less than 20% and 23% unemployment rate. The notion that GDP pc has been taken first place by unemployment rate among economic development indicators is already widespread. Furthermore, evidence proves that practically entire new job creation in the period before the 2008 crisis came from the service sectors. That services are critical for job creation demonstrates the fact that in the 1995-2005 period 85% of new jobs in middle-income countries with industry share of around half of GDP came from service sectors.[23] In case of Serbia increasing share of service sectors (both public and private) in GDP was probably a source of employment increase after 2000. Yet, while taking care of services and employment after 2000, policy makers in Serbia forgot about fundamentals. It is hard to base the growth on services in a country that imports energy and food to such substantial extent. Furthermore, it is paradoxical that the same country enjoys abundance of resources for food and energy production.

Thus, the overarching priority for policy makers should be to pull their weight in the tradable sectors over the coming period. When the base is solid, investment in the labor-intensive service sector can be accelerated. Investments in innovative emerging sectors in a country like Serbia can make a little difference. International competitiveness can hardly be attained, and sectors are also too small to boost employment and growth. What is important is to raise activity and performance in innovative sectors whose

20 See more in Lin, J., Chang, H.J. (2009) " DPR Debate: Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it?" *Development Policy Review*, 2009, 27 (5)

21 Chang, H.J. (2002) *Kicking Away the Ladder: Development Strategy in Historical Perspective,* Anthem Press

22 Lin, J. (2009) *Economic Development and Transition: Thought, Strategy, and Viability,* Cambridge University Press

23 McKinsey MGI (2010): *How to compete and grow: A sector guide to policy*, McKinsey Global Institute

technology and products represent enablers for other sectors by improving their business processes and productivity.

The spectrum of possible policies ranges from so-called "hands-off" approach limited to procreating necessary environment in terms of market and legal institutions to approach which assumes that the state is a key role participant in a sector. In reality governments took one or more of the following measures in order to promote national priorities. First, through establishing state-owned or subsidized companies, funding of existing state owned businesses, and providing restructuring of existing private businesses. Second, by establishing development seed and the flow diagram for exit from the crisis. Third, by building enablers and expanding hard and soft infrastructure for research and development. Fourth, through protection from foreign competition, financial provisions, and increasing of public demand. Fifth, by setting the regulatory environment.

In many instances, we emphasized that the investment priorities in Serbia should be sectors in which comparative advantages exist. Each sector requires different approach by a bearer of an industrial policy. In resource-intensive industries like agriculture or energy, governments have demonstrated support through competitive pricing, anti damping regulation, trade barriers, financial support including subsidizing and public investments. In technology intensive industries like telecommunications, the aim of support is to ensure high quality regulation services. That is why it is necessary to find the right balance between protectionism and open competition since large economies of scale represent the highest entry barrier in these industries and thus key success factor, but the lack of competition leads to inefficiency, decreased quality, and corruption. In manufacturing the success of the companies on both domestic and international market depends on their ability to deliver high quality product with competitive costs. Measures in such sectors include supportive trade policies and long term subsidies. Evidence speaks to the contrary. These policy measures require balanced approach. Namely, too much protection and support leads to significant costs without productivity improvement.

It is not possible to foretell the outcome in case of implementing industrial policies in Serbia, but it is possible to observe and learn from successful examples from the practice. One of the most informative examples is the case of South Korea. In 1968 when South Korea started with industrial policy implementation its per capita income was a mere 5.5% of per capita income in the US. Even in 1983 when *Samsung* started designing semiconductors after being importer for a long period, the per capita income in South Korea was 14% of that in the US. Taking more developed EU countries from the same period as an example, in the case of Finland in 1960 when the government decided to support by various measures growth and development of the sector of electronics, the per capita income was 41% of per capita income in the US, the frontier country in electronics. In the case of Japan, who started with broad reindustrialization right after the WWII, in the same 1960 year, per capita income was 19% of that in the US. Still, the most dramatic example is that of China. China had become the largest producer of steel in the world by 2000, at a time when its per capita income was only about 2.5% of the US level.[24] Previous data undoubtedly depicts the necessity for industrial policy, especially in the time of crisis.

Roadmap for exit from the crisis

Instead of summarizing what have been wrong in Serbia in conducting economic policy hitherto we will try to offer a draft for feasible solution. The importance of such a roadmap is amplified by the second crisis wave that is approaching. Solution to Serbia's twofold crisis (geopolitical + economic) is not simple. Actually, the crisis is a consequence of the flaws and mistakes inherited from the precedent period of geopolitical transition and serious problems emerged during the 2008 global economic crisis. Such kind of crisis cannot be solved with "one-hit" approach. Sustainable solution for structural imbalances requires step-by-step approach. The first step in this approach is identification of the seed of the problem. It is the reason why we decided to develop the flow diagram, whose start node must eliminate output gap as a seed of the current crisis.

24 Lin, J., Chang, H.J. (2009) " DPR Debate: Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it?" *Development Policy Review*, 2009, 27 (5)

The new model has to be based on three types of policies positioned in inverse order, compared to the orthodox approach .The primary policy refers to industrial policy. Focus must be shifted from services toward real economy, in private and public sector both. Industrial policies are sector based (energy, agriculture, food processing, infrastructure, telecommunication, logistic, tourism, etc). The second type of policy represents broad policies (monetary and fiscal). Competitiveness policy and regional policy as support policies follow. Development strategy is conceptual base for all previously mentioned policies (see Figure 3).

Unlike broad macroeconomic policies that affect whole economy, industrial policies are sector specific. Industrial policies are directed towards expansion of output in tradable sectors by promoting for import substitution and/or subsidizing export.

For example, in energy sector, the first measure could be measure competitive pricing. With EUR 57 per MWh compared to the average EUR 190 per MWh in EU27, investing in energy in Serbia is not attractive.[25] Competitive pricing will attract investments in the existing capacities based on fossil fuels and water, as well as in the renewable energy. Investment in new energy and efficiency technologies, or NEET, is formidable counter cyclical stimulus. Consequently, the role of the government in fostering activity in the energy sector could come down to regulation of adequate feed-in tariffs. Even by taking only regulatory role, the government could foster considerable investment in this area. We are talking about immense investments with high investment multiplier. Potential for investments in renewable energy in Serbia is quite significant.[26] Furthermore, global demand for energy is rising every year, so the expansion in the energy sector could play both its export and anti import role. Following measures include investment strategy (balance between fossil fuels and renewable energy, alternative models of financing and role of the state).

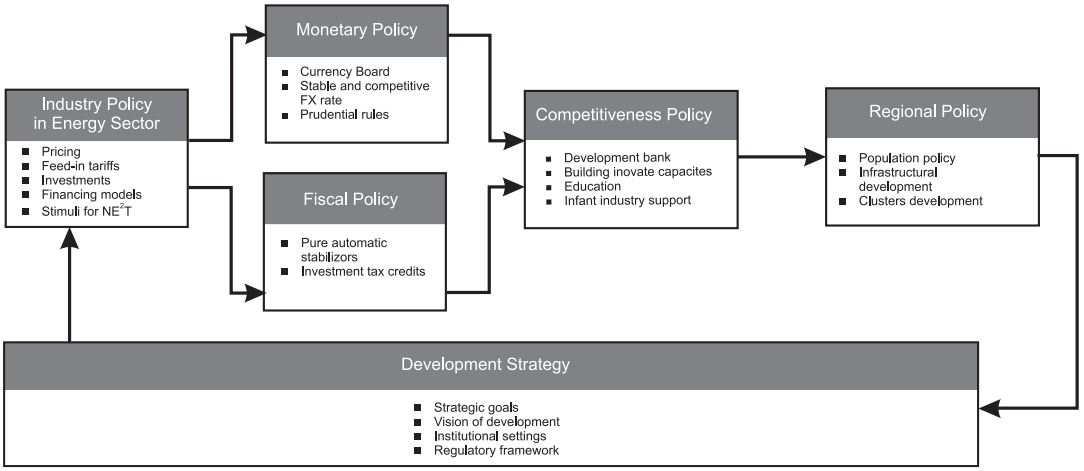
Other measures in energy sector could include proactive role of the government in sector development. It assumes investment in state owned enterprises, subsidies for privately owned enterprises, and promotion of public private partnership, or PPP, for emerging projects. Furthermore, the supportive role refers to constructive activities of business incubators, technology parks, science networks etc. Although making plans concerning previous governmental activities requires government with talented and skilled people with vision, financing plan poses no easier challenge. Internal reserves for financing attractive investment projects almost always exist in each national economy. For example savings in Serbia are currently approaching EUR 7.6 billion (one fourth of GDP).

The effects of such industrial policy on the economy are considerable. First, energy dependency diminishes and exports increases thus putting favorable impact on

25 European Commission Eurostat, available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_price_statistics

26 According to EBRD, the potential of wind is at the level that provides catering full yearly needs of 400 thousands households. The yearly solar irradiation in Serbia is 40% higher than the European average, although costs of installing capacities for solar energy are substantial. Hydro potential has also not been fully used yet. Available at available at http://www.ebrdrenewables.com /sites/renew/default.aspx

Figure 3: Flow diagram for exit strategy



current account balance. Second, although it represents capital-intensive industry, the impact on employment is also significant.[27] The noticeable demand for professionals like engineers, geophysicists, programmers, electricians, designers etc. could lessen the brain drain from the country and preserving human capital base.

Moreover, for competitive tradable sector Serbia wants dynamic financial system constantly promoting discipline but without excess risk and the outrageous behavior against real economy. That will be hard to achieve, but it will be worthwhile.

The root cause of the problem is inadequate monetary model. Instead of price stability reduced to CPI, ultimate tenet of the broad policies at this stage of development must be sustainable employment. Also, instead of being a tenet, FX rate must be an instrument. Previous assumes switch from inflation targeting to "currency board". The new monetary model must be currency board with automatic adjustments that ensures stable and realistic exchange rate. Implementation of currency board means not only the choice of FX rate that is competitive, but also a balanced budget and managing the FX rate determinants. Real FX rate is a barrier to entry and stimulus for export. It is opposite to current monetary model where drastically appreciated currency is a stimulus for import and barrier for export. Also, stable FX rate is a prerequisite for investments. In currency board monetary model real and stable FX rate plays the role automatic stabilizer. Its main function is to keep the output gap low and stable.

As far as financial regulation is concerned the main targets are fiscal discipline and lowering cost of capital. Due to long term structural imbalances tight budget discipline is not possible in the short to medium run. Still, reference point is around 3% budget deficit.

In the financial sector, interest rates should be lower and acceptable for the real sector financing. So far, bank's potential was not development oriented because majority of transactions fall under retail line instead of corporate one. That way, banks have been financing import consumption. On the other side cost of debt to the corporate sector is unacceptably high. The average annual interest rate for corporate sector is unsustainably high. Monetary policy measures are supposed to make the return on repo papers less attractive than investments in real economy. Also, financing of the budget deficit by issuing treasury bonds should be avoided. Such policy makes debt financing for real economy harder for two reasons. First, capital assigned to real economy is limited and scarce. Second, as any scarce resource it becomes expensive. Lowering the cost of capital could be achieved through risk-assets reclassification on bank's balance sheet and by reducing obligatory reserves. With lower cost of capital, economic activity accelerates and new jobs and standard rising commence. On the higher level of economic activity and living standard it is possible to claim competitive pricing. It is especially important in sectors where Serbia has comparative advantage, like energy, agriculture, food processing etc.

The last crisis shows that the space for improvement of discretionary fiscal measures (or automatic stabilizers) exists. There is a difference between pure automatic stabilizers and unconventional automatic stabilizers.

Pure automatic stabilizers are those that imply pro-cyclical decrease in transfers or increase in taxes. In contrast, other group of stabilizers refers to the rules that allow some transfers to vary based on pre-specified triggers connected to the stage of economic cycle (boom or bust). Pure automatic stabilizers come from the combination of rigid government expenditures with elasticity in revenues with respect to output, and they range from social insurance programs to progressive income taxes. Unconventional group of automatic stabilizers is more promising in the time of crisis. They can be applied to tax or expenditure items with significant multipliers. Concretely, on the tax side, we can think of tax measures affecting the businesses such as cyclical investment-tax credit. On the expenditure side there are temporary transfers targeted to liquidity constrained businesses. Issuance of these sorts of taxes and transfers would be triggered by crossing of the threshold connected to leading macro indicators (GDP, for example).

Conceptual platform for road map is new development strategy including strategic goals, vision of economic and social development, institutional settings, and regulatory framework.

27 Building of the wind-park requires 15 man-years (1 man-year equals 2000 working hours) for 1MWh capacity, while construction of a solar park requires 38 man-years for 1MWh. Operation and maintenance also require new jobs.

Conclusion

Serbia would be among the hardest hit by the transition. There are, at least, two crucial reasons. First, the geopolitical transition has not been completed yet. Second, the main impact of transitional recession has been unprecedented drop in the output.

Structural imbalances emerged in the past period were related to the interplay of previous factors. Macroeconomic management would be the critical issue going forward. As a consequence, the orthodox model of economic policies should be under revision. For economy with significant output gap macroeconomic stability in terms of CPI control is necessary but not sufficient condition for sustainable development, especially when vulnerability indicators are too high. In transitional recession there is illusionary sustainability because short term imbalances are regularly solved using limited sources, from privatization proceeds and sovereign debt issuance.

Economic transition in Serbia is proceeding under the financial support and mentorship of the IMF. Its assistance had been accompanied by rapid privatization and pro-cyclical conditionality in terms of reductions of budget and tightening of monetary policy. Raising interest rates to counter the rising prices of tradable goods influences high cost of capital especially in interest sensitive non-traded sectors, without providing sustainable price stability.

Output (and real economy) was bellow the radar of policy makers and, consequently, the main tenet was inflation control through monetary tools. Such policies are not only inefficient but also counterproductive, since one of the purposes of the IMF assistance should be macroeconomic stability, which in Serbia's case means elimination of output gap. More interestingly, these policies were just the opposite of the Keynesian policies advised by the developed economies in the last crisis. To remember, adequate policies in recession must be expansionary, not restrictive but in normal time the purpose of economic policies is introduction of automatic stabilizers for aggregate demand and implementation of discretionary policy frameworks to reduce instability. Serbia has greater external dependence and vulnerability to external cycles and, consequently, much weaker capacity to undertake counter-cyclical policies. Moreover, insufficient attention has been paid to strengthening the built-in stabilizers (competitive and stable FX rate, for example), in some cases there have been built-in destabilizers (fluctuating FX rate, for example).

What happened as the consequence of these policies was predictable and predicted. In impotent economy in terms of output which is additionally slowed down after the 2008 crisis banks face the prospect of high default rates on existing nonperforming loans and they are not disposed to continue the lending. An episode of excessive lending before 2008 may be followed by an episode of credit crunch this year. Serbia is desperately in need to undertake a variety of counter-cyclical measures in real economy including the Development Bank (credit guaranties to infant industries, for example) infrastructure development, investments in public sector with tradable goods, etc.

In the last year the NBS had shown some wisdom in managing currency risk by insisting that companies did not have excessive exposure to the FX risk. It is good, but it is too late because the NBS is actually disarmed against this issue because great majority of credits are euro denominated. More broadly, as the economy slowed down confidence is eroding and risk premiums increase substantially. To retain foreign capital, the NBS must keep interest rates on a high level with adverse effects on real economy. In the emerging heterodox model of economic policies currency board plays a role of crucial automatic stabilizer.

Invisible hand of the market is rather philosophy than the structure. Economy which is impotent and out of tune needs regulation based on rules, not based on principles. Moreover, in times of recession no economist has ever said to let the markets take care of themselves. Even the free market fundamentalists within the market came running to the government for help. Through industrial policies policy makers in Serbia must restore the balance between the market and the government.

A return to common sense and rational behavior in accordance with the true diagnosis of the seed of the problem, prevailing trends in regulatory framework and realistic vision for the future will help Serbia to return to itself and to reposition successfully. In the new mindset

economics should not be a gizmo science any more, a toy in the hands of politicians, but a science in a full capacity with clear paradigm, efficient methods, and programmable results of policy choices. Industrial policies can trigger positive expectations and help bring the economy back to its potentials.

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PERFORMANCE EVALUATION OF REAL SECTOR IN SERBIA*

Ocena performansi realnog sektora u Republici Srbiji

Abstract

Financial performance failure in Republic of Serbia real economy sector started at the very beginning of nineties in the last century. At that time, this sector started to go behind in competing with numerous other countries, whose economies were, just year or two earlier, in many aspects below our achievements. Even greater disaster is that real sector competitiveness continued to diminish dramatically during the first years of transition and that trend has not been stopped even after conclusion of ownership transformation in it. In the meantime, our economy did not manage to avoid big economic crisis whose implications in this region were revealed even more dramatically, having in mind that entire Republic of Serbia economy had already been overwhelmed by crisis during the previous decades and that in the last few years there have not been any significant movements in providing healthy business environment.
The aim of this paper is to, with carefully chosen set of indicators, make research of causes and consequences of real sector competitiveness decrease in Republic of Serbia. Within our paper two aspects of this issue will be particularly investigated. First, our attention will be directed to the research of the present situation and trends of real sector financial-structural position, with special emphasis on analysis of liquidity, indebtedness, as well as assets and equity management efficiency. And secondly, our research will include analysis of profitability status and movements, as well as long-term financial stability position of real sector. Both these aspects of the research will serve us as ground for comprehending present situation , identifying causes, recognizing development path and removing financial imbalance, in order to provide necessary assumptions for recovery and strengthening of real sector competitiveness in the following period.

Key words: *competitiveness, real sector, performance measuring, liquidity, indebtedness, solvency, efficiency, profitability.*

Sažetak

Posrnuće finansijskih performansi realnog sektora privrede RS otpočelo je još na samom startu 90-tih godina prethodnog veka. Naime, već tada ovaj sektor počinje da zaostaje u nadmetanju sa mnogim drugim zemljama čije su privrede do samo pre godinu ili dve bile u mnogo čemu ispod ovdašnjih ostvarenja. Da nevolja bude veća, konkurentnost realnog sektora nastavlja da drastično opada sa prvim godinama tranzicije i taj trend nije zaustavljen ni posle okončanja vlasničke transformacije unutar ovog sektora. U međuvremenu našu privredu nije zaobišla velika ekonomska kriza čije su se posledice na ovom području još drastičnije ispoljile imajući u vidu da se celokupna privreda RS već nalazila u višedecenijskoj krizi i da godinama unazad nije bilo nekih značajnih pomaka u obezbeđivanju zdravog privrednog ambijenta.
Ovaj rad ima za cilj da pomoću pažljivo odabranog seta indikatora istraži uzroke i finansijske posledice pada konkurentnosti realnog sektora u RS u proteklom periodu. Unutar toga posebno će biti istražena dva aspekta ovog problema. Prvo, naša pažnja biće posvećena istraživanju stanja i kretanja finansijsko-strukturnog položaja realnog sektora sa posebnim osvrtom na analizu položaja likvidnosti, zaduženosti i efikasnosti upravljanja imovinom i kapitalom. I, drugo, naše istraživanje obuhvatiće analizu stanja i kretanja profitabilnosti i dugoročne finansijske stabilnosti realnog sektora. Oba navedena aspekta istraživanja treba da nam posluže kao osnova za sagledavanje trenutnog stanja, dijagnostifikovanje uzroka, prepoznavanje puteva razvoja i otklanjanja finansijske neravnoteže kako bi se obezbedile potrebne pretpostavke za ozdravljenje i jačanje konkurentnosti realnog sektora u narednom periodu.

Ključne reči: *konkurentnost, realni sektor, merenje performansi, likvidnost, zaduženost, solventnost, efikasnost i profitabilnost.*

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Introduction

Serbian economy faced global financial and economic crisis completely unprepared to cope with problems following this crisis. Exhausted by wars, economic sanctions and longtime passivity in transition process, economic activity has, to put it mildly, stagnated in the last four years. Problems regarding economic activity decrease, general illiquidity, growth of indebtedness, technical and technological outdatedness and increasing investment risk have deepened further.

Longtime negligence of real sector in favour of financial sector was not sustainable on long terms. Chronic lack of capital in the real sector was useful to financiers who, dictating crediting terms, suffocated further the companies already in troubles. Additional financial expenses deepened financial imbalance of companies operating in real sector. On the other hand, financial sector directed its activity towards safer and more profitable transactions on financial market, neglecting the needs of real sector regarding reasonable financing terms. We might say that there is an unnatural dichotomy of financial and real sector.

Creating the strategy of increasing real sector competitiveness is not possible without current state evaluation. Understanding the existing performances should indicate the seriousness of the issue and point us to the causes of financial disturbances. That could be a sound ground for identifying potential directions towards existing-performance improvement. Finally, by providing the overview of real-sector performance state, we will create the conditions for understanding the effects of adopted strategy regarding real sector competitiveness improvement.

For the purpose of this paper, we confined ourselves to key sectors dealing with manufacturing goods and generating value added. Without intention to confine the real sector only to the industries to be included in this analysis, we decided, to this paper's ends, to include the following industries in the real sector, according to the official classification: agriculture, forestry and fishing, mining, processing industry, construction and supply of electricity, gas and steam. These sectors have included, on average, 28,000 companies and have employed a little less than 600,000 employees. This, of course, does not mean that some other sectors like telecommunications, transport and so on, are less important. For now, we will adjourn their analysis. The choice of such a limited real sector is caused by the opinion that structural disorders are the most serious in it. Furthermore, without the efficiency of these sectors, we undoubtedly cannot talk about national-economy sustainable development.

Performance analysis is based on financial statements of companies belonging to the real sector.[1] Financial statements refer to a five-year period (2006-2010). However, we will reveal some results only for the last four years, as some of the indicators and statements can be calculated only for this period. In this paper, we will present abridged and a little different structural statements compared to their official form. By this we mean balance sheet and income statement, while we intend to create on our own the other reports in this paper, like statement of cash flow and statement of net working capital. Based on this information and with the comprehension of liquidity, solvency, efficiency and profitability analysis, we will try to evaluate real sector performances.

Analysis framework

The basic aim of the following article is to research real-sector financial performance movement in the sequence of four business years, from 2007 to 2010. The basic reason to choose this period comes from our intention to use 2007 as the destination year for performance evaluation, having in mind that this was the business year in which the usual business activity of our economy was manifested. The following three years include the period when consequences of big economic crisis were manifested with varying intensity in domestic economy performances. We recognised a professional challenge in measuring and analysing the movement of real-sector financial performances of this period and we are determined to approach it hereinafter.

In order to present better the part of economy that we named „real sector" for the purpose of this article, in

1 Source: Agency for Business Registers of the Republic of Serbia

Table 1 we give some information that at first seemed the most interesting to us.[2] As you may notice, two types of data are given in this Table. First, those are absolute data ragarding the movement in number of companies and employees, operating assets value, net capital, cumulated losses and total liabilities for real sector as a whole. Secondly, those are data regarding relative share of some industries in total real-sector achievements. Accordingly, the displayed Table provides (before we start a deeper analysis) comprehension of real-sector complexity as well as of relative position of some industries in it.

So, based on displayed information one can see that in each year the focus of our attention will be about 28,000 companies grouped into five industries that we chose considering the fact that most of goods are produced in them, i.e. they generate most of material values. As you may notice, most of analysed companies belong to processing industry (over 60%), then come construction and agriculture, while the number of companies belonging to mining and energetics is considerably smaller. Within this context we can state that total number of companies belonging to real sector increased until 2010 when it dropped. Hence our interest to investigate hereinafter the source of this decrease, whether it may be the consequences of crisis or something else.

The next data that we pay attention to is the number of employees. At the level of real sector in the analysed period, the decrease of employment was by over 25%, or 105,000 employees, while this data was generated from the fact that almost 47,000 employees a year lost their jobs from 2008 to 2010. This point itself is very important and we hope that the following research will reveal real

2 All financial data in this article are given in 000 dinars.

Table 1: Real sector structure

	Agriculture	Mining	Processing industry	Supply of electricity	Construction	Real sector
Partipation in number of companies						
2007	14.30	0.98	63.35	0.54	20.83	26,924
2008	13.66	1.01	62.32	0.61	22.39	28,176
2009	13.02	1.09	62.33	0.83	22.73	29,025
2010	12.04	1.09	60.66	1.10	25.13	28,548
Partipation in number of employees						
2007	8.43	6.80	65.02	4.95	14.80	605,408
2008	7.87	6.91	64.39	5.07	15.76	593,318
2009	7.78	7.26	63.60	5.45	15.91	546,900
2010	7.77	6.89	63.31	5.98	16.06	500,364
Partipation in operating assets						
2007	10.33	8.17	47.38	18.43	15.69	3,586,980,636
2008	10.35	7.62	48.65	16.82	16.56	4,063,938,396
2009	10.36	6.64	49.94	16.53	16.54	4,237,677,587
2010	8.67	6.32	44.46	22.09	18.46	5,079,010,357
Partipation in net capital						
2007	12.21	9.33	35.33	30.51	12.62	1,639,051,367
2008	12.57	7.86	36.88	29.25	13.45	1,663,982,793
2009	12.94	4.33	38.29	30.32	14.12	1,613,050,750
2010	10.25	4.61	31.30	40.35	13.50	1,864,714,507
Partipation in cumulated losses						
2007	5.69	9.20	54.49	24.40	6.22	723,370,997
2008	6.36	9.85	53.66	23.52	6.61	850,150,374
2009	7.70	13.15	54.06	17.90	7.19	989,916,414
2010	6.52	10.93	52.24	20.38	9.93	1,174,571,625
Partipation in total liabilities						
2007	8.90	7.11	58.36	7.08	18.55	1,900,409,314
2008	9.01	7.35	57.04	7.40	19.20	2,320,200,518
2009	8.86	8.02	57.47	7.33	18.31	2,561,091,886
2010	7.82	7.29	52.26	10.98	21.65	3,149,804,079

causes that brought to this, by many criteria, warrying decrease of employment. Considering the distribution of employees by industries, it is very much similar to previously mentioned distribution. Instead of repeating this information, it is more useful to stress that almost 80% of employees in real sector is recruited to do the jobs in processing industry and construction, while the rest of them are equally distributed among agriculture, mining and energetics.

If we, for a change, focus on the next set of displayed information that are financial, we may notice that relations among the industries considerably change. So, speaking of operating assets, it is most present in processing industry, then in energetics, construction and agriculture, while the smallest investments in operating assets are in mining. In the analysed period, total investments in real-sector operating assets increased by more than 42% and the following research will show if this result is satisfactory. Investments in operating assets referring to companies of mining industry decreased steadily, relatively speaking, while the share of energetics and construction increased. Analysed individually, the greatest relative decrease of investments in operating assets is present in processing industry and in the last year in sequence.

Concerning net capital of the real sector, it increased by only 35% in the analysed period. If perceived by selected industries, the situation is very similar to the distribution above mentioned regarding the share in total

Table 2: Abridget balance sheet

	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
A. Fixed Assets	**1,936,578,716**	**2,237,761,727**	**2,454,690,211**	**2,521,157,579**	**3,043,091,089**
I Subscribed capital unpaid	10,509,967	9,435,506	39,126,125	25,845,276	26,097,443
II Goodwill	827,533	929,719	1,481,739	1,587,146	2,284,974
III Intangible assets	26,662,952	33,267,371	55,213,976	51,843,598	72,484,983
IV Property, plant and equipment	1,713,818,952	2,002,695,626	2,152,872,924	2,202,920,600	2,365,654,442
V Long-term investments	184,759,312	191,433,505	205,995,447	238,960,959	576,569,247
B. Current assets	**1,172,069,662**	**1,346,908,611**	**1,598,610,100**	**1,704,639,048**	**2,017,428,332**
I Inventories	433,994,533	520,241,037	601,226,718	602,373,604	709,009,343
II Acount receivables	566,175,223	602,079,771	737,318,747	771,596,607	914,644,028
III Short-term investments	64,350,524	87,189,507	105,115,382	138,927,214	163,599,394
IV Cash and cash equivalents	67,701,146	87,072,218	81,574,605	103,160,077	113,251,778
C. Value Added Tax and Accruals	**33,209,335**	**41,678,489**	**73,374,648**	**88,581,546**	**116,923,789**
D. Deferred tax assets	**7,633,922**	**10,957,887**	**10,638,085**	**11,880,960**	**18,490,936**
E. Total assets	**3,109,643,399**	**3,586,980,636**	**4,063,938,396**	**4,237,677,587**	**5,079,010,357**
F. Loss over capital	**167,145,050**	**190,446,177**	**231,499,782**	**304,744,018**	**381,922,846**
G. Total assets and loss over capital	**3,276,788,449**	**3,777,426,813**	**4,295,438,178**	**4,542,421,605**	**5,460,933,203**

	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
A. Capital	**1,558,252,730**	**1,838,933,050**	**1,934,608,700**	**1,943,640,044**	**2,272,734,796**
I Nominal paid in capital	1,455,185,284	1,489,349,750	1,558,372,480	1,569,577,636	1,933,590,745
II Subscribed capital unpaid	10,509,967	9,435,506	39,126,125	25,845,276	26,097,443
III Reserves	58,890,706	65,225,250	66,499,165	67,601,229	68,949,872
IV Revaluation reserves	127,472,840	409,922,125	448,154,522	467,692,649	472,169,006
V Unrealized gains on securities	0	0	3,294,515	4,895,313	3,387,376
VI Unrealized losses on securities	0	0	3,959,929	6,777,340	5,236,788
VII Retained earnings	308,716,823	398,870,399	444,160,331	504,289,030	569,935,558
VIII Loss	401,604,645	532,924,820	618,650,592	685,172,396	792,648,779
X Stock repurchases	918,245	945,160	2,387,917	4,311,353	3,509,637
B. Long-term provisions	**19,552,247**	**23,767,400**	**36,989,560**	**50,692,378**	**58,946,574**
C. Long-term liabilities	**486,709,121**	**521,974,454**	**630,843,540**	**748,761,821**	**953,183,862**
D. Short-term financial liabilities	**252,873,120**	**322,438,523**	**462,133,752**	**495,381,494**	**646,719,827**
E. Current operating liabilities	**900,770,799**	**989,555,569**	**1,072,897,600**	**1,124,562,801**	**1,320,630,373**
F. Accrual and deferred income	**40,332,264**	**43,030,387**	**117,336,066**	**141,693,392**	**170,323,443**
G. Deferred tax liabilities	**18,298,168**	**37,727,430**	**40,628,960**	**37,689,675**	**38,394,328**
H. Total capital and liabilities	**3,276,788,449**	**3,777,426,813**	**4,295,438,178**	**4,542,421,605**	**5,460,933,203**

operating assets. Namely, most of capital is concentrated in processing industry, then in energetics, construction and agriculture, while mining has the smallest share in total net capital of the sector. Comparing shares of all the industries in 2010, the greatest improvement is seen in energetics whose share in total net capital of the sector increased by 10% in that year.

Since in income statements of the companies belonging to the above mentioned economic sectors we can see that losses prevail, it is interesting to look into the distribution of force here. First, we should notice that total losses of the real sector from 2007 to 2010 doubled, forecasting more serious troubles. Further on, more than 50% of total losses of the sector were generated by processing industry in all these years. Energetics has its share of more than 20% in these losses, with some fluctuations, then come mining with the average share of more than 10%, while losses are almost equally distributed between agriculture and construction, being at about 6%.

We left total liabilities for the end of the analysis. At the level of this sector, they increased by almost 1.7 times in the analysed years, which tells us about emphasized tendency of indebtedness. Such a conclusion worries us since we have not forgotten that net capital value increased by only 35%. Nevertheless, only thorough financial analysis ahead of us will show to what extent it really endangers real-sector business operations. Here we can add that, of all the selected industries, processing industry decides on borrowing most often, absorbing between 58-52% of total borrowed capital. Considerably smaller relative indebtedness is seen in companies belonging to other industries. Among them, construction stands out, with the share in total borrowed capital threatenning to exceed 22% in the next period.

So, it is obvious that in this research we deal with very heterogeneous companies. However, regardless of previously analysed and many other differences evidently present among the selected industries and their companies, for the purpose of this paper it was necessary to give them all a common denominator. We estimated that choosing the value principle is probably the best solution. Hence we first provided financial statements for each sector, coming from basic financial statements of analysed companies, and only then did we approach to workout of total financial statements of the real sector. In order to use more efficiently the approved space for this article, we continue to give you abridged balance sheets and income statements of the real sector, which will serve as ground for the following analysis (see Tables 2 and 3).

Considering the good practice of financial statement analysis, in the next part of the paper we decided to cover three aspects of the analysis:

- analysis of short-term financial risks,
- analysis of long-term financial risks and
- analysis of profitability.

Now, let us analyse more thouroughly the position of real sector in our economy regarding all previously mentioned parameters.

Table 3: Abridget income statement

Positions	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
A. Operating revenues and expenses					
I Operating revenues	2,105,883,787	2,420,046,896	2,715,610,522	2,466,775,279	2,968,840,894
II Operating expenses	2,072,713,956	2,370,135,681	2,644,668,859	2,404,790,635	2,832,424,307
III Operating income (loss)	**33,096,379**	**49,622,049**	**70,901,558**	**61,927,485**	**136,269,841**
B. Financial revenues and expenses					
I Financial revenues	100,665,887	78,201,727	106,554,650	84,923,928	110,571,360
II Financial expenses	98,638,221	107,099,889	218,731,891	192,309,556	268,791,014
III Net financial revenues (expenses)	**2,027,666**	**(28,898,162)**	**(112,177,241)**	**(107,385,628)**	**(158,219,654)**
C. Net other gains and expenses	**3,561,248**	**(77,808,263)**	**12,385,187**	**(59,104,463)**	**(30,673,463)**
D. Income (loss) before taxes	**38,685,293**	**(57,084,376)**	**(28,890,496)**	**(104,562,606)**	**(52,623,276)**
E. Income taxes	**4,140,213**	**(3,991,297)**	**7,856,545**	**3,459,656**	**2,300,072**
G. Net income (loss) after taxes	**34,545,080**	**(53,093,079)**	**(36,747,041)**	**(108,022,262)**	**(54,923,348)**
EBITDA	**236,561,615**	**188,689,632**	**342,559,792**	**243,564,988**	**366,712,733**
EBIT	**137,323,514**	**50,015,513**	**189,841,395**	**87,746,950**	**216,167,738**

Analysis of short-term financial risks

analysis and evaluation of real-sector financial position in our economy supposes that we first understand its liquidity, i.e. short-term financial risks. This segment of financial analysis is very often identified as the analysis of short-term risks, which will be our viewpoint as well in this paper. Overall undrstanding of this phenomenon supposes the use of ratio analysis, particularly indicators of liquidity and turnover, as well as the analysis of net working capital (hereinafter NWC) and the analysis of cash flow synchronicity, particularly inflow and outflow of cash coming from operating activities. This is the reason why in Table 4 we first give comparative achievements of liquidity ratio, turnover ratio and duration of cash cycle.

If we first focus on values of liquidity ratio, we may instantly state that our real sector cannot brag about any acceptable achievements. Namely, if we compare values from Table 4 with landmarks present in business practice of developed countries for many years, we may conclude that liquidity of our economy's real sector seriously goes behind. To be more precise, noted values of current ratio and quick ratio in the analysed period are really uniform, yet they are practically halved compared to what every expert analyst would like to see. Having in mind that the account of static liquidity ratio is based on ratio between current assets and its parts on one hand, and current (short-term) liabilities on the other hand, displayed values reveal the decrease in efficiency of current-assets management and cumulating current liabilities.

We find the confirmation of previous standpoint in the review of average number days of inventory in stock and accounts receivable turnover. If, for the moment, we relate this to the fact that payables turnover shows even more dramatic tendency of accelerated decrease and that the average period from generating to settling liabilities to suppliers is 224 days at the end of the analysed period (note: that number was"only" 145 days in 2007), we can conclude, even at this point, how this group of companies shifts the burden of cash cycle financing, followed by greatest part of illiquidity burden, to the back of their suppliers. Starting from the hypothesis that considerable number of suppliers will act rationally, as well as that in such circumstances they will not be able to cover their cash cycle with short-term liabilities, the illiquidity problem in our economy gets a spiral form, i.e. it shifts from companies to suppliers, and then from suppliers to their suppliers and so on endlessly.

Along with this story, one should notice that in the analysed period the relations among certain parts of assets and real-sector financing sources change dramatically and in a very bad direction. To confirm this, we state negative NWC values increasing from less than 6 billion RSD in 2007 to remarkable 101.7 billion RSD at the end of 2010.[3] Perhaps it sounds more convincing if we say that negative NWC in the analysed period increased by remarkable 17.5 times. Within that, the part of NWC owed to its own sources is negative as well, and it decreases steadily. However, due to more than scarce investments in fixed assets (they increased by more than 35% in four years), own NWC is still in gradual decrease compared to total NWC, i.e. it decreased „only" twice. At the same time, presented Statement of Net Working Capital reveals us that long-term liabilities increased year by year, where only liabilities based on long-term loans increased by almost 100% in the analysed period (see Table 6). We cannot but state that long-term liabilities of the sector increased

3 Further information is contained in the next part of the paper (see Table 6)

Table 4: Indicators of liquidity and cash cycle

Indicators	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Current Ratio	1.00	0.97	0.97	0.95
Quick Ratio	0.60	0.60	0.63	0.61
Cash Flow from Operations Ratio	(0.02)	(0.04)	0.00	(0.03)
Average No. Days Inventory in Stock	80	86	103	96
Average No. Days Receivables Outstanding	90	92	113	105
Average No. Days Payables Outstanding	145	216	210	224
Cash Cycles	**25**	**(39)**	**6**	**(23)**

especially in the last two years of the period. For example, only in 2010, it increased by more than 200 billions RSD.

Nevertheless, despite its intense, long-term indebtedness, during this period real sector did not manage to provide any part of its inventories which burdened the state of its liquidity further. To be more precise, along with the problem of inventory turnover and their conversion into cash, the gap between NWC and the amount of inventories increased continually. Namely, deficiency of NWC increased by more than 1.6 times from 2007 to 2010 and it had to be compensated with deffering liability payment to suppliers and intense short-term borrowing from banks which increased by more than twice in this period. The greatest shock of short-term indebtedness for the real sector came in 2008 and 2010, whereby indebtedness at these grounds increased by almost 150 billion RSD a year. Finally, maybe the most appropriate notice to tell about the pace of short-term indebtedness is that, in the last analysed year, accumulated current operating liabilities make more than 70% of net capital. If we add short-term financial liabilities to current operating liabilities in 2010, we will be stunned by the fact that their total is higher than the value of net ownership capital!

As usual, the final part of liquidity analysis is left for understanding the level of cash flow synchronicity, primarily of cash inflow and outflow, coming from operating activities (see Table 5). Knowing that, generally speaking, this part of cash flow statement should generate cash surplus in order to sustain long-term liquidity (and it is the case here since our analysis includes 4 business years in sequence), displayed results regarding our real sector are considerably warrying. This is because, with the exception of 2009, in other years the group of analysed companies created negative net cash flow from operations (CFO). In the last analysed year, it reached the value beyond 66 billion RSD, which is doubled compared to the beginning of analysed period. Due to all this, one should not be surprised with rather low values of current liabilities coverage ratio appearing from CFO and those values were shown previously in Table 4. Just these few notices related to cash flow leave a very bad impression concerning liquidity and ability of real sector to take the burden of current indebtedness, not to speak of future one.

In order to have a better insight into the state of real sector liquidity, we need to analyse more thouroughly the structure of inflow and outflow of cash from operations. Regarding this, we could look into several facts important to draw a final conclusion. First of all, cash flow from income statement was negative in the second half of the analysed period, where particularly low value was shown in 2009 when the strike of economic crisis was strongest and the analysed companies obviously could not

Table 5: Statements of cash flows

Positions	31/12/2007	31/12/2008	31/12/2009	31/12/2010
I Cash flow from operating activities				
1. Inflow from Income Statement	142,889,272	165,940,557	169,520,856	158,799,191
2. Outflow from Income Statement	(131,294,806)	(143,301,691)	(192,946,190)	(165,494,708)
3. Cash flow from income statement	**11,594,466**	**22,638,866**	**(23,425,334)**	**(6,695,517)**
4. Increase working capital	91,765,047	175,170,155	80,419,471	224,697,623
5. Decrease in working capital	(134,226,325)	(265,123,459)	(56,271,463)	(284,635,379)
6. Cash fow for changes in working capital	**(42,461,278)**	**(89,953,304)**	**24,148,008**	**(59,937,756)**
7. Cash flow from operations	**(30,866,812)**	**(67,314,438)**	**722,674**	**(66,633,273)**
II Cash flow from investing activities				
1. Inflow from investing activities	78,201,727	106,554,650	84,923,928	110,571,360
2. Outflow from investing activities	(463,770,574)	(357,882,137)	(269,378,087)	(696,898,518)
3. Cash flow from investing	**(385,568,847)**	**(251,327,487)**	**(184,454,159)**	**(586,327,158)**
III Cash flow from financing activities				
1. Inflow from financing activities	590,454,948	445,326,375	352,763,129	849,215,280
2. Outflow from financing activities	(154,648,217)	(132,182,063)	(147,446,172)	(186,163,148)
3. Cash flow from financing	**435,806,731**	**313,144,312**	**205,316,957**	**663,052,132**
IV Net cash flow	**19,371,072**	**(5,497,613)**	**21,585,472**	**10,091,701**
V Cash - beginning of year	**67,701,146**	**87,072,218**	**81,574,605**	**103,160,077**
VI Cash - end of year	**87,072,218**	**81,574,605**	**103,160,077**	**113,251,778**

find appropriate answers. Within this part of cash flow statement, it is interesting to notice that cash flow from income statement was poor through the whole period. Having in mind that real sector generated losses in all analysed years, it becomes clear that majority of inflow arises from depreciation and amortization charges.

However, from evaluation point of view regarding the liquidity of real sector, what is even more concerning is negative cash flow arising on grounds of changes in current assets and liabilities. It is mostly owed to increasing investments in inventories which reach their customers harder and harder, as well as to financing accumulated accounts receivable which are hard to charge, usually with a delay. We may notice that not all the achievements in 2009 share the same destiny and that they are shown in minimum net inflow of cash on these grounds. However, if we grasp a little deeper into this achievement, we can see that there is no reason to be happy with it. This is because in 2009 there was a considerable accumulation of operating liabilities which brought to short-term recovery of net cash flow and to new problems regarding sustainability of liquidity in future as well. The sector did not have to wait long to see these problems arising. Namely, at the end of 2010, net cash flow based on changes in current assets and liabilities was turned from net inflow of 24 billions, reported at the end of 2009, into net outflow of almost 60 billion RSD.

All the issues previously discussed bring us to a final conclusion that companies belonging to the real sector of our economy have really big problems related to maintaining short-term financial risks, and none the less serious are the problems of financing from internal sources, servicing liabilities to related creditors and, finally, attracting new investments and return payment to owners. Of course, what arises from all this is high and growing short-term and long-term risk, as well as completely legitimate reluctance of investors in terms of starting some serious capital investments in this region.

Analysis of long-term financial risks

Some of previous conclusions have already traced the path in which our real sector moves regarding solvency, i.e. long-term financial risks. Nevertheless, apart from the fact that we have, during the liquidity analysis, already detected problems regarding the deficiency of positive CFO, slowdown in turnover of current assets and its parts, the collapse of financial structure by means of greater indebtedness and cumulating negative NWC, at this point, we would like to add a few more details to the picture of long-term risks of investment in the real sector of our economy.

Speaking of volume and structure of the assets determining the position of long-term financial stability, we can state that investment in operating assets rose by over 42% in the analysed period. Here, it is particularly important to point out that investments in current assets grow considerably faster compared to investments in fixed assets, which, in normal circumstances, should not be known to real-sector companies that were intensely supplied with

Table 6: Statement of net working capital

Postions	31/12/2007	31/12/2008	31/12/2009	31/12/2010
1. Capital	2,362,422,364	2,514,133,167	2,602,967,164	3,039,286,132
2. Cumulated losses	723,370,997	850,150,374	989,916,414	1,174,571,625
3. Net capital (1-2)	1,639,051,367	1,663,982,793	1,613,050,750	1,864,714,507
4. Fixed assets	2,228,326,221	2,415,564,086	2,495,312,303	3,016,993,646
5. Own net working capital (3-4)	**(589,274,854)**	**(751,581,293)**	**(882,261,553)**	**(1,152,279,139)**
6. Long-term provisions and liabilities	583,469,284	708,462,060	837,143,874	1,050,524,764
7. Net Working Capital - NWC (5+6)	**(5,805,570)**	**(43,119,233)**	**(45,117,679)**	**(101,754,375)**
8. Inventories and similar current assets	572,877,413	685,239,451	702,836,110	844,424,068
9. Excess (deficiency) NWC (7-8)	**(578,682,983)**	**(728,358,684)**	**(747,953,789)**	**(946,178,443)**
10. Short-term financial liabilities	322,438,523	462,133,752	495,381,494	646,719,827
11. Excess (deficiency) NWC a (9+10)	**(256,244,460)**	**(266,224,932)**	**(252,572,295)**	**(299,458,616)**
12. Own NWC / Inventories	**(102.86)**	**(109.68)**	**(125.53)**	**(136.46)**
13. NWC / Inventories	**(1.01)**	**(6.29)**	**(6.42)**	**(12.05)**
14. NWC / Current assets	**(0.43)**	**(2.68)**	**(2.63)**	**(5.00)**

fixed assets due to nature of their operating activities. We previously stated that total investments in fixed assets in the analysed period increased by a little more than 35%, which can be considered an unsatisfactory result in this four-year period. This statement becomes even more obvious if we turn our attention to changes happening within fixed assets. So, it is easy to see that, in this period, average investments in intangible assets, property, plants and equipment (with respect to depreciation charges) decreased, year by year, by more than 100 billion RSD. To be more precise, they fell from the initial 435 billions to only 203 billion RSD in 2009. What is encouraging is that these investments finally increased at the end of 2010, i.e. they were at 330 billion RSD at the time. However, having in mind these achievements and knowing that investments in manufacturing and sales facilities are reflected through the investment in property, plants and equipment, any other comment in terms of potential strenghtening of real sector solvency makes no sense at this point. Since we have already said something about the increase of investments in current assets and its parts, as well as of ways of financing these investments, there is no need to raise this question again.

The value and structure of financing sources, i.e. relation between capital and liabilities, is the next factor directly determining long-term financial risks. In this case, we can notice the tendency of decreasing the share of ownership capital in total financing sources which could be one more relevant signal related to assurance of long-term creditors. Considering all cumulated losses, we can conclude that the share of net capital in total capital and liabilities is under 50% in the analysed period, i.e. it fell from the initial 43% to only 34% at the end of the analysed period. In order to complete the picture of relative amount of capital disposable to our real sector, let us for a moment go back to initial claims of Statement of Net Working Capital. We can see that cumulated losses in each year decreased capital by more than one third, where this decrease was most convincing at the end of 2010 when total loss „ate" almost 39% of ownership capital. Due to all this, net value of ownership capital in all these years was not enough to cover long-term, i.e. risky investments in fixed assets, which is one of crucial indicators speaking in favour of compromised long-term risks of our real sector.

In order not to make a confusion, let us point out here that in previous abridged balance sheet of the real sector we presented, at the assets' side, the position of loss over the value of capital, to emphasize that, within this sector, there is a number of companies to have lost their entire capital. It is interesting to notice that the amount of loss overcoming the amount of ownership capital was doubled in the analysed period. By emphasizing these asset losses, we only stressed previous statements regarding absolute and relative decrease of capital where many long-term creditors have traditionally seen an „air bag" for their claims.

As it usually happens in cases like this, the decrease of ownership capital is followed by the increase of total real sector indebtedness and the indicators shown in first part of Table 7 speak in favour of that. Namely, during the

Table 7: Indicators of solvency and efficiency

Indicators	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Fixed Assets Coverage Ratio	0.74	0.69	0.65	0.62
Fixed Assets and Inventories Coverage Ratio	0.78	0.75	0.75	0.75
Own NWC / Inventories	(102.86)	(109.68)	(125.53)	(136.46)
NWC / Inventories	(1.01)	(6.29)	(6.42)	(12.05)
NWC / Current assets	(0.43)	(2.68)	(2.63)	(5.00)
Debt to Equity	1.18	1.42	1.61	1.71
Cash Flow from Operating to Debt	(0.02)	(0.03)	0.00	(0.02)
Cash Flow from Operations / Interest Expenses	(0.52)	0.53	(0.67)	0.40
Interest Coverage Ratio	(0.29)	(0.31)	0.00	(0.25)
Assets Turnover	0.71	0.70	0.59	0.63
Operating Assets Turnover	0.66	0.65	0.54	0.56
Capital Turnover	1.58	1.62	1.50	1.69
Quality of Revenues	0.99	0.95	0.99	0.95
Capital Expenditure Ratio	(7.11)	(20.72)	0.36	(19.95)

whole period, indebtedness increased steadily, where it is important to point out that short-term indebtedness is far more often. At the same time, the burden of interest becomes practically unbearable to the sector. It is reported through the fact that interest costs in the analysed period almost tripled on average, while at the same time the sector did not manage to cover those costs, neither by means of realised earnings, i.e. earnings before interest and taxes (EBIT), nor by released CFO. Practically, in all these circumstances, our real sector cannot count on any RSD generated from internal sources during the payback of accumulated debts. All this speaks enough of how serious the position of real-sector long-term financial risks really is.

Along with deterioration of asset structure, losses of capital and growth of indebtedness and based on second part of indicators shown in Table 7, we can state that in the analysed period our real sector reported very low values of the ratio of assets turnover, operating assets turnover and current assets turnover on one hand, and capital on the other hand. As it usually happens in cases like this, inadequate assets and capital management affected directly the revenue capacity of the real sector. Namely, after the insight into comparative review of income statement for the analysed period, we can conclude that operating revenues at the end of 2010 increased by a little more than 22% compared to 2007. Having in mind that operating revenues usually reflect operating activity, we can state that reported growth is far below the necessary achievements (results). The greatest fall of operating revenues happened in 2009, when they practically dropped to the level of 2007. To tell the truth, operating revenues at the end of 2010 reported growth by about 20% compared to the year before, which is hardly 10% growth compared to 2008, so, based on that, we cannot conclude that real- sector operating activity was finally increasing. Fortunate in this story is that cash inflow did not go behind reported operating revenues and as a proof of this we have very low values of revenue quality ratio in all analysed years.

Finally, at this point we could stress that growth of real sector indebtedness in the whole period was followed by the decrease in efficiency of assets and capital management. It makes the position of real sector even more difficult when it comes to long-term financial risks. This is because the real sector of our economy cannot use the turnover as leverage effect and multiply the influence of growth in revenue capacity of assets and capital on its profitability. Nevertheless, since turnover is only one of profitability leverages, we will leave for the end of this paper the analysis of other factors' influence on this most important factor of long-term financial stability, hoping that they will change the situation up to certain extent.

Profitability analysis

It is often said that profitability is the final test for the success of a company, branch, sector or economy as a whole. There are two possible reasons for that. The first one owes to the fact that profitability is directly related to achieving owners' interests and it is one of the key factors encouraging or discouraging investors to invest again. Other important reason for profitability's high ranking in total performance evaluation comes from the fact that profitability is inevitable determinant of liquidity, long-term stability and sustainable growth.

On previous pages, we stressed serious disorders in financial structure, which, among others, reflect in the decrease of ownership capital, cumulation of losses and increase of indebtedness level and which are strengthened by serious problems regarding profitability of companies and branches belonging to real sector, which is the subject of our analysis. Having this in mind, we will first try to present general picture of real sector profitability, by means of some standard indicators, and then we will make an effort to identify the causes of such position. To realise the first goal, we will rely on globally used profitability tests: Return on Equity (ROE), Return on Assets (ROA) and Return on Operating Asset (ROOA). Their values are decomposed to appropriate profit margins and turnover ratios, given in Table 8 for the analysed period of four years.

Generally speaking, profitability analysis demands the answer to two questions. The first one is related to presence of capacity to generate return on capital belonging to owners, while the other one refers to the profitability of core business, i.e. capacity to generate return on total used assets, regardless of the way that company was financed.

Thereby, meeting ownership expectations is tested with ROE, while ROA and ROOA are used as tests for core-business success. Linking ROA and ROE is extremely important, because excess return on total assets over cost of debt (fixed return of capital lenders) overflows to owners' return.

The seriousness of profitability problem, or in other words, unprofitability, is apparent at first sight. Cumulative analysis of all industries included in real sector for the purpose of this paper implies that in each analysed year ROE was negative and ROA was just slightly over zero. Though it has been popular these days to attribute all negative effects to the economic crisis, it seems that financial, structural and profitability disorders have surpassed time frame since the beginning of crisis. Of course, we do not scrutinize negative effects of crisis, but results show that situation was not much better even before the crisis. This only confirms that structural disorders, low level of activity, inefficiency and outdatedness in technical and technological development have had longer history.

Return od assets, measured by the ratio between EBIT (Earnings Before Interest and Tax) and average total assets, has, particularly due to EBIT growth, its greatest values in 2008 (4.42) and in 2010 (4.09). Appreciating EBIT as the rate of ability to pay debts, we conclude that these values are unsatisfactory. Namely, generated values are far from costs of debt. Such negative effects overflow to ROE, turning them into negative values in all analysed years. Negative influence of financial leverage is obvious, and there is no need to analyse it further.

Differences between ROA and ROOA occur as the consequence of content incompatibility of gains in numerator and assets in denominator. Since the concept of operating assets is more narrow than the concept of total assets for the value of long-term and short-term investments, higher ROOA could be expected. However, a wider concept of incomes taken in calculating EBIT compared to operating income, caused the decrease in operating income due to higher EBIT. This only reconfirms profitability problems.

To all above mentioned, we should add that returns were calculated on net values of investment basis. It means that we decreased capital for the amount of cumulated losses and that we did not add losses to total assets. Facing with reality in that way, we presented returns as more favourable then they really are.

These circumstances demand deeper analysis that should provide better understanding of unprofitability causes regarding the analysed sector. In order to do so, we turn our attention to the analysis of result structure, result dispersion by individual sectors within real sector and ROA, calculated by the ratio between EBITDA (Earnings Before Interest, Tax, Deprecation and Amortization)[4] and total assets.

The analysis of result structure includes the analysis of operating income and net financial revenues (expenses), the analysis of net income structure and the ratio between EBIT and financial expenses. Thereby, our main goal is

4 In Serbian business and accounting practice, it is acceptable to use the name EBITA instead of EBITDA. EBITA concept corresponds to a concept widely known as EBITDA, since in both cases amortization (depreciation) charges of intangible assets, property, plants and equipment, are added to EBIT. However, since EBITDA is globally recognised measure and there is a possibility to think that depreciation charges regarding property, plants and equipment are excluded, we decided to keep the name EBITDA.

Table 8: The review of key profitability indicators

Indicators:	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Operating Income Margin	2.08	2.65	2.52	4.63
Operating Assets Turnover	0.78	0.76	0.65	0.72
Return on Operating Assets - ROOA	**1.61**	**2.02**	**1.64**	**3.35**
EBIT Margin	1.65	6.27	2.79	6.43
Assets Turnover	0.71	0.70	0.59	0.63
Return on Assets - ROA	**1.18**	**4.42**	**1.66**	**4.09**
Profit Margin	(2.22)	(1.37)	(4.40)	(1.87)
Capital Turnover	1.58	1.62	1.50	1.69
Return on Equity - ROE	**(3.52)**	**(2.23)**	**(6.59)**	**(3.16)**

Note: Profit margins are calculated based on operating revenues without correction of inventory values

to locate the key areas of real sector unprofitability. The results of performed research are given in Figures 1, 2 and 3. At this point, we leave aside other, not so small others gains and losses, since they potentially have a transitory character.

In operating income statement, a part where achievements of core business are measured, the real sector as a whole operates positively. However, revealed net operating incomes are really poor anually, which is also confirmed by earlier operating income margins not exceeding 2.65% in the first three years. Only in the last analysed year, operating income margin equals poor 4.63% again.

On the other hand, in financing income statements, a part which includes financial transactions (revenues and expenses based on interest, exchange rate effects, etc.), it is apparent that in each analysed year financial revenues go behind financial expenses. Thereby, in the last tree analysed years, financial expenses are more than doubled compared to financial revenues, with the inconvenient ratio tending to grow. What is most important to notice here is that losses from financial transactions, except in 2007, exceed operating incomes steadily. In this way, innappropriate borrowing, along with inconvenient effects of exchange rate effects, turn operating incomes into net losses, which generates great balance-sheet suspicion through cumulating losses and consequent capital decrease. This process is enforced by net losses based on other incomes and expenses (except in 2008 when there is a net income). From this point of view, exposure of the analysed real sector to long-term risks is huge.

Figure 1: The analysis of operating income

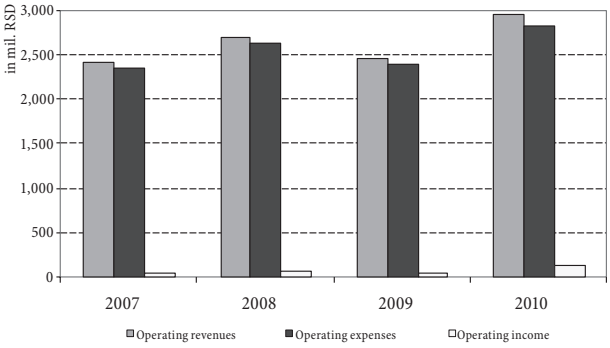


Figure 2: The analysis of net financial revenues (expenses)

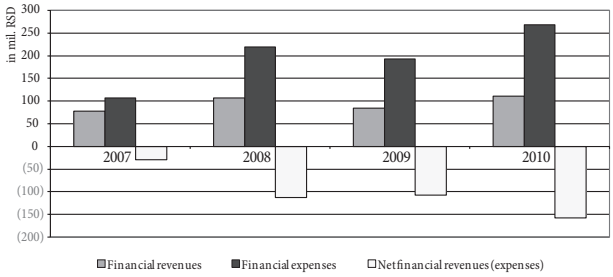
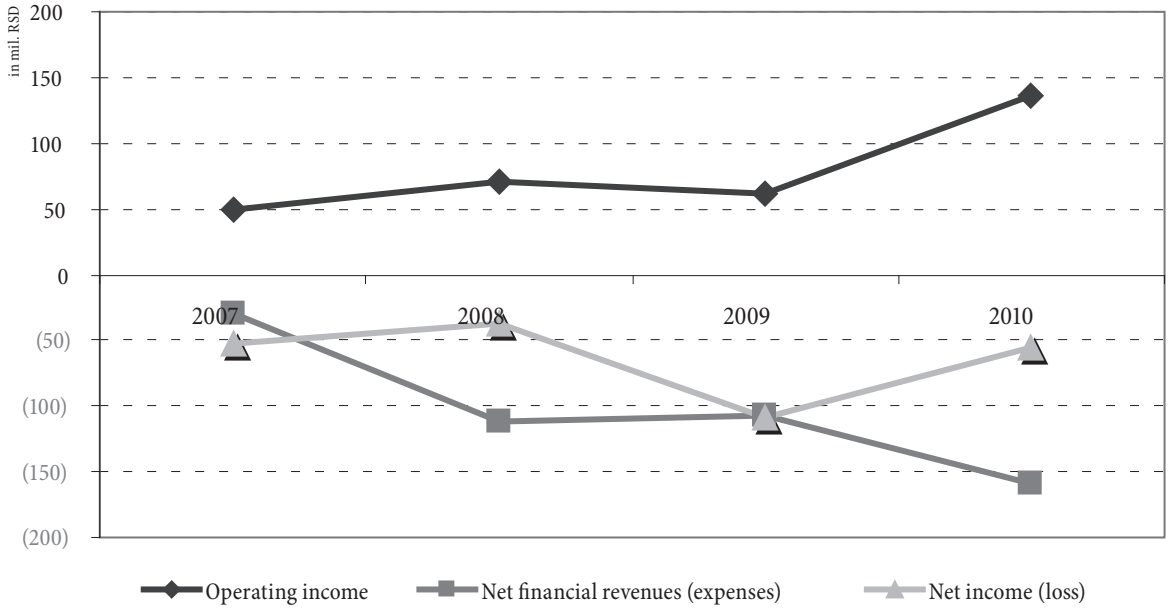


Figure 3: The analysis of income structure



In normal circumstances, financial expenses should not exceed EBIT. In this case, financial expenses constantly exceed EBIT, even by 2.8 times in 2009. It only confirms that real sector at this activity level cannot take such burden of financial expenses.

We could say that real sector as a whole and as a capital intensive sector is in a vicious circle. Emphasized dependency on high investments in fixed assets and follow-up long-term risks also imply a great share of top-quality (own) financing sources. This requires internal financing sources, i.e. profit which would be partly retained for the purpose of internal financing. As there is no profit and obtaining capital from new issues becomes harder, turning towards external creditors is inevitable. Since they are extremely expensive, they increase losses further, creating more serious financial troubles.

The lack of internal financing sources disables launching serious investment projects, without further collapse of financial structure. Previously provided cash flow analysis, as well as capital-expenses coverage ratio given in Table 7, imply this. We could see there that capital investments, except symbolically in 2009, were not financed from internal sources. External financing appeared as inevitable. The decrease of ownership capital and the increase od debt implies turning toward borrowed financing sources. Thorough analysis, that we cannot present here due to a limited space, shows that short-term financial liabilities take considerable share in such financing. Sustainable growth is not possible in such circumstances.

With all the warrying facts previously mentioned, we should have in mind that we deal with the analysis of a large unit, consisting of five selected sectors. Each of these sectors contains numerous branches and companies. That implies being careful at drawing conclusions for, at least, two reasons. First, revealed net incomes in balance sheets from the beginning of the paper were calculated from the difference between net incomes and net losses. It shows, that, within real sector, there are vital parts as well, i.e. healthy companies that can do business successfully. Favorable business environment, real instead of declarative investors' assurance, developed and

Table 9: The review regarding partipation of certain income components in real-sector achievements

	Agriculture	Mining	Processing industry	Supply of electricity	Construction	Real sector
Participation in operating revenues						
2007	7.70	12.48	56.33	9.01	14.48	2,420,046,896
2008	8.04	8.47	58.43	9.64	15.41	2,715,610,522
2009	8.29	7.21	58.28	11.39	14.83	2,466,775,279
2010	8.14	8.06	56.00	14.37	13.44	2,968,840,894
Average	**7.91**	**10.11**	**56.96**	**10.70**	**14.33**	**2,535,431,476**
Participation in operating expenses						
2007.	7.85	12.67	55.76	9.84	13.88	2,370,135,681
2008	8.20	8.65	58.02	10.50	14.62	2,644,668,859
2009	8.58	7.54	58.07	11.50	14.31	2,404,790,635
2010	8.42	7.42	56.45	14.66	13.05	2,832,424,307
Average	**8.14**	**10.12**	**56.85**	**11.09**	**13.80**	**2,464,946,688**
Participation in financial expenses						
2007	7.13	9.86	64.98	3.50	14.53	107,099,889
2008	5.36	11.15	63.18	6.03	14.28	218,731,891
2009	7.02	10.95	61.79	4.76	15.49	192,309,556
2010	5.50	10.47	54.41	9.11	20.51	268,791,014
Average	**6.37**	**11.01**	**61.13**	**6.07**	**15.41**	**177,114,114**
Participation in EBITDA						
2007	8.64	12.24	79.18	(25.33)	25.28	188,689,632
2008	3.83	7.61	60.00	9.69	18.87	342,559,792
2009	2.59	(1.29)	61.02	14.80	22.89	243,564,988
2010	2.60	15.06	50.17	14.48	17.69	366,712,733
Average	**4.36**	**9.41**	**59.96**	**6.60**	**19.67**	**275,617,752**

transparent capital market and cheaper financing sources could be the indispansable stimulus for the growth of real sector. Disciplined payment of due claims is assumed as well, which excludes tolerance of the opposite behaviour (where some public or other companies take the lead). The problem is that such companies lead some vital parts of the sector into illiquidity.

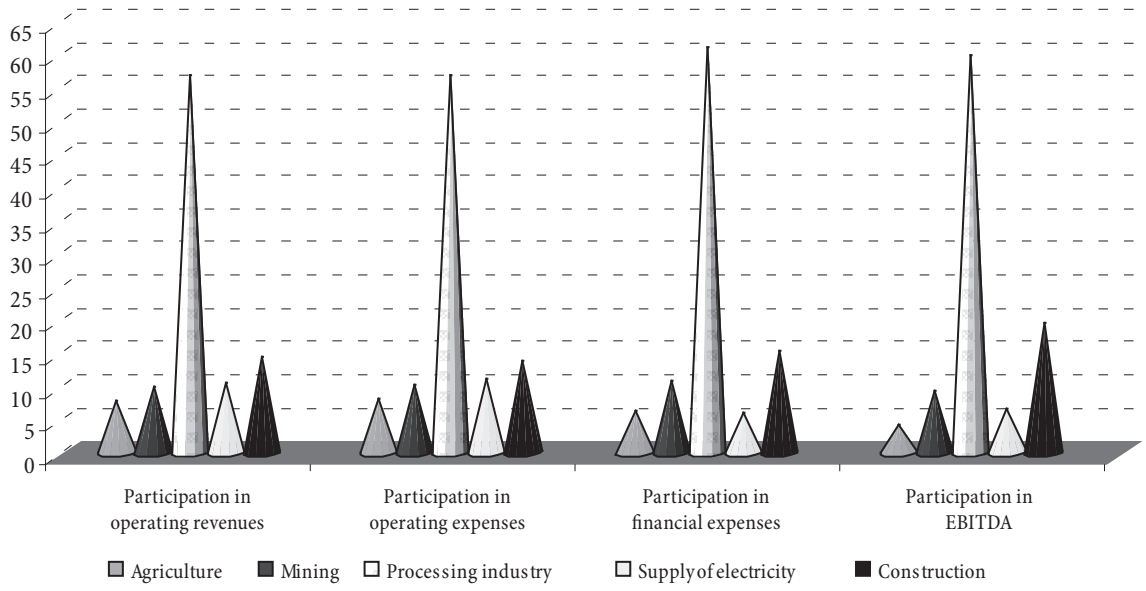
Secondly, revealed cumulative results are not equally grouped by individual sectors. No doubt that financial troubles are everywhere, but it is also obvious that they burden in different ways the performances of real sector as a whole. Accordingly, to get a general image of the influence of individual sector performances on total real sector performances, we present the review regarding participation of certain income components by years, as well as figure regarding average participation of these components in the real sector (see Table 9 and Figure 4).

Without the ability to provide deeper analysis, due to a limited space, and convinced that provided reviews are enough themselves, we have just a few notices. It is obvious that processing industry has a dominant influence on real sector performances, its share being about 50% or more almost everywhere. This sector also takes the greatest burden of financial expenses, over 60% on average. In spite of that, the greatest share of EBITDA is shown in this sector, in the same cumulative value. Construction also gives considerable contribution to real sector achievements, where results measured by EBITDA are the second largest. Finally, we should not forget that depreciation and amortization charges are excluded from EBITDA, so this indicator can be understood in that context as well.

Eventually, in order to identify further the causes of innapropriate achievements and find solutions for overcoming current state, let us turn to ROA for EBITDA, which has the highest values of all returns. It is the return which is, besides being released from the influence of financial sources, also released from the amortization of fixed assets to be written-off. It is the fact that amortization is the expense that requires no cash outflow. Due to emphasized capital intensity, these expenses are often very high. Due to their high level, they (reasonably) decrease profit. Again, the fact that amortization does not require outflow immediately makes company functioning much easier. ROA for EBITDA, decomposed to profit margin and turnover ratio, is given in Figure 5.

Though calculated values of ROA for EBITDA are higher than any return so far analysed, we must say that these values are far from impressive. This is true, especially if we have in mind how many expenses are left outside EBITDA concept. However, at this point the idea is to grasp deeper into the causes of real sector unprofitability, by means of this indicator, free from financial leverage and the influence of various amortization policies. By

Figure 4: The analysis of result structure in real sector



decomposing ROA for EBITDA to profit margin and assets turnover, we realise that total assets turnover is below 1 and that it is lower in the last two analysed years compared to the first two years. Obviously, nominal growth of 41.6% in total assets in this four-year period is not followed by estimated growth of operating incomes that rose by 22.7% in 2010 compared to 2007. Thorough analysis reveals even more dramatically the problems in this field. Namely, in four years, inventories rose by 1.3 times, receivables by 1.5 times, short-term investments by 1.9 times and long-term investments by 3 times. At the same time, the growth of investments in intangible assets, property, plants and equipment, is smaller in 2010 compared to 2009 than in 2007 compared to 2006.

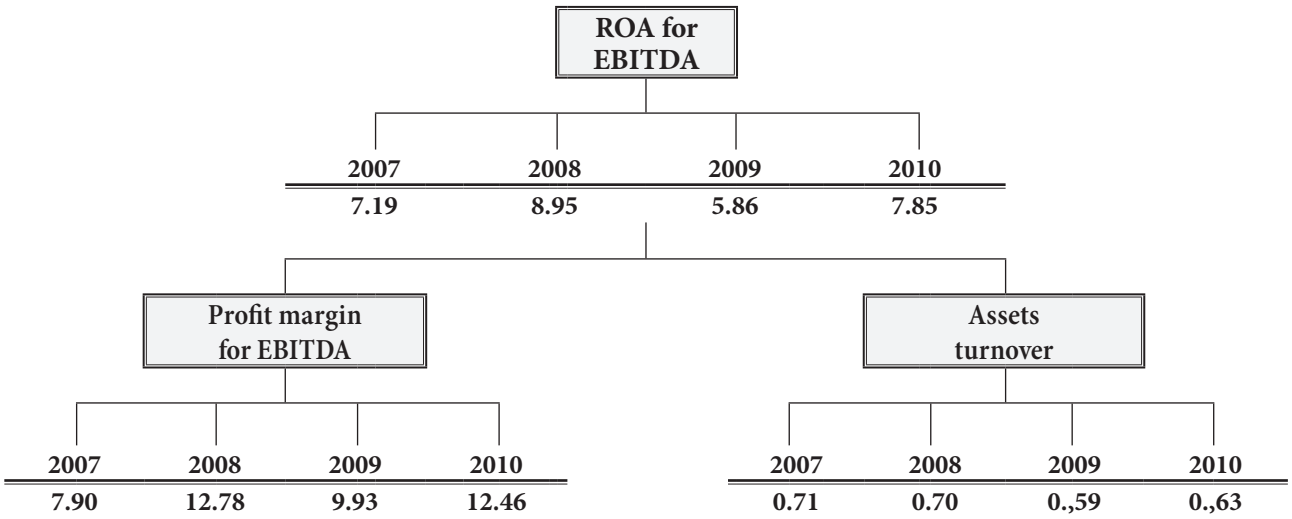
We could draw two conclusions from the above mentioned. First, investments in fixed capacities stagnate. Since these are investments that should bring return in future, it is reasonable why the income growth goes behind the assets growth. Above-average investments in inventories and receivables are more the reflection of problems in manufacturing and sales, as well as in account receivables payment, than the result of sector activity growth. Secondly, low and receding turnover ratios do not seem to be the consequence of assets growth. Done investments are not enough. Low turnover ratios are primarily the consequence of inefficient revenue growth. Again, it points us towards two possibilities. Existing assets, due to its ageing, cannot generate appropriate revenues, or capacities are not used enough. We believe this is for both reasons.

More than necessary rise of economic activity level would improve turnover ratios, but it would reflect positively on profit margin increase as well. Since there are variable as well as fixed expenses within total expenses included in EBITDA calculation, it would be real to expect that potential growth of revenues would, due to degression of fixed expenses, be followed by accelerated growth of EBITDA, which would increase ROA for EBITDA through the increase of profit margin for EBITDA. If we add possible rationalizing at expenses'side, we believe that certain space could be created when it comes to increased ability to cover huge financial expenses in the first place.

Conclusion

The imperative of raising the level of competitiveness in Serbian economy real sector must rely on evaluation of existing performances. This is inevitable, at least for two reasons. First, the evaluation of present state is ground for understanding causes of financial imbalance and unsatisfactory profitability, due to easier and safer identification of courses of action. Secondly, it is important to make the overview of the current situation in order to set the benchmark for comparing the effects of created policies, which would help to increase responsibility of economic policy designers.

Figure 5: The analysis of ROA for EBITDA



Performed analysis of liquidity, which is ground for the evaluation of short-term financial risks, solvency analysis, as the ground for long-term financial stability, and profitability analysis, as the ground for the evaluation of investment attractiveness and sustainable growth potential, provide comprehension of current situation in our real sector. Concerning this, we provide some key conclusions.

First, the analysis of profitability and financial position revealed very high level of deformity in financial structure and unsatisfactory profitability. Such state is definitely a consequence of external factor activity which could not be controlled, as well as of internal inefficiency which should have been raised to higher level along with the process of privatization. Apparent financial disorders at global level create serious obstacles and challanges in the process of creating preconditions for the improvement of real sector performances.

Secondly, the state of liquidity, or, to be precise, illiquidity, is alarming. In 2010, average number days payables outstanding reached on average 224 days or 7.5 months at real sector level. Since this is average, it implies that there are some companies credited by suppliers for more than a year. Payment inability is spirally transfered from customers to suppliers, who become customers for their suppliers and so on. The problem is even more complex due to irresponsibility of public companies which, abusing their close relationship with state and political structures, often ignore deadlines regarding payment of liabilities. Concerning this, we could say that as long as this ignoring is tolerated, there will be no improvement in this field. It is clear that bad, insolvent companies will take some vital parts of the real sector into illiquidity.

Third, cash flow analysis confirms the implications of bad financial structure on payment ability. CFO structure, relevant for the evaluation of payment ability, reveals that high amortization, as the expense not requiring immediate cash outflow, along with high liabilities to suppliers (their participation in net capital is over 70%) and high short-term indebtedness (short-term liabilities exceed the amount of net capital), represent maneuvering space delaying final financial collapse of many companies. This, of course, is sustainable on short terms. On long terms, damages arising from illiquidity could be devastating.

Fourth, the state of illiquidity is even more dramatic if we consider financial and structural disorders. NWC, as generally accepted measure of financial equilibrium, was negative in all analysed years. We should not forget that real sector has considerable inventories that should be, to great extent, financed on long terms. So, if we start from the fact that the level of NWC determines good or bad assumptions for maintaining liquidity, we can only conclude that there are no good assumtions in that sense.

Fifth, cumulating losses, present in each year, caused severe disorders of financial structure at real sector level. In 2010, the sector was burdened with losses and lost about 39% of capital value. This estranges companies from possibilty to cover fixed assets, as the most risky investments, from own, top-quality sources. Within this context, about 60% of fixed assets is financed from own capital, and the rest is financed from long-term and short-term debts.

Sixth, cumulating losses also affects capital structure. The share of capital decreased to about 37%, and the share of borrowed sources increased. So, indebtedness increased. Thereby, total borrowed sources are almost equally distributed between interest liabilities (long-term and short-term financial liabilities) and non-interest liabilities. Furthermore, we should not forget that, having left losses over capital in assets, we wanted to send a message that the number of overindebted companies is not negligible.

Seventh, real sector as a whole operates with losses in all analysed years. It results in negative ROE and very low ROA. Since these returns are far from cost of debt, negative residue overflows to owners. Investment attractiveness is very low in these circumstances, which is also reflected in unsuccessful issues of new shares.

Eighth, causes of real sector unprofitability are numerous and they come from operating and financial activities. At this level of activity, the main reason for losses are burdening financial expenses. Inappropriate indebtedness, along with negative effects of exchange rate, turns already small operating incomes into net losses, thereby creating great financial troubles. Situation

becomes even more complex with the increase of need for additional capital. Since there are no incomes and the inflow of ownership capital is poor and inefficient, it leads companies to indebtedness, and, as a rule, they do this under unfavourable conditions.

Nineth, to all this we should add unfavourable efficiency within core business as well as low level of capacity use which prevents total expenses coverage. Even if we assume that effects of fiancial transactions are neutral concerning the net result, such achievements are not satisfactory. It is known that investors want higher returns compared to capital lenders since they take the highest risks. Necessary growth of economic activity must be followed by further investments in fixed capacities in order to overcome technical and technological outdatedness up to a point. We need assets able to create respectable incomes. Exit from such situation should be seen in business and financial restructuring of companies, releasing balance sheet from losses, their assumption and taking to the burden of capital and finding strategic partners for capital increase in order to remove financial disorders.

Tenth, we should have in mind the limitations of this analysis before we draw final conclusions. Namely, this analysis is based on cumulative balance sheets. Net losses of the sector were calculated by clearing total incomes and total losses. It means that there are vital parts within the real sector, i.e. vital companies that can do business successfully. Support of these companies implies creating favorable business environment, providing real instead of declarative investor assurance, building high-quality and stable regulations, presence of developed and transparent capital market, as well as of cheaper financing sources.

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INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE OF SERBIAN COMPANIES IN THE REAL SECTOR*

Intelektualni kapital i finansijske performanse srpskih preduzeća iz realnog sektora

Abstract

There is significant evidence that intellectual capital (IC) determines a company's potential for growth and generates the majority of its added value. Thus, research into measuring and analyzing IC and determining its impact on the financial and market performance of companies is gaining increasing interest. Different forms of IC such as knowledge, skills, talent, enthusiasm, patents, know-how, software, databases, close customer relations, brand, unique organizational design, and corporate culture can be categorized into human, structural, and relational capital. This paper explores the impact of IC, measured using the Value Added Intellectual Coefficient (VAIC™), on the financial performance of 100 Serbian companies in the real sector that achieved the highest net profits in 2010. We also analyze the impact of various individual IC components on financial performance. Scientific hypotheses are developed according to similar studies on IC and financial performance. Performance measures used in this research are net profit, operating revenues, operating profit, return on equity, and return on assets. Data is analyzed using statistical methods of correlation and regression (single and multiple). A simple regression model is used to indicate the relationship between VAIC, as an aggregate measure, and the financial performance of the selected companies, while multiple-regression models are employed to determine the relationship between individual components of VAIC and financial performance. Although the majority of similar studies so far show that IC has a significant impact on financial performance, this causality in the case of Serbian companies is small or irrelevant.

Key words: *IC, intangible assets, financial performance, Value Added Intellectual Capital (VAIC)*

Sažetak

Brojni su dokazi koji nedvosmisleno ukazuju na činjenicu da intelektualni kapital (engl. Intellectual Capital, IC) opredeljuje potencijal rasta preduzeća i generiše najveći deo uvećane vrednosti. Stoga sve više dobijaju na značaju i aktuelnosti istraživački napori usmereni na merenje IC-a i njegovog uticaja na finansijske i tržišne performanse preduzeća. Različiti pojavni oblici IC-a kao što su znanje, obučenost, talentovanost i entuzijazam zaposlenih, patenti, know-how, softveri, baze podataka, prisni odnosi sa kupcima, snaga brenda, unikatni organizacioni dizajn i poslovna kultura, mogu se kategorizirati na ljudski, strukturni i relacioni kapital. U radu se analizira međuzavisnost između IC-a, iskazanog pomoću koeficijenta dodate vrednosti IC-a (engl. Value Added Intellectual Coefficient, VAIC™), i finansijskih performansi 100 preduzeća iz realnog sektora Srbije koja su 2010. godine ostvarila najveću neto dobit. Pored ovoga, cilj istraživanja je i sagledavanje uticaja pojedinih komponenti IC-a na finansijske performanse. Hipoteze koje se testiraju razvijene su u skladu sa većim brojem sličnih studija u kojima je istraživan odnos IC-a i finansijskih performansi poslovanja. Merila performansi korišćena u okviru istraživanja su neto dobit, poslovni dobitak, poslovni prihodi, prinos na sopstveni kapital (engl. Return on Equity, ROE), prinos na ukupnu imovinu (engl. Return on Assets, ROA). Analiza prikupljenih podataka je izvršena primenom statističkih metoda korelacije i regresije (jednostruka i višestruka). Metod jednostruke regresije je korišćen da bi se sagledao uticaj VAIC™-a, kao agregatne veličine, na performanse izabranih preduzeća. Višestrukom regresijom je utvrđivana međuzavisnost između pojedinih komponenti koeficijenta VAIC™ i finansijskih performansi. Mada najveći broj do sada sprovedenih istraživanja ovog tipa u svetu ukazuje na značajan uticaj IC-a i njegovih komponenti na finansijske performanse, u slučaju srpskih preduzeća ova međuzavisnost je mala ili zanemarljiva.

Ključne reči: *intelektualni kapital, nematerijalna aktiva, finansijske performanse, koeficijent dodate vrednosti IC-a (VAIC™)*

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Introduction

Unlike the industrial era, in the information era, resources that do not have a physical form are gaining increasing interest and are therefore becoming critical factors to success. Compared to visible and physical resources, which have financial bases (equipment, buildings, land, plants, materials, financial property, etc.), intangible resources such as disposable knowledge, information, skills, talents, close customer relations, corporate culture, reputation, information systems, and organizational practices are not explicitly visible. These non-material resources and the ability to exploit them accordingly form the essence of intellectual capital (IC). Value created by IC is greater than that created by the use of material assets.

Some companies recognize the importance of investing in IC in achieving competitive advantage. The most successful companies tend to have an IC that is 10 or 20 times the value of their material assets. Economic crises in particular highlight the importance of investing in IC; that is, these investments represent the best way of coping with today's economic climate.[1] However, despite its importance, determining the value and effects of IC remains highly challenging. For this reason, many researchers have focused on evaluating IC and establishing its effects on corporate performance. This is particularly important for the Serbian economy, since the current low competitiveness level of its real sector highlights the need for a strategy for its increase. In order to establish the main initiatives for such a strategy, it is vital to examine the practices of the best performers in this sector.

The present paper examines the relationship between IC and the financial performance of companies that achieved the greatest net profits in 2010 in the Serbian real sector. Empirical research was conducted using a sample of 100 companies from this sector that showed the highest net profits. Tested hypotheses were developed according to similar studies investigating the impact of IC on financial performance. The paper is presented in sections that focus on specifically defined research objectives. Empirical research provides results for correlation analysis, and two regression models, generated from analyzing the data in financial reports. The efficiency of use of invested capital (both intellectual and physical) is quantified through the Value Added Intellectual Coefficient (VAIC). Financial performance measures used in the research are net profit, operating profit, operating revenue, return on equity (ROE), and return on assets (ROA). These measures are mostly used in analyzing and comparing performance of companies in Serbia.

Literature review

Definition and the nature of IC

IC is defined in a variety of ways because it is not homogenous. It often describes different things from different perspectives (economics, strategic management, finance, accounting, human resources, marketing, and communication). In attempts to define and categorize IC, its potential benefits and its reliance on non-material resources tend to be stressed. Thus, "intellectual" refers to the fact that the source of this capital is the human mind and knowledge. Stewart[2] uses IC to mean "packaged useful knowledge," while he defines IC as knowledge, information, intellectual property, and expertise that may be used for value creation. Sullivan[3] focuses on the importance of knowledge, which represents the most significant part of IC, and defines IC as knowledge that can be converted into value. Edvinsson and Malone[4] view IC as being equal to human capital plus structural capital. They define structural capital as hardware, software, databases, organizational structure, patents, trademarks, and other organizational capabilities.

An often-used synonym for IC is intangible assets. Logically, this "hidden value" could be viewed from the standpoint of a balance sheet's assets and capital. The very meaning of "intangible" indicates something that is not

1 Lev, B., "Remarks on the measurement, valuation, and reporting of intangible assets", *FRBNY Economic Policy Review*, September (2003) 17-21

2 Stewart, T. A., *Intellectual Capital: The New Wealth of Organizations*, Nicolas Brealey Publishing, London, 1998, p. 67

3 Sullivan, P. H., *Value - Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value*, John Wiley & Sons, New York, 2000, p. 228

4 Edvisson, L. and Malone, M., *Intellectual Capital: Realizing Your Company's True Value by Funding Its Hidden Brainpower*, Harper Business, New York, 1997, p. 10-14

possible to touch, something that is barely describable or measurable. International accounting standard (IAS) 38[5] defines intangible assets as non-monetary assets with no identifiable physical form. In addition to "intangible assets," further synonyms for IC include "non-material resources," "intangible capital," "intangible values," and "intellectual property".[6]

Unlike tangible assets, whose value decreases over time owing to exploitation, the value of IC increases when it is used appropriately. Material resources are easier to obtain and imitate, while the creation of competencies and competitive advantage based on intangibles is far more complex. Value created by IC is indirect, potential, and contextual. IC rarely affects financial results directly, and the effects of investing in IC are uncertain. Different components of IC should interact continually. It is therefore difficult to valuate IC since its value is created indirectly and its effects tend to be delayed and uncertain. The value created is contextual because it depends on its fit with the strategy used, since the modern business environment demands that strategy is positioned at the center of the management process. Consequently, for value to be created, IC has to be linked to strategy[7], and different forms of IC must be interrelated and connected to the company's tangible assets. It is through these links that the value of IC can increase further.

According to Choong[8] and Dess et al.[9], the measure of IC is the difference between a company's market and book value. Companies that focus mainly on physical assets have a lower market-to-book ratio (M/B ratio), and vice versa. However, this measure of IC has certain disadvantages. Firstly, for companies not listed on a stock exchange, the value of IC cannot be determined. Secondly, since the measure is aggregate by nature, it is impossible to assess the individual components of IC and their contribution to value creation. Thirdly, the difference in the equation may be the result of many external factors to IC. For example, undervalued or overvalued positions of tangible assets on the balance sheet may reflect the market value of stock and even market capitalization, directly affecting the value of IC determined in this way. Fourthly, the ongoing economic crisis and its impact on stock prices represent further limitations to this measure, because the economic crisis has in many successful companies induced a "meltdown" of IC measured in this way. However, research shows that the majority of S&P500 companies did not invest significantly in the field of research and development (new technologies, brand improvement, trademarks, etc.), while at the same time investments in tangible assets increased.[10] Fifthly, the limitations of using the difference between market and book value as a measure of IC become particularly visible in newly established capital markets. For instance, over 8–11 August 2011 the BELEX15 index on the Serbian stock exchange dropped 17% in only three days of trading.

If a company has a high M/B ratio, there are high expectations for its future business performance as generated by IC potential. One empirical study[11] on the M/B ratios of 3500 U.S. companies found that in 1978 there was no difference between the two values, since book value was at the level of 95% of market value. Twenty years later, book value was only 28% of market value. In 1982, out of every $100 invested in S&P500 companies' share purchase, approximately $62.3 went to tangible assets. Ten years later (1992), only $37.9 out of $100 was spent on material resources, and in 1999 this amount had dropped to just $16. Newer research[12] indicates that, today, IC makes up around 75–85% of a company's total market value (Figure 1). In addition, data on S&P500 companies from the mid

5 International Accounting Standards Committee, *International Accounting Standard No 38 - Intangible Assets,* 2004

6 Kaufmann, L. and Schneider, Y., "Intangibles – a synthesis of current research", *Journal of Intellectual Capital*, 3 (2004) 366-388; Choong, K. K., "Intellectual Capital: definitions, categorization and reporting models", *Journal of Intellectual Capital*, 4 (2008) 609-638

7 Kaplan, R. and Norton, D., *Strategy Maps: Converting Intangible Assets into Tangible Outcomes*, Harvard Business School Press, Boston, 2004, p. 11

8 Choong, K. K., "Intellectual Capital: definitions, categorization and reporting models", *Journal of Intellectual Capital*, 4 (2008) 612

9 Dess, G. G., Lumpkin, G. T. and Eisner, A. B., *Strategic Management (Text & Cases)*, McGraw – Hill International Edition, Boston, 2006, p. 118

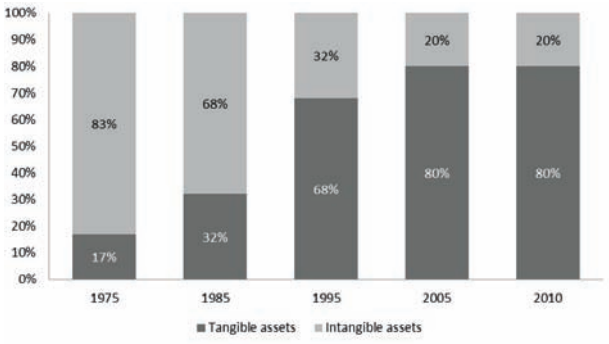
10 Lev, B., "Remarks on the measurement, valuation, and reporting of intangible assets", *FRBNY Economic Policy Review*, September (2003) 17-21

11 Dess, G. G., Lumpkin, G. T. and Eisner, A. B., *Strategic Management (Text & Cases)*, McGraw – Hill International Edition, Boston, 2006, p. 118

12 Lev, B., *Intangibles: Management, Measurement, and Reporting*, Brookings Institution Press, Washington, D.C., 2001; Kaplan, R. and Norton, D., *Strategy Maps: Converting Intangible Assets into Tangible Outcomes*, Harvard Business School Press, Boston, 2004; Cardoza, K., "The power of intangible assets: an analysis of the S&P 500", *Les Nouvelles*, March (2006) 37

1980s reveal a significant increase in the book value of IC compared to each company's total book and market value. From 1975 to 2005, the proportion of total assets comprising the book value of IC rose from 1.9% to 43.2%, while at the same time the IC book value proportion of the market capitalization of companies increased from 1.6% to 15.5% (every ten years this share doubled).[13]

Figure 1: Growth in IC proportion of the market value of S&P500 companies over 1975–2010



Source: Ocean Tomo, "Intangible asset market value," available at http://www.oceantomo.com/ productsandservices/ investments/intangible-market-value (accessed 4 October 2011)

Approaches to defining and categorizing IC vary. Sveiby[14], whose classification is often used, states that IC is made up of employee competencies, internal structure, and external structure. Employee competencies are the abilities of employees in terms of their knowledge, skills, and education. Internal structure entails patents, concepts, processes, technologies under development, IT, administration systems, and corporate culture. External structure includes relations with customers and suppliers, brand, and company reputation. A similar concept is used when categorizing IC into human, structural, and relational capital.[15]

The most important part of human capital is knowledge. It also comprises skills, creativity, talent, ability to learn, as well as responsibility, dedication, enthusiasm, and level of motivation. Structural capital includes the management process, corporate strategy and plans, software, databases, organizational structure, patents, trademarks, and every other organizational capability that supports employee productivity. In short, structural capital represents everything that stays in the office when the employees go home. Relational capital is actually external capital, which involves numerous external relationships with various stakeholders (customers, suppliers, creditors, investors, etc.) and their perceptions of the company. Examples of relational capital include brand, reputation, customer relations, partnerships with suppliers, agreements, licenses, sales channels, capacities for negotiation, and networking. Table 1 lists the main components of human, structural, and relational capital.

Conventional financial accounting and related performance measures do not align with the nature of the contemporary business environment, in which the majority of the value is created by IC. The market looks to the future while financial statements look to the past. In other words, financial statements and business ratios based on these statements do not supply sufficient relevant and timely information for adequate understanding of

13 Cardoza, K., "The power of intangible assets: an analysis of the S&P 500", *Les Nouvelles*, March (2006) 37

14 Sveiby, K. E., *The New Organizational Wealth: Managing and Measuring Knowledge-based Assets*, Barrett – Kohler, San Francisco, 1997

15 MERITUM, *MERITUM Guidelines for Managing and Reporting on Intangibles*, Measuring Intangibles to Understand and Improve Innovation Management – MERITUM, Madrid, 2002; Seetharaman, A., Teng Low, K. L. and Saravanan, A. S., "Comparative justification on intelelectual capital", *Journal of Intellectual Capital*, 4 (2004) 523-524; Bontis, N., "Assessing knowledge assets: a review of the models used to measure intellectual capital", *International Journal of Management Reviews*, 3 (2001) 41-60.

Table 1: Components of IC

IC		
Human capital	**Structural capital**	**Relational capital**
- Knowledge and skills	- Corporate culture	- Brand
- Trainings	- Management process	- Market reputation
- Creativity	- ICT systems	- Customer relations
- Ability to learn	- Corporate strategy and plans	- Communication with existing and new customers
- Responsibility, individualism, dedication	- Internal databases	- Ability to appeal to new customers
- Enthusiasm and level of motivation	- Software	- Business networks
- Flexibility and adaptability	- Patents, licenses, authorship rights	- Sales channels
- Attitudes (toward life, family, career, etc.)	- Franchises	- License agreements

the impact of IC on future value creation. The nature and potential of IC demands a new set of performance measures. Accordingly, the measurement and valuation of IC and its disclosure within financial statements have become increasingly prominent, with the aim of improving understanding how IC contributes to the value creation process. IAS 38 requires the disclosure of intangible assets within financial statements when it is evident that the company exploiting them will benefit directly from these intangibles in the future. In addition, IC should appear in financial statements according to IAS 38 when the costs of obtaining these intangibles can be estimated reliably. The challenge faced by the accounting profession is to find a suitable model for embedding the IC elements into financial statements.[16]

IC measurement

Today, the measurement of IC and its influence on a company's financial and market performance are crucial topics. Many attempts have been made to find a useful model for measuring the size and impact of IC on overall company performance. One early attempt in this area can be seen in the work of Edvinsson[17], who developed a model for measuring IC (known as Skandia Navigator) while employed by the Swedish insurance company Skandia. Methods for measuring IC can be categorized into four large groups[18]: direct IC methods, market capitalization methods, ROA methods, and scorecard methods. The most important direct techniques for measuring IC are Technology Broker, Citation-Weighted Patents, and Value Explorer. Of market capitalization methods, the most significant are Tobin's q, and Market-to-Book Value. The most recognizable ROA techniques are the Economic Value Added (EVA) method, Calculated Intangible Value, and VAIC. Widely known scorecard models include the Skandia Navigator, Value Chain Scoreboard, Intangible Assets Monitor, and Balanced Scorecard.

Value added as an indicator of IC

The starting point of the model developed and implemented by Pulic[19] is calculation of value added (VA), as an indicator of a company's efficient use of IC. The basic idea behind this approach lies in determining the contribution of all company resources (human, structural, and physical) to the creation of VA, which is calculated by:

$$VA = OUT - IN \quad (1)$$

Outputs (OUT) represent total sales realized on the market. Inputs (IN) entail all the costs of managing the company, except for those related to human resources, which are viewed in this model as an investment. Further steps involve calculating intellectual and physical capital efficiency coefficients.

A company's IC comprises human and structural capital. Calculation of human capital efficiency (HCE) starts with employee salaries and wages, which are not included as inputs in this model. HCE is therefore calculated as:

$$HCE = VA/HC \quad (2)$$

Here, HC denotes total salaries and wages during one fiscal year. In this manner, the model describes the relative contribution of human resources to the creation of VA. The next component of IC, structural capital, represents everything that stays in the office when employees go home. Structural capital comprises hardware, software, organizational structure, patents, trademarks, and all other factors that support or increase employee productivity (EP).[20] Structural capital efficiency (SCE) is calculated by:

$$SCE = SC/VA \quad (3)$$

Structural capital (SC) represents the second component of a company's IC. The above equation indicates that SCE is inversely related to HCE. IC efficiency (ICE) is obtained by summing the partial efficiencies of human and structural capital:

16 Chareonsuk, C. and Chansa-ngavej, C., "Intangible assets management framework for long-term financial perormance", *Industrial Management & Data Systems*, 6 (2008) 812-828; Lev, B., "Remarks on the measurement, valuation, and reporting of intangible assets", *FRBNY Economic Policy Review*, September (2003) 17-21; Lev, B. And Zarowin, P., "The boundaries of financial reporting and how to extend them", *Jornal of Accounting Research*, 2 (1999) 353-385.

17 Edvinsson, L., "Developing intellectual capital at Skandia", *Long Range Planning*, 3 (1997) 366-373.

18 Roos, G., Pike, S. and Fernström, L., *Managing Intellectual Capital in Practice*, Butterworth-Heinemann, Oxford, 2005.

19 Pulic, A., "Measuring the performance of intellectual potential in knowledge economy", presented at the 2nd McMaster World Congress on Measuring and Managing Intellectual Capital by the Austrian Team for Intellectual Potential, 1998; Pulic, A., "Intellectual capital: does it create or destroy value?", *Measuring Business Excellence*, 1 (2004) 62-68.

20 Bontis, N., "Assessing knowledge assets: a review of the models used to measure intellectual capital", *International Journal of Management Reviews*, 3 (2001) 41-60.

$$ICE = HCE + SCE \quad (4)$$

Finally, the physical capital component, or capital-employed efficiency (CEE), is derived from the ratio of VA to a company's net assets:

$$CEE = VA/CE \quad (5)$$

Here, capital employed (CE) is the capital already invested in a company, that is, its net assets. In order to enable a comparison of overall value creation efficiency, the two indicators need to be added together as:

$$VAIC = ICE + CEE, \quad (6)$$

where VAIC is the value added intellectual coefficient. This aggregated indicator allows us to understand a company's overall efficiency and indicates its intellectual ability. Put simply, VAIC measures how much new value has been created per invested monetary unit. A higher value for this coefficient indicates higher value creation using the company's resources.

Despite criticism, chiefly put forward by Andriessen[21], who suggests that the model's basic assumptions may lead to dissatisfying results, VAIC methodology is becoming increasingly accepted by researchers as a good indicator of a company's efficient use of IC. Moreover, the VAIC method was accepted by the former U.K. Department for Business, Enterprise, and Regulatory Reform and Department for Innovation, Universities and Skills as a measure of companies' IC, thus contributing greatly to the model's validity.[22]

The most significant disadvantage of the VAIC model is that it is calculated using the financial statements of companies, which implies that the coefficient is a measure of value created in the past and not that of value creation potential. Another criticism (which also applies to other IC valuation models) entails the inability of the model to incorporate synergistic effects realized through interactions between different components of IC. VAIC methodology clearly depicts the contribution of each component of IC to value creation. However, in practice elements of IC interact, and therefore it is not possible to calculate accurately the contribution of each component to the creation of VA. For example, advancements in IT (structural capital) may lead to increases in employee productivity (human capital). In addition, the model fails to offer adequate analysis of the creation of VA for those companies that have negative equity in terms of operating profit. In these cases, VA and all the elements of VAIC (HCE, SCE, and CEE) would be negative as well, which would lead to useless analysis.[23]

IC and financial performance

A number of studies have dealt with the impact of IC on company financial performance. These studies mostly reveal a positive correlation between the value of IC components and corporate performance. A few studies stand out regarding similar research hypotheses and methodology to those used in the present study. For example, Firer and Williams[24] conducted research on a sample made up of 75 companies listed on the Johannesburg Stock Exchange. The companies were in industries expected to be characterized by high volumes of investments in IC and dependence on the efficient exploitation of IC. Their study is particularly interesting since the economy of South Africa was, at the time (2003), in the same stage of transition that the Serbian economy is experiencing today. Hypotheses presented in Firer and Williams' paper correspond to some extent to those developed in the present study. Further research, undertaken in Taiwan, aimed to provide insights into the relationship between IC (measured by VAIC) and market value and the financial performance of listed companies.[25] Another interesting study[26] presented the level of IC (also measured by VAIC) in domestic and foreign banks in Malaysian territory. Goh's research found that domestic banks were generally less efficient at IC exploitation. A similar study was conducted on Egyptian software companies to analyze how IC affected the organizational

21 Andriessen, D., *Making Sense of Intellectual Capital*, Butterworth-Heinemann, Burlington, 2004.

22 Zéghal, D. and Maaloul, A., "Analysing value added as an indicator of intellectual capital and its consequences on company performance", *Journal of Intellectual Capital*, 1 (2010) 39-60.

23 Chiu, S. K. W., Chan, K. H. and Wu, W. W. Y., "Charting intellectual capital performance of the gateway to China", *Journal of Intellectual Capital*, 2 (2011) 249-276.

24 Firer, S. and Williams, M., "Intellectual capital and traditional measures of corporate performance", *Journal of Intellectual Capital*, 3 (2003) 348-360

25 Chen, M., Cheng, S. and Hwang, Y., "An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance", *Journal of Intellectual Capital*, 2 (2005) 159-176.

26 Goh, P. C., "Intellectual capital performance of commercial banks in Malaysia", *Journal of Intellectual Capital*, 3 (2005) 385-396.

performance of selected companies.[27] Another interesting study[28] involved Malaysia's entire financial sector, with the aim of determining the impact of IC on financial performance in the sector from 1999 to 2007, and VAIC was used as a measure of efficient IC use. Ting and Lean chose to analyze the financial sector after assuming its heavy dependency on IC performance.

Research objectives and hypotheses

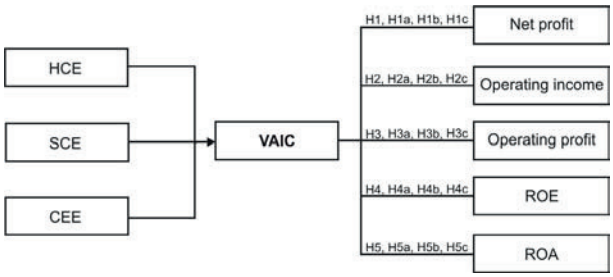
The present research has two basic objectives. The first is to determine whether there is interdependence between the amount of IC (measured by VAIC) and the financial performance of selected companies from the real sector. The second basic objective is to analyze empirically the role of each component of IC on certain financial performance measures. Financial performance measures used here are net profit, operating revenue, operating profit, ROE, and ROA.

These two objectives are tested with the following hypotheses:

1. Companies with higher VAIC tend to have higher net profit
   - 1a. Companies with higher HCE tend to have higher net profit
   - 1b. Companies with higher SCE tend to have higher net profit
   - 1c. Companies with higher CEE tend to have higher net profit
2. Companies with higher VAIC tend to have higher operating revenue
   - 2a. Companies with higher HCE tend to have higher operating revenue
   - 2b. Companies with higher SCE tend to have higher operating revenue
   - 2c. Companies with higher CEE tend to have higher operating revenue
3. Companies with higher VAIC tend to have higher operating profit
   - 3a. Companies with higher HCE tend to have higher operating profit
   - 3b. Companies with higher SCE tend to have higher operating profit
   - 3c. Companies with higher CEE tend to have higher operating profit
4. Companies with higher VAIC tend to have higher ROE
   - 4a. Companies with higher HCE tend to have higher ROE
   - 4b. Companies with higher SCE tend to have higher ROE
   - 4c. Companies with higher CEE tend to have higher ROE
5. Companies with higher VAIC tend to have higher ROA
   - 5a. Companies with higher HCE tend to have higher ROA
   - 5b. Companies with higher SCE tend to have higher ROA
   - 5c. Companies with higher CEE tend to have higher ROA

Figure 2 shows the conceptual model used in determining the relationship between IC and financial performance.

Figure 2: Conceptual model of the research



Data sources and methods

The research used a sample of 100 Serbian companies from the real sector that had achieved the highest net profits in 2010 according to data in "Report on the functioning of the economy in Republic of Serbia in 2010", published by the Agency for Business Registers.[29] The study also used data drawn from the financial statements of each of these

27 Seleim, A., Ashour, A. and Bontis, N., "Human capital and organizational performance: a study of Egyptian software companies", *Management Decision*, 4 (2007) 789-801.

28 Ting, I. W. K. and Lean, H. H., "Intellectual capital performance of financial institutions in Malaysia", *Journal of Intellectual Capital*, 4 (2009) 588-599.

29 Agencija za privredne registre, *Saopštenje o poslovanju privrede u Republici Srbiji u 2010. godini – uporedni podaci iz finansijskih izveštaja za 2009. i 2010. godinu*, Beograd, 2011.

companies, gathered by the authors. Software SPSS 17.0 was used to analyze the data statistically.

Table 2 offers an insight into the companies' positions according to achieved net profit in 2010 and the level of efficiency in terms of VAIC. It was not possible to determine the level of VAIC for six of the analyzed companies, since their capital, salaries, and wages were at zero level in 2010. The data on VAIC rankings indicate that 45 companies were better positioned in terms of this criterion compared to the net profit rankings. In other words, 45 companies from the real sector of Serbia use their capital (intellectual and physical) more efficiently than would be assumed simply by looking at the levels of net profit. The potential for value creation in these companies is undervalued when analyzing them solely on net profit. On the other hand, the companies whose positions were worse according to VAIC rankings (49 of them) are less efficient in terms of capital (particularly intellectual) exploitation.

Table 2: Company rankings according to net profit and VAIC in 2010

Company name	Net profit in 2010 (in 000 EUR)	Net profit ranking	VAIC in 2010	VAIC ranking	Rankings change according to VAIC comparing to net profit	
NIS	156,253	1	4.43	53	worse position	-52
Telekom Serbia	149,665	2	5.15	39	worse position	-37
PTT Serbia	43,906	3	2.00	87	worse position	-84
Tarkett	39,760	4	5.46	35	worse position	-31
Tigar Tires	31,384	5	4.04	60	worse position	-55
Lafarge BFC	24,196	6	7.12	21	worse position	-15
Coca-Cola HBC	21,929	7	3.71	65	worse position	-58
Telenor	20,121	8	7.51	19	worse position	-11
Yugorosgaz	18,862	9	8.31	16	worse position	-7
Airport "Nikola Tesla"	18,364	10	6.14	28	worse position	-18
Delta Maxi	17,852	11	4.30	55	worse position	-44
IM Matijević	17,619	12	4.94	44	worse position	-32
Philip Morris Operations	17,604	13	4.75	46	worse position	-33
Titan Kosjerić	17,122	14	5.92	32	worse position	-18
Elektroprivreda Srbije	16,935	15	7.86	17	worse position	-2
Delta City 67	16,693	16	2,006.97	1	better position	15
Holcim Serbia	15,905	17	5.96	31	worse position	-14
Henkel Merim	15,091	18	6.32	26	worse position	-8
Umka	14,068	19	3.56	68	worse position	-49
Victoria Logistic	11,117	20	12.59	10	better position	10
Imlek	10,953	21	4.61	48	worse position	-27
RTB Bor	10,062	22	n.a.	n.a.	n.a.	n.a.
Crvenka	10,044	23	4.48	52	worse position	-29
Napred	9,870	24	6.96	22	better position	2
Apatinska pivara	9,487	25	21.77	5	better position	20
Messer Tehnogas	9,403	26	4.32	54	worse position	-28
Amasis	8,821	27	-0.07	91	worse position	-64
Tetra Pak Production	8,682	28	11.58	11	better position	17
Pharmaswiss	8,529	29	5.02	41	worse position	-12
Budapest Energy Trading	8,370	30	1,461.39	2	better position	28
Srbijagas	8,352	31	4.95	43	worse position	-12
Rudnap Group	8,253	32	4.96	42	worse position	-10
Victoriaoil	7,667	33	12.67	9	better position	24
Elektro mreža Srbije	7,609	34	4.12	58	worse position	-24
Sojaprotein	7,507	35	7.18	20	better position	15
Direct Media	7,194	36	8.98	15	better position	21
Nelt Co.	7,037	37	1.89	88	worse position	-51
Mercator S	6,910	38	1.35	90	worse position	-52
Autoritas Investments	6,881	39	5.06	40	worse position	-1
Sheer Corporation	6,868	40	6.95	23	better position	17

Company name	Net profit in 2010 (in 000 EUR)	Net profit ranking	VAIC in 2010	VAIC ranking	Rankings change according to VAIC comparing to net profit	
Mercata	6,748	41	3.92	62	worse position	-21
Ball Packaging Europe	6,718	42	5.19	38	better position	4
C market	6,495	43	2.94	75	worse position	-32
Victoria Group	6,363	44	-0.09	92	worse position	-48
Dinamika	6,268	45	9.76	13	better position	32
Beohemija	6,190	46	6.10	29	better position	17
Utva industrial zone	6,155	47	-2.82	94	worse position	-47
Energoprojekt holding	6,059	48	6.20	27	better position	21
Jugoimport SDPR	6,056	49	2.18	86	worse position	-37
Veletabak	5,957	50	3.83	64	worse position	-14
Rubin	5,878	51	4.57	49	better position	2
Galenika Fitofarmacija	5,836	52	5.43	36	better position	16
Concern Farmakom MB	5,677	53	9.01	14	better position	39
Eurolion	5,512	54	3.93	61	worse position	-7
Pionir	5,342	55	3.86	63	worse position	-8
Bambi-Banat	5,270	56	3.64	66	worse position	-10
Fiat Cars Serbia	5,266	57	1.59	89	worse position	-32
Battery Factory	5,196	58	4.05	59	worse position	-1
M Centar Land	5,145	59	n.a.	n.a.	n.a.	n.a.
Saga	5,062	60	4.23	57	better position	3
Fresenius Medical Care	5,037	61	3.36	72	worse position	-11
PTP Dis	5,033	62	4.49	50	better position	12
Airtraffic Services Agency	5,025	63	2.45	84	worse position	-21
Gorenje	5,011	64	4.25	56	better position	8
Štark	4,992	65	2.99	74	worse position	-9
Concern Farmakom-Zajača	4,959	66	5.65	33	better position	33
Promist	4,955	67	24.66	4	better position	63
Valy	4,908	68	2.86	77	worse position	-9
Metro Cash & Carry	4,820	69	2.28	85	worse position	-16
M Centar Sistem	4,698	70	n.a.	n.a.	n.a.	n.a.
Jedinstvo	4,632	71	2.91	76	worse position	-5
Nokia Siemens Networks	4,450	72	4.49	51	better position	21
Pekabeta	4,440	73	2.47	83	worse position	-10
Ce-Za-R	4,423	74	6.00	30	better position	44
AOFI	4,388	75	-0.47	93	worse position	-18
Gebi	4,335	76	15.14	6	better position	70
Alfa Plam	4,333	77	2.72	81	worse position	-4
Takovo	4,298	78	3.41	71	better position	7
Grand Prom	4,265	79	2.80	78	better position	1
Promo Media	4,256	80	n.a.	n.a.	n.a.	n.a.
Vital	4,193	81	6.59	24	better position	57
PORR BAU Gmbh	4,137	82	5.34	37	better position	45
BZ Top Corporation	4,096	83	n.a.	n.a.	n.a.	n.a.
Ringier Axel Springer	4,076	84	3.50	69	better position	15
Agromarket	3,996	85	6.46	25	better position	60
Ćirić & Son	3,975	86	66.95	3	better position	83
Agroglobe	3,968	87	10.09	12	better position	75
Asseco SEE	3,891	88	3.14	73	better position	15
TE Nikola Tesla	3,847	89	4.89	45	better position	44
Novkabel	3,792	90	n.a.	n.a.	n.a.	n.a.
Elektrosrbija	3,769	91	2.70	82	better position	9
Nectar	3,690	92	3.56	67	better position	25
Fertil	3,655	93	13.72	7	better position	86
Roaming Electronics	3,646	94	13.60	8	better position	86

Company name	Net profit in 2010 (in 000 EUR)	Net profit ranking	VAIC in 2010	VAIC ranking	Rankings change according to VAIC comparing to net profit	
Serbia Highway	3,602	95	3.47	70	better position	25
Beohemija – Inhem	3,475	96	7.76	18	better position	78
Swisslion-Takovo	3,466	97	2.78	79	better position	18
Enmon	3,408	98	5.63	34	better position	64
Ericsson	3,407	99	2.75	80	better position	19
Milk factory Šabac	3,405	100	4.62	47	better position	53

Source: Agency for Business Registers, 2011, and authors' calculation

The sample comprises companies of varying legal form and size. Companies with limited liability (Ltd.) and corporations make up 94% of the sample. Some 92% of the companies are large, 5% medium, and only 3% small enterprises. These 100 companies together realized 38% of total net profit of the Serbian economy. In terms of the whole economy, the 100 most profitable companies make up only 0.1% of all entities in Serbia. The majority of the companies in the sample are in the manufacturing (46%), wholesale and retail (21%), traffic and warehousing (6%), and construction (6%) sectors.

The research model employed involves dependent and independent variables. The independent variables are the components of VAIC, HCE, SCE, and CEE, and the steps used to calculate these variables are described in Section 2. Conversely, the dependent variables selected are net profit, operating revenue, operating profit, ROE, and ROA:

- ROE is calculated by dividing net profit by the book value of average stockholders' equity
- ROA is the ratio of pre-tax income to the company's total assets

Gathered data were analyzed by applying statistical methods of correlation and regression, and the research model used both single and multiple linear regressions. The first regression model is a simple regression equation aimed at answering the question: How does VAIC, as an aggregate measure, affect the described dependent variables? Since certain components of VAIC affect financial performance by different amounts and in different ways, multiple regression was used to answer the question: To what extent and in what way do components of VAIC (HCE, SCE, and CEE) influence selected indicators of corporate success?

Results

Correlation analysis

Table 3 presents the results of correlation analysis. They indicate a moderate correlation between CEE and ROE

Table 3: Results of correlation analysis

		NP	OR	OP	ROE	ROA	HCE	SCE	CEE	VAIC
NP	Pearson Correlation	1	0.693**	0.939**	-0.051	0.005	-0.047	0.031	0.013	0.008
	Sig. (2-tailed) p-value		0.000	0.000	0.619	0.964	0.655	0.762	0.898	0.939
OR	Pearson Correlation	0.693**	1	0.795**	-0.113	-0.256*	-0.035	0.052	0.016	-0.072
	Sig. (2-tailed) p-value	0.000		0.000	0.270	0.010	0.735	0.611	0.875	0.488
OP	Pearson Correlation	0.939**	0.795**	1	-0.045	-0.079	-0.009	0.094	0.139	-0.025
	Sig. (2-tailed) p-value	0.000	0.000		0.659	0.433	0.932	0.358	0.176	0.808
ROE	Pearson Correlation	-0.051	-0.113	-0.045	1	0.042	0.175	-0.067	**0.300****	0.037
	Sig. (2-tailed) p-value	0.619	0.270	0.659		0.681	0.096	0.521	**0.003**	0.722
ROA	Pearson Correlation	0.005	-0.256*	-0.079	0.042	1	0.091	**-0.326****	-0.001	0.151
	Sig. (2-tailed) p-value	0.964	0.010	0.433	0.681		0.385	**0.001**	0.991	0.146
HCE	Pearson Correlation	-0.047	-0.035	-0.009	0.175	0.091	1	0.228*	0.024	0.972**
	Sig. (2-tailed) p-value	0.655	0.735	0.932	0.096	0.385		0.027	0.818	0.000
SCE	Pearson Correlation	0.031	0.052	0.094	-0.067	-0.326**	0.228*	1	0.057	0.119
	Sig. (2-tailed) p-value	0.762	0.611	0.358	0.521	0.001	0.027		0.588	0.253
CEE	Pearson Correlation	0.013	0.016	0.139	0.300**	-0.001	0.024	0.057	1	-0.030
	Sig. (2-tailed) p-value	0.898	0.875	0.176	0.003	0.991	0.818	0.588		0.777

*Significance level α=0.05; ** Significance level α=0.01; NP: net profit; OR: operating revenue; OP: operating profit

(Pearson coefficient 0.300) and between SCE and ROA, which in this case are inversely correlated (Pearson coefficient −0.326). Values for the correlation coefficient are interpreted according to Cohen.[30] In the case of CEE and ROE, there is a less than 0.3% probability that a correlation coefficient this large would have occurred by chance in a sample of 100 companies. On the other hand, the probability that the coefficient of correlation in the case of SCE and ROA would have occurred by chance in the same sample is less than 0.1%. Other performance measures (net profit, operating revenue, and operating profit) show no statistically significant correlation with independent variables.

Results of simple linear regression

Table 4 lists the findings from simple linear regression, where VAIC appears as an independent variable, and dependent variables are net profit, operating revenue, operating profit, ROE, and ROA.

Table 4: Results of simple linear regression (VAIC as independent variable)

Variable	R^2	ß	T	Level of significance
Net profit	0.000	0.008	0.077	0.939
Operating revenue	0.005	-0.072	-0.696	0.488
Operating profit	0.001	-0.025	-0.243	0.808
ROE	0.001	0.037	0.356	0.722
ROA	0.023	0.151	1.465	0.146

No evidence can be found in these results of any statistically significant correlation between VAIC, as an aggregate measure of efficient capital exploitation, and the selected performance measures. This suggests that IC as measured by VAIC does not influence the corporate performance of the 100 investigated companies that recorded the greatest net profits in 2010.

Results of multiple linear regression analysis

Since it is possible to separate VAIC into components, particular analytical values utilize multiple linear regression to determine the impact of certain components on selected performance measures. The elements of IC used in this research model are HCE and SCE. Tables 5, 6, 7, 8, and 9 present the results of this regression analysis.

Table 5: Results of linear multiple regression analysis (dependent variable net profit)

Variable	ß	T	Level of significance	VIF
HCE	-0.057	-0.521	0.604	1.051
SCE	0.293	0.293	0.770	1.054
CEE	0.082	0.082	0.935	1.004

R^2 = 0.004 F = 0.104 Significance = 0.957

Table 5 shows that net profit does not significantly influence human, structural, or physical capital, viewed as a whole or individually. If we look at the value of R^2, we can conclude that there is little causality between net profit and HCE, SCE, and CEE coefficients, since only 0.4% of changes in net profit may be contributing to variations in these coefficients. As a test for multicollinearity, the variance inflation factor (VIF) was used. According to Myers[31], VIF must be below ten in order for the statistical model to be relevant.

Table 6: Results of linear multiple regression analysis (dependent variable operating revenue)

Variable	ß	T	Level of significance	VIF
HCE	-0.052	-0.475	0.636	1.051
SCE	0.060	0.552	0.582	1.054
CEE	0.004	0.037	0.971	1.004

R^2 = 0.005 F = 0.147 Significance = 0.931

Where the dependent variable is operating revenue, the conclusions are similar to those reached where the dependent variable is net profit. The model explains only 0.5% of total changes in operating revenue, while there is no significant correlation between operating revenue and HCE, SCE, and CEE (Table 6).

Table 7: Results of linear multiple regression analysis (dependent variable operating profit)

Variable	ß	T	Level of significance	VIF
HCE	-0.035	-0.328	0.743	1.051
SCE	0.083	0.771	0.443	1.054
CEE	0.128	1.217	0.227	1.004

R^2 = 0.024 F = 0.736 Significance = 0.533

30 Cohen, J., *Statistical Power Analysis for the Behavioral Sciences*, (2nd ed.), Lawrence Erlbaum Associates, Hillsdale, NJ, 1988.

31 Myers, R., *Classical and Modern Regression with Applications*, 2nd edition, Duxbury, Boston, 1990, in: Field, A., *Discovering Statistics using SPSS*, 2nd edition, SAGE Publications, London, 2005, 175.

Table 7 presents the results of multiple linear regression when the dependent variable is operating profit. In this case, only 2.4% of changes in the value of operating profit may be the effect of changes in VAIC components (R^2=0.024). As in the case of net profit, there is no causality between IC components and the analyzed dependent variable.

Table 8: Results of linear multiple regression analysis (dependent variable ROE)

Variable	ß	T	Level of significance	VIF
HCE	0.191	2.868	0.005	1.051
SCE	-0.160	-2.397	0.019	1.054
CEE	0.766	11.767	0.000	1.004

R^2 = 0.628 F = 49.507 Significance = 0.000

The data from Table 8 show the interdependence of ROE and components of VAIC. The R^2 value is 0.628, which indicates that changes in ROE value can be explained by changes in HCE, SCE, and CEE values in 62.8% of the cases. The statistically most significant relation is between ROE and CEE, and then between ROE and HCE, while the relationship between ROE and SCE is insignificant.

Table 9: Results of linear multiple regression analysis (dependent variable ROA)

Variable	ß	T	Level of significance	VIF
HCE	0.268	2.838	0.006	1.051
SCE	-0.490	-5.190	0.000	1.054
CEE	-0.013	-0.143	0.887	1.004

R^2 = 0.255 F = 10.050 Significance = 0.000

Table 9 indicates the relationship between independent variables HCE, SCE, and CEE and the dependent variable ROA. The model explains 25.5% of changes in ROA, and a significant correlation can be seen between structural capital and ROA. Of least significance is the relation between human capital and ROA, while no correlation is observed between CEE and ROA. Table 10 summarizes the results of regression analysis.

Taking together all of the above findings, the following can be concluded:

- Correlation analysis failed to confirm hypotheses H1, H2, H3, H4, and H5.
- Results of multiple regression analysis confirmed hypotheses H4a, H4c, and H5b.
- The statistically most significant correlation is that between ROE and CEE (hypothesis H4c). The value of β is 0.766 with a significance level of 0.000.
- Multiple regression analysis confirmed hypotheses H1a, H1b, H1c, H2a, H2b, H2c, H3a, H3b, H3c, H4b, H5a, and H5c.

Conclusion, limitations, and avenues for future research

The importance and potential of IC as a factor in competitive advantage is undisputable. Developed market economies base their competitiveness on knowledge, information, commercial innovativeness, corporate strategies, and the sophistication of their business models, and far less on natural resources and cheap labor. The Lisbon Treaty represents efforts made by the European Union to strengthen their member states' competitiveness based on IC. A European Commission[32] document entitled "Europe 2020 – European strategy for smart, sustainable, and inclusive growth" states that development based on knowledge and innovation must be a key pillar of future "smart" growth of European Union member states. Serbia is currently falling behind in the development of a knowledge- and innovation-based society. Since the competitiveness of the Serbian economy is low (according to the World Economic Forum's index of global competitiveness in 2011, Serbia is placed 95th), and as the Serbian real sector is currently in a state of crisis, the research results presented in this paper are logical and unsurprising. They indicate clearly that IC has a very small or insignificant impact on the financial performance of the 100 companies in the real sector with the highest net profits of 2010. Consequently, the level of IC is the limiting factor in growth in competitiveness. This is particularly relevant today, when investing in IC is the only real way of progressing business during times of economic crises.

The study failed to confirm hypotheses regarding the interdependence of net profit, operating revenue, operating profit, ROE, and ROA, and the independent variable VAIC (as an aggregate measure). The situation is

32 European Commission, *Europe 2020 – A European strategy for smart, sustainable and inclusive growth*, Brussels, 2010.

a little different when we analyze components of human, structural, and physical capital separately. The results of correlation analysis indicate a moderate positive correlation between CEE and ROE and a moderate negative correlation between SCE and ROA. In all other cases, there is no statistically significant relationship between dependent and independent variables of the proposed research model. Net profit does not depend on HCE, SCE, and CEE and is not therefore the consequence of the efficient use of IC. The situation is similar when we analyze operating revenue and operating profit and their relationship with VAIC components. However, the research reveals that HCE and CEE influence ROE, with CEE being more influential than HCE. On the other hand, ROA is mainly determined by the SCE coefficient.

The measurement and valuation of IC and its impact on companies' financial and market performance are crucial issues and should not be thought of as trivial tasks. Just as corporate performance cannot be analyzed using solely one measure, it is also impossible to assess IC from only one perspective. The VAIC coefficient is only one attempt of many to find a suitable model for estimating the level of IC and its contribution to corporate performance. Its basic advantage (simplicity of calculation and ease of use) is its main limitation. The main problem is in measuring the contribution of something that is not physical and cannot be easily quantified. Even if IC could be clearly defined and presented, the key issue is that the value created by IC is indirect. The interaction between different forms of IC and with other forms of material assets should therefore be borne in mind, since the effects of IC tend to be delayed and unpredictable.

Another important limitation relates to the inability of the model to assess companies' future performance. Modern measures of performance start with cash flow rather than net profit. In other words, VAIC does not provide an adequate framework with which to integrate financial measures of performance with IC as a driver of future performance.

Apart from the abovementioned limitations of VAIC, the results of our empirical study undertaken in Serbia are a good basis for further research to improve understanding of the impact of IC on financial performance. One possibility is to include more variables such as different nonfinancial measures of performance. By doing this, the scope and validity of the research could be increased. Another route would be to conduct the research on a larger sample, which could have a different structure and be more representative. It may also be interesting to analyze the impact of IC on financial performance within and between particular

Table 10: Summary of research results found by regression analysis

Independent variable	Dependent variable	R^2	β	Level of significance	Hypothesis	Hypothesis confirmed
VAIC	Net profit	0.000	0.008	0.939	H1	No
	Operating revenue	0.001	-0.072	0.488	H2	No
	Operating profit	0.005	-0.025	0.808	H3	No
	ROE	0.001	0.037	0.722	H4	No
	ROA	0.023	0.151	0.146	H5	No
HCE	Net profit	0.004	-0.054	0.604	H1a	No
	Operating revenue	0.005	-0.052	0.636	H2a	No
	Operating profit	0.024	-0.035	0.743	H3a	No
	ROE	0.628	0.191	0.005	H4a	Yes
	ROA	0.255	0.268	0.006	H5a	No
SCE	Net profit	0.004	0.293	0.770	H1b	No
	Operating revenue	0.005	0.060	0.582	H2b	No
	Operating profit	0.024	0.083	0.443	H3b	No
	ROE	0.628	-0.160	0.019	H4b	No
	ROA	0.255	-0.490	0.000	H5b	Yes
CEE	Net profit	0.004	0.082	0.935	H1c	No
	Operating revenue	0.005	0.004	0.971	H2c	No
	Operating profit	0.024	0.128	0.227	H3c	No
	ROE	0.628	0.766	0.000	H4c	Yes
	ROA	0.255	-0.013	0.887	H5c	No

industries or between companies, for instance, of different sizes or legal forms or with different market positions or proportions of total revenues as export revenues.

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ANALYSIS OF COMPETITION AND CONCENTRATION IN THE CONFECTIONERY PRODUCTS MARKET IN SERBIA*

Analiza konkurencije i koncentracije na tržištu konditorskih proizvoda u Srbiji

Abstract

Confectionery products make up a significant part of the consumer basket, which makes them a strategically important segment of the consumer standard in Serbia. Hence the authors' interest in the domains of market concentration and antitrust regulation of this industry. The aim of this paper is to present the current status and trends in the confectionery products market, to define the methodological framework and to perform an analysis of competition and market concentration. The methodology of the analysis is consistent with the antitrust practice of the European Commission, i.e. its resolved representative regulatory disputes as well as with its fundamental scientific contributions in this area. It is understood that the authors were also careful that the analysis is consistent with the regulatory framework for protection of competition in Serbia. Proper definition of the relevant market arises as the key issue in implementing the regulatory procedure, which predominantly determines not only the course, but also the final outcome of the regulation. The survey was conducted based on the data from relevant sources for 2010 and shows the conditions and the intensity of competition and concentration in the confectionery products market for the stated year. The calculated concentration ratios indicate that Serbian confectionary market is relatively unconcentrated to moderately concentrated.

Key words: *confectionery products, relevant market, market concentration, Serbia.*

Sažetak

Konditorski proizvodi čine značajan deo potrošačke korpe, što ih čini strategijski važnim segmentom potrošačkog standarda u Srbiji. Odatle sledi i interesovanje autora za domen tržišne koncentracije i antimonopolske regulacije ove grane. Cilj ovog rada je da prikaže stanje i aktuelne trendove na tržištu konditorskih proizvoda, definiše metodološki okvir i sprovede analizu konkurencije i tržišne koncentracije. Metodologija analize je usklađena sa antimonopolskom praksom Evropske komisije, odnosno njenim rešenim reprezentativnim regulatornim slučajevima kao i fundamentalnim naučnim doprinosima iz ove oblasti. Podrazumeva se da su autori vodili računa da analiza takođe bude usklađena sa regulatornim okvirom zaštite konkurencije u Srbiji. Pravilno definisanje relevantnog tržišta nameće se kao ključno pitanje prilikom sprovođenja regulatorne procedure, što dominantno određuje ne samo tok, već i konačni ishod regulacije. Istraživanje je sprovedeno na bazi podataka iz relevantnih izvora za 2010. godinu i prikazuje uslove i intenzitet konkurencije i koncentracije na tržištu kondistorskih proizvoda u toj godini. Izračunata merila koncentracije ukazuju da je tržište konditorskih proizvoda Srbije nisko do umereno koncentrisano.

Ključne reči: *konditorski proizvodi, relevantno tržište, tržišna koncentracija, Srbija.*

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Introduction

The ratio of market concentration and competition became topical in late ninety-nineties when there was a sudden increase in market power of the big players based on their external growth through mergers and acquisitions. The reasons for the increased concentration of market power in this period lie in the rapid liberalization of goods and capital markets, in the opening of what previously had been autarchic economies due to the collapse of communism, human capital migration and government support for the companies with the status of "national champions".

In mid-nineties, in the context of the EU Stabilization and Association Process, the candidate countries, successively formed their own regulatory frameworks and regulatory bodies, in accordance with the general principles in this segment as defined by the European Commission. Croatia completed this process back in 1995, Bulgaria in 1998, and Serbia only in 2002 when the Commission for Protection of Competition (hereinafter: the Commission) started to operate.

The aim of this paper is to highlight current trends in the confectionery industry in Serbia, and to establish the methodological basis for defining the relevant market for antitrust regulation of the companies in this sector in Serbia. Given the importance this industry has in the standard of living, it is not surprising that the activities of the companies in this industry are occasionally under the scrutiny of public opinion and the regulatory bodies in the domain of protection of competition. Evidently, the regulatory policy in the field of protection of competition in this sector has its own characteristics that require further clarification. In order to apply the methodology for measuring the degree of market concentration, it is necessary to introduce the theoretical concepts such as market structure or relevant market, then it is necessary to know the regulatory framework and practice of the Commission for Protection of Competition and, finally, it is necessary to thoroughly review the important trends in the market whose concentration is being measured.

The level of market concentration in the industry for 2010 was analyzed based on the representative methodological framework and the available statistics. The research results for market concentration are presented on the sales position for finished goods, with respect to the revenues of the companies involved in the production and sale of confectionery products. Similar type of analyses should be performed by the state regulators in cases of specific companies for which there is a concern that they are threatening the competition in their relevant market.

With respect to the objectives set, the paper consists of four parts. The first part shows the historical and current trends in the confectionery industry in Serbia. In the second part, the authors explain in detail the methodology for defining relevant markets and measuring market concentration inside the sector, using clear arguments from relevant practice of the European Commission for Protection of Competition. The third part presents the results of the analysis of market concentration in the confectionery market in Serbia. The final part summarizes the main conclusions of the paper and suggests possible directions for future related research.

The analysis of trends in Serbian confectionery industry

In order to analyze the trends in Serbian confectionery industry it is necessary to pre-define its domain. Namely, there are several classifications for groups of products that define the confectionery industry, which are not mutually compatible. There are at least three classifications in Serbia, which are currently not harmonized. These are the Rules on the classification of the quality of confectionery products (Novi Sad Fair, 2008), the Statistical nomenclature of activities (Serbian government, 2010) and the Customs regulations on product declarations (Serbian Customs Administration, 2010). The regulations on quality and customs declarations have a somewhat broader approach to the definition of confectionery products, including snack products, breakfast cereals, and even ice cream. For easier analysis, our analysis of the confectionery industry is going to follow the statistical classification of confectionery products, which tentatively places confectionery products in three broad categories: 1. Products made from cocoa (chocolate and similar products), 2. Products made from flour (biscuits, wafers and similar products) and

3. Products made from sugar (candy, chewing gums and similar products). A more precise statistical determination of the activity codes is going to be subject to subsequent analysis in this paper.

Although official statistics on the performance of the confectionery industry in Serbia is rather poor, the available indicators point to the following conclusions[1].

First, after a steady growth in production volume in the period between 2000 and 2008, Serbian confectionery industry has first stagnated, and then gone through a prolonged decline in the volume of activities during the past three years. The decline in the volume of activities in 2011 is expected to be between 3 and 5 percent compared to the previous year. The overall decline in the production volume in the period between 2008 and 2010 was 7 percent, or 9,300 tons of confectionery products. During this period, the largest decline by 20.7 percent was noted for candy products.

Second, the fall in the production volume was paralleled with the growth of imports in the field of confectionery products. In other words, the contraction of domestic supply was being compensated and exceeded by the over proportional growth of import. During the first quarter of 2011 alone, confectionery products imports increased by as much as 23%. An interesting fact is that over the last year Serbia imported chewing gums whose value was USD 27 million, which at first glance, seems surreal.

Third, unlike imports, exports have grown more slowly, only 2-3% year-on-year. 90% of exports were directed to the CEFTA region, mostly to Bosnia, Montenegro and Croatia. In this statement lies the hidden danger of loss of export markets with their approach to the liberalized EU market. Domestic confectionery industry should explore the possibility of greater use of benefits offered by free trade agreements with the Customs Union of Russia, Belarus and Kazakhstan, with Turkey and CEFTA countries. The exchange of products under these agreements is currently modest in volume, and confectionery products are not traded with Belarus and Kazakhstan at all. Serbia practically does not export confectionery products to Turkey, while imports of confectionery products from Turkey to Serbia have been at the level of about two thousand tons for years now.

Fourth, despite the decline in output and export stagnation, confectionery industry in Serbia is considered to be one of the healthier parts of Serbian food processing sector. The confectionery industry capacity (a hundred active companies with annual output of approximately USD 500 million), which employs about 7,000 workers, significantly exceeds domestic demand, so companies must be export oriented. Approximately USD 150 million is exported annually to various world markets creating a surplus of over USD 50 million in the balance of payments. In recent years, the total investment in the confectionery industry has exceeded one hundred million Euros. Most companies have invested in new production lines, expanding the range of products and factory modernization, the introduction of new standards for safety and quality control of products. All this has resulted in a more diverse range of confectionery products, whose quality does not lag behind the world famous brands.

Fifth, by analyzing the viewpoints of the leading confectionery company directors it can be concluded that the state is not sufficiently considered with the development of the industry, i.e. that some of its measures even discriminate against the domestic producers as compared to the importers. This primarily refers to the tax and customs policies, which substantially burden the cost price of the domestic producers. Namely, the tax burden on confectionery companies is up to 10% higher than with the competitors in the neighboring countries. Furthermore, through customs fees, the state raises the price of imported raw materials (sugar, milk powder, vegetable oil, palm oil, cocoa, hazelnut) thus making the domestic producers' prices uncompetitive in the domestic market as well. It is sufficient to give the example of sugar, whose price in the EU varies between EUR 500 and 550 per ton, while in Serbia the price of sugar is nearly EUR 900 per ton.

On one hand, the customs fees burden the cost of imported raw materials, and on the other hand, the prices of imported confectionery products have been steadily less burdened by customs fees. From 2013, the expected

1 The data used in the analysis are those of the Group of confectionery products manufacturers, which belongs to the Serbian Chamber of Commerce. (Source: http://www.pks.rs)

imports of confectionery products from the EU are going to be fully exempt from customs fees.

One possible solution discussed is the determination of customs quotas for the imports of milk powder and butter without paying the levies, as a duty, given that domestic production of milk cannot provide sufficient amounts (annual domestic production of milk powder is around 2,500 tons, and the needs of confectionery industry is approximately 6,000 tons). The supporting measures can be the introduction of seasonal levies, which would be applied only during the periods when there is enough domestic raw materials. Current levies are RSD 50.4 for skimmed milk powder (duty rate for products from the EU is 18%), RSD 44.8 for whole milk powder (16% duty rate) and RSD 28 per kilogram of butter (24% duty rate). Also, a useful measure can be easier imports of raw materials used for manufacturing export products. In some other sectors, this measure has provided positive incentives for export of finished products.

The inertia of the state regarding these issues is worrying. The joint initiative of all the confectionery producers to liberalize imports of milk powder did not prove to be of great assistance either, although they even the producers of milk agreed with it. In case the state does not react in time, full liberalization of the market in the future is going to lead to further closure of a large number of companies in the industry or to the reorientation of the domestic producers towards manufacturing private labels for other foreign producers. Perhaps the most worrying issue is the announcement of some major manufacturers that they are seriously thinking about relocating their production facilities out of Serbia (Macedonia, Croatia, Slovenia), where they would open new production facilities and work on equal terms with foreign competitors.

Shown below is a summary of the previous analysis, which shows the strengths and weaknesses of the domestic confectionery industry, as well as the positive and negative trends that affect or may affect its future development.

Methodological framework for measuring market concentration

Further text discusses the antitrust regulatory framework in Serbia, with special focus on determining the dominant position of a business entity in the relevant market. Also, special attention will be devoted to the methodology for identifying the relevant product market and relevant geographic market in the context of the confectionary industry. Finally, it will give a summary overview of the market concentration indicators and the method for their calculation and interpretation.

Concentration regulation in Serbia

The pillar of the legal framework for protection of competition in Serbia is the Law on Protection of Competition (hereinafter the Law), which entered into force 01 November 2009 (the Republic of Serbia, 2009). The supporting elements for the basic pillar are Serbian Government Decrees, which are an attempt to clarify the essential procedural and methodological sections of the Law. The previous Law from 2005 envisaged the establishment of the Commission for Protection of Competition, as the main regulatory body whose business is the prevention threats to competition. The Commission began its activities upon establishing the five-member Commission Council in 2006. The

Figure 1: SWOT analysis of Serbian confectionery industry

Strengths	Weaknesses
• Modern technology • Significant production capacity • A diverse and high quality range • Extensive experience and skilled work force • Strong brands • Strong market position in the CEFTA	• Lack of or high cost of specific raw materials • Inadequate marketing efforts and packaging • Lower level of expertise in logistics
Opportunities	**Threats**
• Products with functional dietary properties • Customized products for consumer groups with special requirements and needs • Opening of the EU and the Commonwealth of Independent States markets	• Unequal position compared to importers because of significant tax and customs burden to the price by the state • Sudden liberalization of the deomestic and CEFTA markets

Commission, according to the Law, is an independent organization, with the status of a legal personality, which reports to the National Assembly of the Republic of Serbia by submitting annual reports on its activities.

The law envisages three key forms of threat to competition:

1. Agreements which substantially prevent, restrict or distort competition
2. The abuse of dominant position
3. The concentration which significantly distorts competition on the basis of strengthening the dominant position in the market.

The first form of violation of competition envisaged by the Law are treaties intended to prevent, restrict or distort competition. It forbids cartel agreements between market participants whose intention is to agree the purchase or sale price in the market, limit production, supply or the amount of investment and treat sources of supply unequally.

As far as the abuse of dominant position is concerned, the Law prescribes that a dominant position in the relevant market belongs to those participants who make business decision without considering the interests and needs of other market participants (competitors, suppliers and end users). A flexible threshold for identifying a dominant position is prescribed to be the market share of 40%. Namely, a market participant may, but need not have a dominant position if its market share is greater than 40%, depending on the market share of its nearest competitors, the market power of potential competitors, the level of market entry barriers and market position of the buyers. Thus, those market participants whose market share is less than 40% may have a dominant position, but the burden of proving this dominant position lies on the Commission. Those market participants whose market share is greater than 40%, bear the burden of proving that they do not have a dominant market position themselves. The Law allows that market share is determined by different criteria, but also recommends that market share is determined based on the quantity of goods or services or income generated by the subject goods or services. The Law expressly prohibits the abuse of a dominant position, which would violate the equality of other market participants by imposing unfair purchase or selling conditions, limiting production, markets and technical development to the detriment of customers or by applying unequal conditions to equivalent transactions with various market participants. Therefore, the Law does not prohibit or sanction the possession of a dominant position, but the abuse of a dominant position in the market.

To protect the existing relations of competition and prevent the acquisition of a dominant position in the relevant market on the basis of concentration, the Law provides that the concentration between two or more parties may be conducted only upon the approval by the Commission, issued at the request of the market participants entering into the concentration relationship. The Commission has the option of a provisional approval of concentration, where it must precisely define the conditions that the participants must meet, as well as the validity period for the imposed conditions.

Violations of competitive rules are defined in the relevant market. The Law defines relevant market from two perspectives, as the relevant product market and the relevant geographic market. The relevant product market includes a set of goods and/or services that are interchangeable under satisfactory conditions by their users in terms of their properties, use and price. The relevant geographic market, according to the Law, is a territory with the same conditions for competition, which are significantly different from the conditions of competition in the neighboring territories. The previous Law was followed by the Decree on the criteria for determining the relevant market, but this Decree, for some reason, was terminated when the new Law entered into force of Law in 2009.

Methodological clarification of the relevant market domain

The first step in measuring market concentration is to define the relevant market. Defining the relevant market involves its determination in terms of products (relevant product market), and a spatial-geographic determination (relevant geographic market). If we are determining the relevant product market, this raises the question of which products are to be included in the "competitive struggle". On the other hand, the relevant geographic market definition implies spatial (geographic) boundaries within which

it makes sense to observe the "competitive" products comprising the relevant product market.

How to define the relevant market? Evidently, this is the most complex issue of any regulatory analysis, in which no single method can be considered completely perfect. The choice of methods for defining the relevant market primarily depends on the characteristics of the industry the companies that are subject to regulation belong to, but also on the availability of the data necessary for its implementation. In the developed regulatory practices of U.S. and EU the relevant market is predominantly determined by applying the hypothetical monopolist test (the SSNIP test[2]). This means that both dimensions of defining the relevant market (relevant product market and relevant geographic market) are based on the same test, where we should bear in mind that the application of the same test for different dimensions of the market does not also imply their simultaneous determination. First, the relevant product market is defined, and then, based on this definition, the relevant geographic market.

The idea of this test is to determine the immediate market for the product or service in which a hypothetical monopolist could profit from a small but significant (5 to 10%) and lasting (up to one year) price increases. The profitability of a hypothetical monopolist is measured based on a decline in demand due to the price increase, rising production and distribution costs due to a falling demand and the distribution of profitability per unit of product after the price increase. Assessing the drop in demand is based on an analysis of the demand substitutability and the supply substitutability. The substitution of demand is estimated based on the analysis of the product attributes, price elasticity, demand from customers, customer loyalty, dealer changes costs and other research conducted among the customers, market participants and experts. The substitution of supply is estimated based on an analysis of the possibility for other market players to offer a specific product or service in az short term without incurring higher costs.

The application of this test leads us to the relevant market comprising of a product, or a set of products that are sold in a particular geographic area, such that a hypothetical monopolist who maximizes its own profits and does not apply price discrimination, and who is the only present and future seller of those products, can profitably increase the price by a defined amount for a period of not less than one year (Federal Trade Commission, 2007: 6). In addition, it is assumed that the sales conditions for all other products that are not subject to the assumed increase in prices, and that belong to the relevant market are invariable.

Accordingly, the basic principle for defining the relevant market means that the relevant market is the narrowest possible group of products sold in the narrowest possible geographic area, so that the criterion of profitability according to the SSNIP test is satisfied, both in defining the relevant product markets and in defining the relevant geographic market as well. The market thus determined is considered as "worthy of monopolization" according to the hypothetical monopolist. The hypothetical monopolist is an assumed (fictitious) company, considered to be the only seller of a product in a particular territory, which is the key element for the formation of a theoretical construction necessary for a definition of the relevant market.

The hypothetical monopolist test is fundamentally of a quantitative-econometric nature, and in a group with other, mainly qualitative, methods it can be deemed the least biased[3]. The main limitations of the test originate from: possible arbitrariness in the choice o the price rise for the product being tested, the choice of econometric model for market demand for the product being tested and the inability to obtain valid data for the application of the test[4].

2 The test for an assumed monopoly price increase (*SSNIP - Small but Significant and Nontransitory Increase in Price*) was first defined in 1982 in the U.S. Department of Justice Merger Guidelines for this horizontal merger and has been used in regulatory processes since. In the European Union, the *SSNIP* test has informally been applied since the Nestlé / Perrier case in 1992. From 1997 the test was officially launched by the European Commission in the document which is the subject of defining the relevant market (*Commission's Notice for the Definition of Relevant Market for the Purposes of Community Competition Law*).

3 In practice, the Critical Loss Analysis is the most frequently used technique to implement the hypothetical monopolist test (see O'Brien & Wickelgren 2004, Daljord et al. 2008). It should be noted that when defining the relevant geographic market, it is possible to apply other methods which do not start from the hypothetical monopolist test, such as the Elzinga-Hogarty test, an isochronous lines analysis with the assistance of the GIS software package (Geographic Information System) and the temporal elasticity analysis.

4 See more on the shortcomings in: European Commission (1997).

Because of the specificity of partial markets, prior to the election of explanatory variables that should be included in the model, it would be useful, if possible, to conduct a survey on a representative sample of consumers that would aim to identify the variables that predominantly determine customer choice. It is assumed that the consumers of confectionery products in Serbia have different preferences compared to the consumers in the developed countries of the European Union. For example, it should be checked whether chocolate as a final product is seen as a homogeneous or a differentiated product by the consumers, and whether the consumers believe that products from certain companies are better than others. The aim of these surveys would be to determine whether the choice of customers, in addition to price, depends on the quality of the product as well.

The measures of market concentration

Market concentration is measured using various indicators; those most commonly used in practice are the following: market share, concentration ratio of the four leading companies, the Herfindahl-Hirchman index and concentration curve with the Gini coefficient (Duricin and Loncar, 2010: 201-207).

When we talk about market share our first idea is the absolute market share, which is obtained when a specific company's income is put in relation to the total income of the relevant market. This indicator indicates which part of the overall market the observed company takes. In addition to the absolute market share, it is possible to calculate relative market share and market saturation coefficient. The relative market share is the ratio between actual revenues and the observed company and the revenues of the biggest competitor. The relative market share reflects the relative market position of a particular company in relation to the market leader. The market saturation coefficient is an important indicator of the utilization of the market potential by the producers from one sector, i.e. the utilization of the sales potential by the observed company. Given the two levels of observation (sector and company), this ratio can be calculated in two ways: (1) actual sales of the sector / total market potential (sector level), and (2) actual sales of the company / potential sales (company level)[5]. In new sectors where demand is growing faster, the market saturation coefficient is less than 1, while in older sectors it is close to 1.

It is not enough just to observe the market share as an indicator of market concentration. In order to gain deeper understanding of the nature of market concentration, it is necessary to apply a whole set of other criteria and indicators. The concentration ratio of the four leading companies (Concentration Ratio 4 – abbreviation CR4) is obtained as the sum of market shares of four largest companies in the market expressed as a percentage. An unwritten rule says that if the four largest companies control more than 40% of the market, it is an oligopoly. If the value of this ratio is greater than 90%, it is a pure monopoly. This concentration indicator has two disadvantages. First, there is no adequate justification for focusing on four, rather than say three or six leading competitors. Second, the CR4 does not provide an insight into the market share ratios of the four leading companies.

The Herfindahl-Hirchman index is considered as the most reliable indicator of market concentration. The value of this index is determined as the sum of squares of the individual market shares of all the competitors in the market. Unlike the CR4, the HHI index depends on the number of competitors in the market and the differences in their relative market power. The HHI index decreases with an increase in the number of competitors in the market. Also, this index increases with greater differentiation in the market power, because larger companies have greater weights in the calculations due to the effect produced by squaring the market share. The maximum value of this index is 10,000 points, and minimum is close to zero. It is easy to notice that the maximum index value is obtained only in the case of pure monopoly, and the minimum in the case of atomistic market structure characteristic of perfect competition. The biggest problem in determining the HHI index is the necessity of having the information about the size of market share for each company belonging to the observed market. Although this is formally correct, we should go back to the formula for calculating the HHI

5 It should be noted that the two coefficients calculated in this way are not necessarily equal and usually are not, as they are related to two completely different levels of observation.

index and note that companies with small market share size have very little impact on the result, of course, due to the aforementioned effect of squaring. In other words, to calculate the HHI index it is enough to have the data on market shares of all companies whose market share exceeds 1%. It is important to state that the HHI is used by the Antitrust Division of the U.S. Department of Justice to assess changes in the structure of market power after the conclusion of the mergers and acquisitions agreements (U.S. Department of Justice, 1992). In short, the Commission has a guide which establishes limit values for assessing the impact of mergers and acquisitions on the structure of market power. Markets are usually classified into one of three categories: unconcentrated (when 1,000<HHI<2,000) and concentrated (when HHI>2,000). The European Commission has similar standards and deems critical the concentration where the HHI exceeds 2,000 points.

The concentration curve is a popular tool for visualizing the degree of concentration in the market and identifying the disparities in market power. The point is to rank the competitors on the basis of their market share (from the smallest to the largest), to cumulate market shares of competitors and to graphically combine the points obtained. The resulting concentration curve is then placed in a relationship with the equal market shares curve (45° line), obtained in a hypothetical case of perfect competition. The concentration curve is the basis for calculating the Gini coefficient as a measure of market power inequality.

The aforementioned technique of measuring market concentration is applied in the following section on the data from Serbian confectionery products market.

Analysis of market concentration for Serbian confectionery market

Previously described trends in this industry are the basis for the analysis of market concentration in Serbian confectionery industry. This is a very topical subject, especially because of the increasing number of cases of analyses of abuse of a dominant position and excessive concentration performed by the Commission for Protection of Competition of the Republic of Serbia. Below, we will attempt to see the big picture regarding the trends in competition in this industry and possible methodologies for measuring market concentration according to the available data. Furthermore, we will attempt to show the cross-section of the concentration measures for 2010 based on the available data and give our interpretation of the competitive profile of the industry.

Relevant market

When defining the relevant confectionery market in Serbia, we are going to observe the market of final products or retail market. In analysis, this market can be seen as an integral relevant product market or as a set of several specific relevant product markets. Namely, in the case of Kraft/Cadbury case from 2010, the European Commission has left a dual possibility of defining the relevant product market in terms of a separate analysis of chocolate market, sweet biscuits, sweets and sugar-based chewing gums, or their integrated analysis (European Commission, 2010). Given the lack of data in the case of Serbian confectionery industry analysis, we are forced to take into account all the businesses that produce and trade in confectionery products as the relevant market.

In order to analyze individual product groups as separate relevant product markets we should have a detailed Market Analysis of individual product groups at our disposal, with specific data on the revenues of each company based on the product group. For example, if we considered the relevant chocolate and chocolate products market, we should have at our disposal the revenues of all the confectionery companies earned from selling this category of products. These data are not publicly available and thus could not be the subject of our analysis. Therefore, we have decided to look at all confectionery products as a single relevant market, which is not in conflict with the logics of the relevant product market, the hypothetical monopolist test and good practices of the European Commission. For the same reason we have determined Serbian market as the relevant geographic market.

The data

The modesty of the available industry data has already been pointed. This view is further reinforced when it comes to the availability of corporate data, more specifically, the data

on financial and market performances of the confectionary companies in Serbia. Because of the necessity to use the official data we were forced to rely on the official data from financial statements of all companies that are subject to the following activity codes:

1. Code 1072 - Manufacture of rusk, biscuits, preserved pastry goods and cakes (67 entities)
2. Code 1082 - Production of cocoa, chocolate and confectionery products (107 entities)
3. Code 4636 - Wholesale of sugar, chocolate and sugar confectionery (140 entities).

These data were collected through the Business Registers Agency website, (Business Registers Agency, 2011). The list of registered confectionary companies was downloaded from the website of the National Market of Goods and Services of Serbia (National Market, 2011).

Based on available data, a base was made with important financial and nonfinancial parameters for the registered confectionery companies for the period between 2006 and 2010, such as total operating income, net score, and number of employees, classification of companies by size and location of the head office.

The striking fact is a large number of registered and non-active companies, viewed from the perspective of the analyzed year 2010. Namely, out of the total number of registered companies within the three activity codes more than 30% are inactive companies, companies in liquidation proceedings or companies deleted from the register of companies. These data are in line with the previously argued that, in the last two years, the business conditions have been progressively more complicated, especially for small and medium size enterprises.

This paper uses the data on incomes of legal entities and entrepreneurs, which were obtained from the database of Serbian Business Registers Agency. With processing these data, a number of issues occurred. First, the obtained data are summary data on the total business results of a company and not on individual products or geographic areas. In other words, the authors did not have access to the analytical accounting of the analyzed companies, but to the summary aspects of the balance sheets and income statements. Second, it is possible that some companies are registered under the code of activity which does not reflect their prevailing activity, since it is possible that they are generating income from other activities. Third, it is possible that the analysis does not include the revenues of foreign confectionery companies generated in Serbia, if they do not have registered import companies in Serbia but are trading in confectionary products from their head offices abroad. Because of the potential weaknesses of these data, in their data analysis, the authors have applied several logical approximations and simulations.

The analysis

The analysis is made in the relevant market of all confectionery products based on the revenues of the relevant companies (activity codes 1072, 1082 and 4636) in Serbia. A preliminary analysis was performed on the basis of fixed projections of input variables, but was then refined by using the case scenario analysis. The entire analysis was performed with the purpose of calculating the key measures of market concentration and their interpretation.

The analysis of concentration in the confectionery sales marked was based on the data on operating revenues from the income statement of active confectionery manufacturers and wholesalers in Serbia. Since we were not able to obtain the data on the structure of the revenues of each company, we have made a realistic approximation. Namely, the companies within the industry codes 1072 and 1082 are the companies engaged in the production of confectionery products, and generate their income by selling confectionery products in domestic and international markets. Company under the 4636 code of activity are engaged in the wholesale of confectionery products and their income can be generated from imports and sales of confectionery in Serbia, based on exports of domestic production and its sales abroad or in combination of the two, on import and export sales. Some of the larger companies within the activity codes generate significant revenues from the sale of products, which are not confectionery. For example, Nelt is a company engaged in the wholesale of other consumer goods.

The authors have observed only Serbian confectionery market and are interested only in the revenues from confectionery products sales that were realized on the territory of Serbia, regardless of the fact whether these are

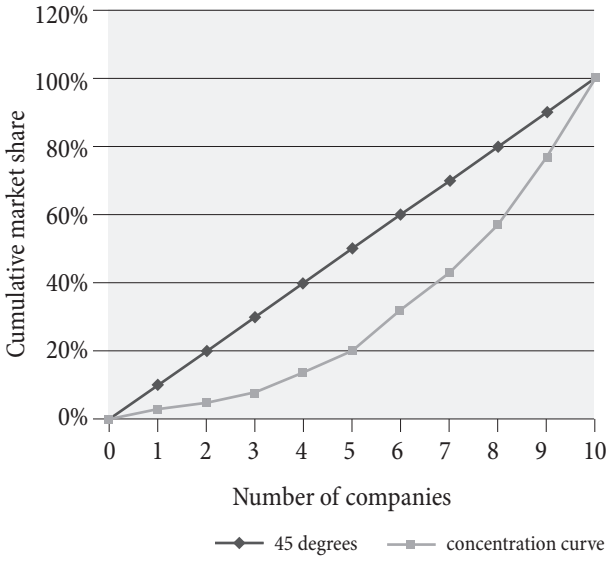
incomes of domestic producers or importers of foreign confectionery. Given that the authors do not have access to analytical accounting of individual companies and are not able to look at the sources of revenues by products and geographic basis, they have to resort to making logical and realistic approximations, or to observing several typical case scenarios.

The first case scenario is a passive case scenario which assumes that the total of incomes of local confectionery manufacturers (codes 1072 and 1082) is placed in Serbia. Within these industry codes, a total of 174 companies were registered in 2010, out of which only 101 companies were active. Under the aforementioned assumption that all income is derived from domestic sales, we come to the following indicators of concentration (Table 1, Figure 2).

Table 1: Measure of market concentration (Case scenario 1)

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,99%
2	CR4	55,75%
3	CR8	77,00%
5	Gini coefficient	0,3
6	HHI	993

Figure 2: Concentration curve for 10 leading companies (Case scenario 1)

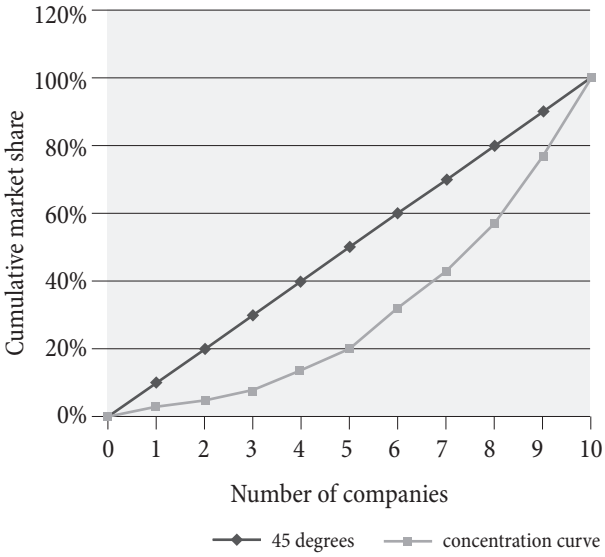


The second case scenario is that the total income of the domestic producers and domestic wholesalers (codes 1072, 1082 and 4636) is generated in Serbia. Practically, we add to the analysis confectionary wholesalers in the total amount of their income. The concentration indicators in expanded market are shown in the illustrations below.

Table 2: Measures of market concentration (Case scenario 2)

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,81%
2	CR4	56,32%
3	CR8	76,90%
5	Gini coefficient	0,35
6	HHI	1.149

Figure 3: Concentration curve for 10 leading companies (Case scenario 2)

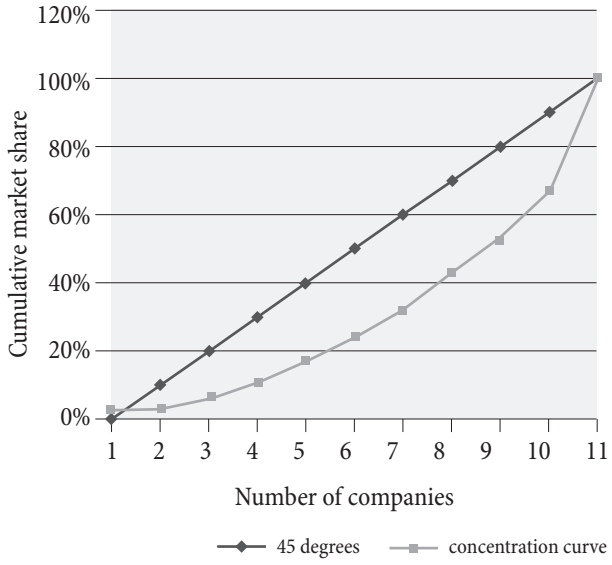


The third case scenario is a simulation of the second case scenario with the following assumptions. According to the Group of confectionery products manufacturers, a third of domestic production is being exported. Therefore, in this case scenario the authors have assumed that 70 % of the revenues of the companies with activity codes 1072 and 1082 are generated in the domestic market, and that 30% of their revenue is generated from imports. As far as the companies with the activity code 4636 are concerned, we will assume that 80% of their revenues is realized on the domestic market, and 20% is intended for export. With the diversified wholesalers, such as Nelt, the percentages of revenues generated by selling confectionery have been individually approximated based on experience, thus the revenues generated from the sales of other products have been excluded. The concentration indicators for the third case scenario are shown in the illustrations below.

Table 3: Measures of market concentration (Case scenario 3)

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,81%
2	CR4	57,52%
3	CR8	77,64%
5	Gini coefficient	0,35
6	HHI	1.231

Figure 4: Concentration curve for 10 leading companies (Case scenario 3)



In summary, the analysis of all three case scenarios indicates that this market is poorly to moderately concentrated. The HHI as the dominant measure of market concentration is not even close to the critical threshold of 2,000 points, which implies a high concentration of market power.

Conclusion

The paper explains in detail the historical and current trends in the confectionery market in Serbia. After a steady growth in production volumes in the period between 2000 and 2008, Serbian confectionery industry first experienced stagnation in the first year, and then a prolonged decline in the volume of activities during the last three years. In parallel with the fall in output and stagnation in exports, there was a sudden increase in the imports of confectionery products. Notwithstanding the decline in output and export stagnation, the confectionery industry in Serbia is considered to be one of the healthier parts of Serbian food processing sector with annual production of about 500 million dollars, out of which approximately 150 million dollars is exported annually to various world markets creating a surplus of over 50 million dollars in the balance of payments. The analysis showed that the state is not sufficiently considered with the development of the industry, i.e. that some of its measures even discriminate against the domestic producers as compared to the importers. This primarily refers to the tax and customs policies, which substantially burden the cost price of the domestic producers making them uncompetitive in price-comparison with imported products.

The second part of the paper explains in detail the theoretical postulates needed for defining the relevant market of confectionery products, as well as possible measures of concentration that can be used.

The third part presents an empirical analysis of the concentration in the confectionary market in Serbia. The analysis used the data from the Business Registers Agency from the financial statements of all the companies involved in manufacturing and trading in confectionery products.

A preliminary analysis was performed on the basis of fixed projections of input variables, but was then refined by applying the analysis of three typical case scenarios. The analysis of all three case scenarios indicates that this market is poorly to moderately concentrated. The limitations of the available data have been partially alleviated by approximating the missing data in a defined range. The approximations in the ranges specified have given stable results in the third case scenario compared to the first and second case scenario, which indicates that the data limitation has not significantly affected the calculated value of the measure of concentration or the final conclusion regarding the level of concentration of the analyzed markets.

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REGIONAL DISPARITIES IN SERBIA*

Regionalne razlike u Srbiji

Abstract

The paper presents a legislative and institutional framework of regional development in Serbia, as well as the analysis of regional disparities across different geography, elaborated through six selected indicators: population and population density (analysed as a single indicator), Regional GDP, Employment, Unemployment, Business Demography and Budgetary Revenues per capita. Indicators are analysed at the all three NUTS, as defined by the Law on Regional Development, and at the local level (cities and municipalities). In the analysis, the paper applies the unweighted Gini index of regional disparity that was used in calculating disparities within each observed indicator. The results are presented within the tables and figures that show changes of the Gini index across years of observation. The paper showed that highest regional disparities in Serbia are at the local and NUTS 3 level. Disparities at those two levels are stable across the years. Disparities at NUTS 1 and NUTS 2 levels are also high, yet lower than at the bellow territorial levels (NUTS 3 and the local level). However, disparity at these two levels grows much faster than at the NUTS 3 and local level.

Key words: *regional disparity, regional development, Gini index, Serbia*

Sažetak

U radu je prikazan zakonodavni i institucionalni okvir regionalnog razvoja u Srbiji, kao i analiza regionalnih razlika na različitim teritorijalnim nivoima, prikazana kroz šest odabranih indikatora: stanovništvo i gustina naseljenosti (koji su analizirani kao jedan indikator), regionalni BDP, zaposlenost, nezaposlenost, poslovna demografija i budžetski prihodi. Indikatori su analizirani na sva tri NTSJ nivoa, definisanih Zakonom o regionalnom razvoj, i na lokalnom nivou (opštine i gradovi). U analizi se primenjuje neponderisani Gini indeks regionalnih razlika koji je korišćen za određivanje razlika u okviru svakog posmatranog indikatora. Rezultati analize su prestavljeni u okviru tabela i grafika koji prikazuju promene Gini indeksa tokom godina posmatranja. U radu je pokazano da su najveće regionalne razlike u Srbiji prisutne na lokalnom i na NTSJ 3 nivou. Regionalne razlike na ova dva nivoa su stabilne tokom godina. Sa druge strane, razlike na nivoima NTSJ 1 i NTSJ 2 su takođe velike ali manje nego na nižim teritorijalnim nivoima. Međutim, razlike u ova dva nivoa rastu mnogo brže nego na nižim nivoima.

Ključne reči: *regionalne razlike, regionalni razvoj, Gini indeks, Srbija*

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Introduction

The contemporary world is characterized by difference rather than uniformity and inequality. On a global scale is stark and largely undisputed despite unparalleled wealth, advances in human ingenuity, and a vast array of policies to promote development and redress regional inequalities. Disparities may be long lasting, destabilizing parts of a country, entire nations, and even some world regions.

Regional inequality is a salient feature of most countries, either developed or developing ones and trend of disparity is either stable or increasing (Rodrigues-Pose and Gill, 2003; Kanbur and Venables, 2005; World Bank, 2009). Some of the widest regional gaps exist in affluent countries. For instance, GDP per capita in London is much larger than in the United States, while in Wales it is lower than in Greece. People in Mississippi have a GDP per capita closer to that of Slovenia than to that of many US states, while people in the District of Columbia or Delaware have a higher GDP per capita than most OECD countries (OECD, 2011). Employment differences can be equally large. In Italy, the difference in the employment rate of the region Emilia-Romagna and Campania is more than 30 percentage points, the same as between the United States and Turkey. In developing countries, intra-national development disparities are even more alarming since not all parts of a country are suited for accessing world markets (Kanbur and Venables 2005). Fast growing countries, such as China, India, Russia, Turkey or Brazil experience high degree of regional equality (Milanovic, 2005, OECD 2011). Coastal and economically dense places usually do better than other parts of a country (World Bank 2009). Therefore, in a globalised context developing countries should be more concerned about regional disparities in production and income than in comparable stage of development with developed countries.

Uneven development in literature is variously viewed as an intrinsic characteristic of capitalist economic development and/or a necessary stage through which countries pass on their way to a high-income society (Perrons, 2010). Theoretical explanations are based on the growth theory and the new economic geography. According to the growth theory, in the early stages of economic development, regional inequality would tend to rise as growth occurs in discrete locales, but inequalities will later decline as equilibrating forces such as better infrastructure, technological diffusion, decreasing returns to capital in richer and high-wage areas, diseconomies of agglomeration etc. become stronger (Williamson, 1965). A different view has been proposed more recently within the context of the new economic geography school (Krugman and Venables, 1995) and endogenous growth theory (Romer 1986) who argued that increasing returns to scale and thus advantages of agglomeration of capital and knowledge will tend to perpetuate, or even increase, spatial inequalities[1].

The purpose of this article is to explore the regional disparities in Serbia through selected six indicators: population and population density (used interchangeably as one indicator), GDP, employment, unemployment, business demography and budgetary revenues per capita. Indicators were selected as the main ones for presenting the economic strength of sub-national development at different level and inter-regional disparity of Serbia. Indicators were analysed as a part of the socio-economic analysis of regional development in Serbia, done by two authors within the scope of the EU-funded project "Assistance to regional Policy Development at National Level" (abbreviated as RegPol-project).

Regional disparities in Serbia are presented through the unweighted Gini index of regional disparities, taking into account all three NUTS levels and the local level (the latest presenting the level of cities and municipalities).

Framework for regional development in Serbia

Some of the key challenges of Serbia are related to the growing disparities in the socio-economic development of different parts of the country. Strong disparities in economic development of Serbia's territories are caused by long-standing deficiencies in the key factors of

1 Yet in Krugman and Venables (1995), decreasing transportation costs may play an offsetting role: assume that transportation costs are zero, then the advantage of cheap labour in less developed countries (or regions) will, to some extent, tend to offset the advantages of increasing returns to scale.

competitiveness – poor infrastructure, maladjustment of workers to the market conditions, insufficient support for business, and inadequate innovative capacity of enterprises, a significantly degraded environment and resultant low investment attractiveness of territories. Disparities in Serbia have significantly increased during the socio-economic transformation to the market economy, when territories with low level of competitive and comparative advantage did not manage to catch up with leading growth poles of the country.

Recognising the problem of high regional disparities, the Constitution of the Republic of Serbia emphasizes the need for regional development and the country's obligation to promote balanced and sustainable regional development (Article 94). In addition, the Constitution stipulates that the Republic of Serbia establishes and formulates "the development of the Republic of Serbia, policy and measures for stimulating balanced development of certain areas of the Republic of Serbia, including the development of underdeveloped areas" (Article 97, paragraph 12).

In January 2007, the Government of the Republic of Serbia has adopted the Regional Development Strategy of the Republic of Serbia 2007 - 2012, which is the main national strategic document for regional development. The strategy determined seven goals of regional development: (i) sustainable development; (ii) enhancing regional competitiveness; (iii) alleviation regional disproportions and poverty; (iv) stopping negative population trends; (v) continuation of the decentralisation process; (vi) economic integration of Serbian communities in AP Kosovo and Metohija; and (vii) building institutional regional infrastructure. However, very little has been done so far in regard to the implementation of the strategy.

Following a two-year public discussion, the Parliament of the Republic of Serbia finally adopted the Law on Regional Development in 2009. However, a year after, in 2010, the Law was amended with the significant changes and policy instruments. The Law outlined the legal, economic and institutional mechanisms for the implementation of state regional policy aimed at encouraging the development of regions and the removal of the conditions for stagnation in territories.

The Law introduced territorial units according to the NUTS classification[2]. At the NUTS 1 level, Serbia is split between Serbia-North (comprised of Belgrade and Vojvodina) and Serbia-South (other three regions). At the NUTS 2 level, the Law introduced five regions: Vojvodina, Belgrade, Šumadija and Western Serbia, Southern and Eastern Serbia, and Kosovo and Metohija. Two autonomous provinces (Vojvodina and Kosovo and Metohija) and the City of Belgrade administratively and geographically coincide with the NUTS 2 regions, while remaining two regions are only planning (statistical) regions with no joint administrative functions. This asymmetry in political and administrative power between regions presents one of the key characteristics of the regionalisation in Serbia. NUTS 3 level coincides with the existing 30 administrative districts in Serbia.

2 The NUTS (NUTS stands for *Nomenclature des Unités Territoriales Statistiques*) classification subdivides the economic territory of the EU member states, as well as candidate and potential candidate countries, with the purpose of making regional statistics comparable with each other. The classification is hierarchical and has three levels: NUTS1, NUTS 2 and NUTS 3. The division is based on the population numbers, following the threshold: NUTS 1: from 3 million to 7 million people; NUTS 2: from 800,000 to 3 million people; and NUTS 3: from 150,000 to 800,000 people. NUTS classifications follows the existing administrative units, yet in cases where there is no administrative units of a sufficient size, the level is established by aggregating a significant number of smaller contiguous administrative units. These aggregated units are also known as 'non-administrative units' or 'statistical units'. Bellow NUTS 3 level there are two Local Administrative Units (LAU 1 and LAU 2), which sometimes are incorrectly designated as NUTS 4 and NUTS 5.

Table 1: NUTS Classification of the Republic of Serbia

NUTS 1	NUTS 2	NUTS 3	LAU
Serbia-North	Region of Vojvodina	7 administrative districts	6 cities and 39 municipalities
	Region of Belgrade	District of Belgrade	City of Belgrade with its 17 city-municipalities
Serbia-South	Region of Šumadija and Western Serbia	8 administrative districts	10 cities and 42 municipalities
	Region of Southern and Eastern Serbia	9 administrative districts	6 cities and 41 municipalities
	Region of Kosovo and Metohija	5 administrative districts	1 city and 28 municipalities

Source: The Law on Regional Development of the Republic of Serbia (2010) and the Law on Territorial Organisation of the Republic of Serbia (2007)

The Law defines the following stakeholders as the key actors in regional development (Article 19): the Government; Ministry of Economy and Regional Development and line ministries for finance and spatial planning; Autonomous Province of Vojvodina; City of Belgrade; Serbian Business Registers Agency; Republic Agency for Spatial Planning; Fond for Development; Local self-government units; National Council for Regional Development; National Agency for Regional Development; Regional Development Councils; and Regional Development Agencies.

National Agency for Regional Development (NARD) is established in 2009 by the Government of the Republic of Serbia as a public agency for regulatory affairs and for developing expertise and public policies in the field of regional development. NARD is one of the key institutions for implementation of the Law on regional development and regional policies in Serbia. Among other issues, NARD is in charge of accreditation of Regional Development Agencies (RDAs) and coordination of their work.

At the moment, there are eleven RDAs in Serbia. RDAs are established as public private-partnerships between local self-government units and other public or private agents such as universities, banks, private companies or NGOs, under the vague legal form of a non-for-profit limited liability company. By the end of 2001 only four RDAs[3] passed the demanding process of accreditation at NARD, while other agencies are striving in collecting the necessary statements from their founders.

Table 2: Distribution of the RDAs in Serbia (2011)

NUTS 2	Number of RDA	Area covered (in %)
Region of Vojvodina	3	100%
Region of Belgrade	none	none
Region of Šumadija and Western Serbia	4	68.3%
Region of Southern and Eastern Serbia	4	100%
Region of Kosovo and Metohija	none	none

Source: Website of National Agency for Regional Development (www.narr.gov.rs) and websites of regional development agencies

As it can be seen in the table 2, RDAs in Vojvodina and Southern and Easter Serbia cover the whole territory of those two regions. This is not entirely true since RDA Bačka still have not formalise their partnership agreement with three municipalities of Northern Bačka, as well as with Apatin, Temerin and the City of Novi Sad. Šumadija and Western Serbia has four RDAs, covering 68.3% of the territory of the region. Two remaining regions, Belgrade and Kosovo and Metohija do not have regional development agencies established.

In October 2010, an EU IPA-funded project "Assistance to regional Policy Development at National Level" (abbreviated as RegPol-project)[4] was initiated with the objective to contribute towards a balanced territorial socio-economic development in Serbia, through increasing capacities at national level to plan and implement integrated regional development and through achieving a more effective and transparent planning and spending of Serbian funds for development. One of the main components of the project is the support in designing development documents that are required by the Law on Regional Development, such as the National Plan for Regional Development, NUTS 2 development strategies and corresponding Programmes for Financing the Development of Regions.

GINI Index of regional disparities

OECD's *Regions at Glance 2011* measures regional disparities by an unweighted Gini index, which is defined as (OECD 2011):

$$GINI = \frac{2}{N-1}\sum_{i=1}^{N-1}\left|F_i - Q_i\right|$$

where N is number of regions,

$$F_i = \frac{i}{N},\quad Q_i = \frac{\sum_{j=1}^{i} y_j}{\sum_{i=1}^{n} y_i},$$

and y_i is the value of variable y (e.g. GDP per capita, employment and unemployment rate, population density, etc.) in region j when ranked from low (y_i) to high (y_n) among all regions within a country. Gini index ranges between 0 that present a perfect equality: y is the same in all regions, and 1 when y is nil in all regions except one.

3 Four accredited agencies are: RARIS - Zaječar, Centre for Development - Leskovac, RDA Banat - Zrenjanin and Regional Agency for Spatial and Economic Development - Kraljevo.

4 More about RegPol is available at the official website of the project: http://www.regpol.rs/en.html, accessed on 7 December 2011

The Gini index is unweighted since it assigns equal weight to each territorial unit of observation regardless of its size. In terms of the geographical coverage, at the NUTS 3 level territorial units in Serbia are fairly uniform in their size, which was confirmed by the Gini index of 0.17). Disparity in size of other three levels, measured by the Gini index, is higher and counted 0.36 for NUTS 1, 0.32 for NUTS 2 and 0.34 for the local level.

Regional disparities in Serbia[5]

Regional disparities in Serbia are presented through the analysis of six selected indicators: population and population growth (as one indicator), Gross Domestic Product (GDP), employment, unemployment, business demography and the budgetary revenues. Disparities are analysed at all three NUTS level, as defined by the Law on Regional Development, and the local level (cities and municipalities). Since the region of Belgrade is considered at the NUTS 2 level, it is excluded from analysis at the NUTS 3 level in order not to distort the results. Nevertheless, Belgrade's city municipalities were included in calculating disparities at the local level, including calculations of the Gini index at the local level. Following the same logic, at the local level the city of Niš was participating not as a single self-government unit yet through its city municipalities.

The table 3 presents the overview of the disparities in Serbia on the selected six indicators at the NUTS 1 and NUTS 2 level. In further text disparity on each indicator is analysed separately.

Population density

The population share is almost equal between the Serbia-North and the Serbia-South, though the population density in the Serbia-North is more than twice higher (with 146 people per km^2) than in the Serbia-South (only 71 people per km^2) in 2009. The number of population is fairly well distributed among NUTS 2 regions as well. In 2009, the most populated is Šumadija and Western Serbia with 2,052,490 inhabitants (28% of the total population in Serbia), followed by Vojvodina (1,968,356 inhabitants, or 26.9%), Southern and Eastern Serbia (1,669,379 inhabitants, or 22.8%) and Belgrade (1,630,582 inhabitants, or 22.3%). The highest population density is in the Region of Belgrade with 509 inhabitants per square kilometre, while the region of Southern and Eastern Serbia has the lowest density with only 64 inhabitants per square kilometre. The population density in Vojvodina is 92 inhabitants per square kilometre, while the figure for Šumadija and Western Serbia was 78. The highest concentration of population is in central urban municipalities of Belgrade, Niš and Novi Sad, while the lowest is in rural municipalities in southern Serbia (Crna Trava, Trgovište and Bosilegrad). Besides Belgrade, in 2009 only five districts in Serbia had population density more than 100 inhabitants per square kilometre (South Bačka: 151, North Bačka: 107, Šumadija: 122, Podunavlje: 166 and Nišava: 137).

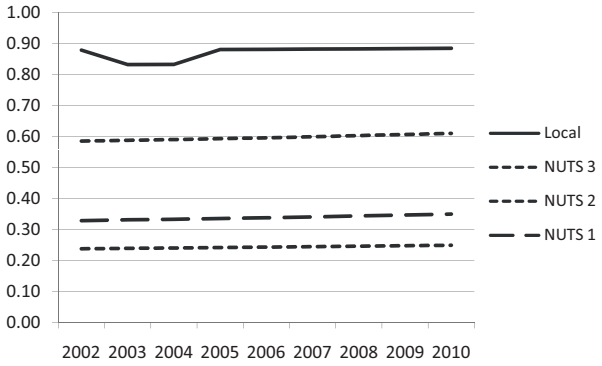
5 Region of Kosovo and Metohija is excluded from the analysis on regional disparities due to the lack of reliable data.

Table 3: Disparities in Serbia on selected indicators (in %, 2009)

NUTS 2	Population	GDP	Employment	Unemployment	No. of Enterprises	Budgetary Revenues per capita (RS=100%)
North	**49.3%**	**65.5%**	**58.8%**	**39.6%**	**56.7%**	**134.3%**
Belgrade	22.3%	39.9%	32.5%	12.7%	29.5%	187.4%
Vojvodina	26.9%	25.6%	26.4%	27.0%	27.2%	90.4%
South	**50.7%**	**34.5%**	**41.2%**	**60.4%**	**43.3%**	**66.8%**
Šumadija & Western Serbia	28.0%	20.0%	23.3%	33.5%	27.0%	68.0%
Southern &Eastern Serbia	22.8%	14.4%	17.8%	26.9%	16.3%	65.3%

Source: SORS "Municipalities of Serbia 2009", and MERR "Report on Small and Medium-sized Enterprises and Entrepreneurship 2009"

Figure 1: Regional disparity of population density measured by the Gini index



Source: calculated using the data from the SORS, 2002 Census data and annual publications "Municipalities of Serbia" for years 2003-2010

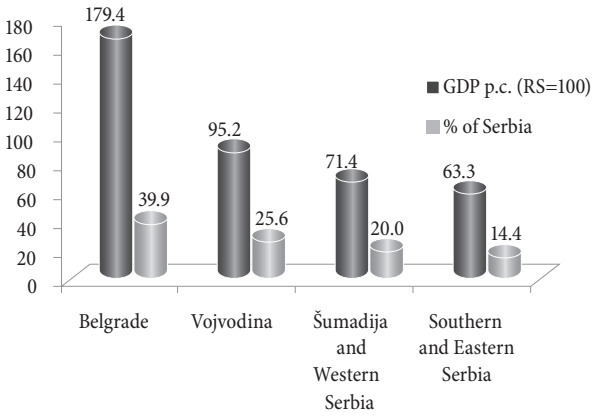
Within the time period 2002-2010, the Gini index of the population density is relatively stable across all four observed territorial levels (see the figure 1). The extreme values of disparities are at the local level, where the Gini index is close to 0.9[6]. Reason behind is in the extremely high disparity in population density between urban municipalities of cities (i.e. in period 2002-2010, the Niš city municipality Medijana had more than 29 thousands inhabitants per squared kilometre) and rural municipalities in remote areas (in 2010, the municipality of Crna Trava had less than 5 inhabitants per squared kilometre).

The Gini index is also significantly high at the NUTS 2, with figures around 0.6, mostly due to the significant difference in population density between Belgrade and other three regions. The Gini index at NUTS 1, and especially at NUTS 3 level are relatively modest, especially comparing to other two observed levels.

Regional Gross Domestic Product (GDP)

In 2009, Gross Domestic Product (GDP) of the Serbia-North was 1,844,866 mil RSD, or almost twice higher than in the Serbia-South (970,134 mil RSD). At the NUTS 2 level, there is a clear dominance of Belgrade over other three regions. Namely, the share of the Belgrade region to the national GDP is close to 40%, which is almost 2.8 times higher than the share of the region of Southern and Eastern Serbia (14.4%). Vojvodina has a share of a quarter, while Šumadija and Western Serbia has one-fifth of the nation GDP. In addition, GDP per capita in Belgrade is almost 80% higher than a national average. Other three regions have GDP per capita bellow the national average, two of them are even bellow 75% (see the figure 1).

Figure 2: Regional GDP in 2009



Source: SORS "Regional GDP of the Republic of Serbia - Preliminary Results"

In 2009, the Gini index of regional GDP at NUTS 2 level was 0.27, while the Gini index for regional GDP per capita was 0.30.

Employment

Regional disparity in employment is also significant. In 2009, the Serbia-North had more than 330 thousand employees than the Serbia-South. Besides, in terms of the employment density, the same year the Serbia-North had 309 employees per 1,000 inhabitants, while the figure for the Serbia-South was 209.

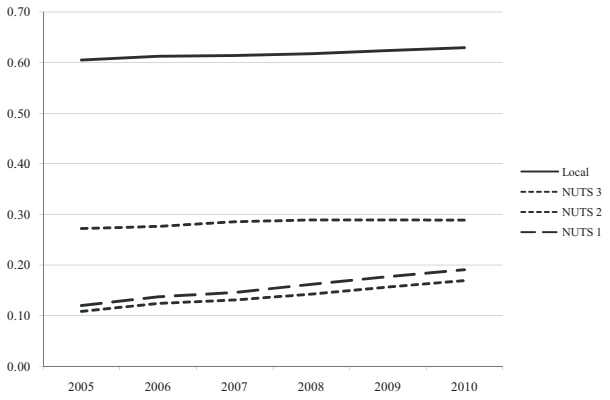
Employment indicators also show the dominance of Belgrade region over other regions in Serbia. In 2009, number of employees in Belgrade was 613,802, which was almost a third of the total number of employees in Serbia. On the other hand, share of the region of Southern and Eastern Serbia in total employment of Serbia was only 17.8% (or 337,109 employees). The same year Vojvodina had 26.4% of a total employment in Serbia (or 497,907 employees), while the share for Šumadija and Western Serbia was 23.3% (or 440,261). At the NUTS 3 level, the highest number of employment is in the South Bačka administrative district, which presents an urban agglomeration of Novi Sad

6 The concave curve in line for the local level is created due to the lack of data for the city municipality of Surčin (Belgrade) for 2003 and 2004.

(202,114 employees), while the lowest employment is in Toplica administrative district, only 15,375. Employment density per 1,000 inhabitants follows the figures on total employment. The highest density is in Belgrade region, 376 employees per 1,000 inhabitants, which is 146% higher than the national average, while the lowest density is in the region of Southern and Eastern Serbia with 202 employees per 1,000 inhabitants (or 78.3% of the national average). At the local level, the highest density of employment is in urban centres of Belgrade: Savski Venac (1,993 employees per 1,000 inhabitants) and Stari Grad (1,438 employees per 1,000 inhabitants), while the lowest one is in Opovo (51 employees per 1,000 inhabitants), Lebane (82 employees per 1,000 inhabitants) and Malo Crniće (83 employees per 1,000 inhabitants).

The Gini Index for employment was calculated based on the data available at the official website of the Statistical Office of the Republic of Serbia (SORS), based on the annual average of the formal employment for period 2005 - 2010.

Figure 3: Regional disparity of employment measured by the Gini index



Source: calculated using data from the SORS website www.stat.gov.rs

The highest disparity of employment is at the local level where the Gini Index has a value above 0.6. As emphasized in the previous chapter, discrepancy in employment is high in city municipalities of urban centres of Belgrade and rural under developed municipalities of all other three regions

The Gini index of the employment at NUTS 3 level is higher than at other two NUTS levels, mostly due to the high disparity in employment between South Bačka district on one side (that has a share of more than 10% of the employment in Serbia), and Toplica district (with less than 1% of the national employment). The Gini Index at NUTS 1 and NUTS 2 is bellow 0.2.

The Gini index of regional disparity in employment shows disturbance of the labour market in the years after 2008, caused by the global financial crisis. This phenomenon was reflected by growing Gini index, especially at NUTS 1 and NUTS 2 yet also at the local level. This explains that difference in employment between Belgrade and Vojvodina on the one hand and two other regions on the other hand[7]. Growing at the NUTS 3 level is less significant than at other levels.

Unemployment

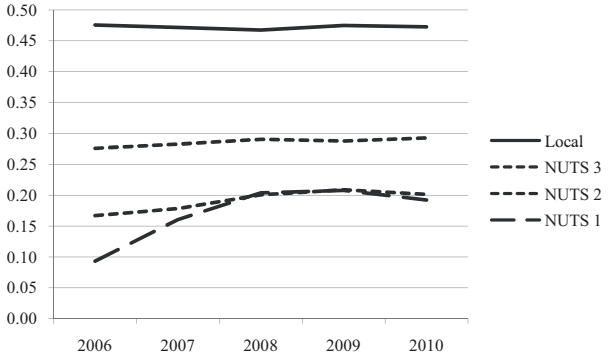
Unemployment indicator refers to a number of officially registered job seekers, presented within the SORS annual publications "Municipalities of Serbia". Data were analysed for period 2006 - 2010.

At the NUTS 1 level, unemployment is significantly higher in the Serbia-South than in the Serbia-North: in 2009, 439,869 people from the Serbia-South were registered as unemployed (or 60.4% of all unemployed in Serbia), while the figure for the Serbia-North equalled to 288,570 (39.6%).

At the NUTS 2 level, data for 2009 showed highest unemployment in the region of Šumadija and Western Serbia, which accounted for a third of the national figure. Unemployment in Vojvodina and Southern and Eastern Serbia were almost even and accounted for 27% of the total number of unemployed in Serbia. Unemployment share of Belgrade was 12.7%. Diversity in unemployment figures is especially visible at the NUTS 3 and local level. At the NUTS 3 level, extreme unemployment values are in Toplica, Jablanica and Raška administrative districts, while the lowest is in Braničevo and Kulubara. At the municipal level, the unemployment is highest in Crna Trava, Bojnik and Lebane.

7 In period 2005-2010 Serbia lost 273,067 jobs. However, the lost of jobs is not uniform across regions. While Belgrade lost 16,933 jobs (or 2.8% of the 2005 value), other three regions lost significantly more jobs: Vojvodina lost 72,297 (or 13.3% of the 2005 value), Šumadija and Western Serbia lost 93,642 jobs (or 18.4% of the 2005 value) and Southern and Eastern Serbia lost 90,195 jobs (or 22.4% of the 2005 value).

Figure 4: Regional disparity of unemployment measured by the Gini index



Source: SORS, Municipalities of Serbia 2006-2010

The Gini index showed the highest disparity on unemployment at the local level. At the NUTS 3 level, the disparity is relatively stable, with the value close to 0.3. The Gini index at the NUTS 1 and NUTS 2 shows an increasing trend in 2006-2008 and a stable and slightly decreasing trend for 2009-2010. The first can be explained by difference in speed of reducing unemployment between Belgrade and Vojvodina on the one hand, and two other regions, while the second explains the increasing trend of unemployment caused by the global economic crisis.

Business demographics

Business demography is presented with the number of enterprises at all levels. The statistics is publicly available for only two years, 2008 and 2009, from the reports on small and medium-sized enterprises and entrepreneurship, published annually by the Ministry of Economy and Regional Development (MERR), Republic Development Bureau and National Agency for Regional Development (NARD).

In 2009 the number of enterprises in the Serbia-North was 178,779 while the figure in the Serbia-South was 136,577 entities. Concentration of medium-sized and large companies is also much higher in the Serbia-North than in the Serbia-South: 1,518 medium-sized companies in the Serbia-North comparing to 952 in the Serbia-South, and 339 large companies in the Serbia-North comparing to the 190 in the Serbia-South.

At the NUTS 2 level, Belgrade region dominates over other three regions. In 2009, 29.5% of all business entities in Serbia (or 93,042 enterprises) were registered in Belgrade, followed by Vojvodina with 27.2% (or 85,727 enterprises) and Šumadija and Western Serbia with 27% (or 85,055 enterprises). The least number of enterprises were registered in Southern and Eastern Serbia, only 51,522 or 16.3% of the total number of enterprises in Serbia.

Entrepreneurs and micro enterprises dominate in the number of all business entities (with 71.7% and 24.4% of the total number), while numbers of small, medium-sized and large companies are significantly smaller[8]. However, large and medium-sized companies mainly concentrate in Belgrade, and to some extent in Vojvodina. For instance, in 2009 only 74 large companies (or 14%) are located in the region of the Southern and Eastern Serbia, while 206 of them are in Belgrade region (38.9%). In 2010, the number of large companies in Southern and Eastern Serbia decreased by 11, while in Belgrade this decrease was 7 companies.

Large companies tend to concentrate in urban centres and along the main corridors, leaving hinterland districts and municipalities to deal only with small-scale employment business entities. For instance, in 2009, Toplica district had only one large company (none in 2008), districts of Pirot and Zaječar had four and Jablanica had five. At the same time Belgrade had 206 and South Bačka 54 large companies.

Demography statistics of medium-sized enterprises shows the dominance of Belgrade and Vojvodina, while other two regions are lagging behind in numbers. In 2009, there were 814 medium-sized companies in Belgrade Region (or 33%) and 704 companies in Vojvodina Region, while in the numbers in other two regions were 574 for Šumadija and Western Serbia (23.2%) and 378 in Southern and Eastern Serbia (16.3%). Most of the medium-sized companies are concentrating in Belgrade (814), South Bačka district (244) and Srem district (110), while in all

8 There is no clear definition of SMEs in Serbia. Official definition of SME, but only for legal entities, is given in the Law on Accounting and Auditing. It does not apply to the entrepreneurs. In some cases, slightly different definition of SME is used, e.g. in the Law on state aid and subsequent regulations, where the classification thresholds are taken from the EU. EU definition on Small and Medium-sized enterprises is available at: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm, accessed on 9 December 2011;

other districts the figures significantly smaller, reaching minimum in Toplica district with only 21 companies.

The Gini index on all business entities is relatively small for NUTS 1 and NUTS 2, while it is a bit higher for NUTS 3 level (reaching 0.31 in 2009). In 2008 there is almost no discrepancy in number of entrepreneurs at the NUTS 1 level. However, the Gini index is higher on micro, small, medium and large companies on all three NUTS levels. The highest discrepancy is on large companies where the Gini index goes to 0.42 (NUTS 3 level for 2008).

Budgetary revenues per capita

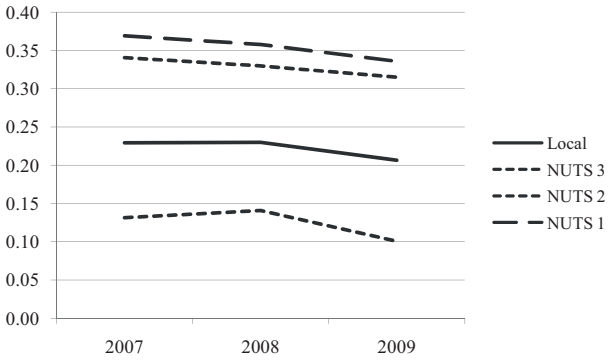
Budgetary revenues per capita is more than twice higher in the Serbia-North than in the Serbia-South, which probably the best reflect the degree of disparities at this level.

In 2009, budgetary revenue per capita in the region of Belgrade was 42,564 RSD, which was 187.4% higher than in the national average (22,712 RSD). All other three regions were having budgetary revenues per capita less than a national average, Vojvodina with 20,521 RSD (or 90.4%), Šumadija and Western Serbia with 15,443 RSD (or 68%) and Southern and Eastern Serbia with 14,840 RSD or 65.3% of the national average.

At the NUTS 3 level only South Bačka had the budgetary revenue per capita above the national average (26,108 RSD or 115%). The minimum figures are in districts of Mačva and Toplica (both with 56.7% of the national average) and Jablanica with only 54.4%. In 2009, four municipalities had budgetary revenue had less than 10,000 RSD per capita (Vlasotince with 9,976 RSD p.c. Bogatić with 9,917 RSD p.c., Varvarin with 9,870 RSD p.c., Vladimirci with 9,696 RSD p.c. and Žitorađa with 9,442 RSD p.c.).

The Gini index shows that disparity on the budgetary revenues per capita is the highest at the aggregate level of NUTS 1 and NUTS 2, while the lowest is at the NUTS 3 level. This might be read that NUTS 3 level presents functional regions where the economic wealth is fairly well distributed, while it cannot be said the same for other territorial levels. As of 2008 the Gini index is falling for all four levels, which is the aftermath of the global financial crisis.

Figure 5: Regional disparity of budgetary revenues per capita measured by the Gini index



Source: SORS, Municipalities of Serbia 2008-2010

Conclusion

Regional disparities in Serbia are among the largest in Europe, reflected in the high ratio between developed Serbia-North and lagging behind Serbia-South. Inter- and intra-regional disparities are also high, especially at the local level, as well as along the urban-rural division. In historical terms, out of 45 undeveloped municipalities of Serbia, 30 of them have not changed their development status for about four decades. Even more, regional disparities have been drastically accelerated in the transitional period 2001-2010, when peripheral regions were not able to address their developmental needs in a sufficient way. This further caused extreme imbalances in demography, income, unemployment, social welfare and living standards in general.

Disparity at the NUTS 1 level makes a clear "core-periphery" division with developed and converging Serbia-North and lagging behind and diverging Serbia-South.

Table 4: the Gini index of number of enterprises per size, 2009

NUTS level	Entrepreneurs		Micro		Small		Medium		Large		All business entities	
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
NUTS 1	0.01	0.04	0.36	0.37	0.29	0.31	0.22	0.23	0.29	0.28	0.11	0.13
NUTS 2	0.11	0.13	0.32	0.32	0.25	0.27	0.18	0.19	0.27	0.26	0.12	0.13
NUTS 3	0.28	0.30	0.38	0.38	0.36	0.37	0.33	0.30	0.42	0.40	0.29	0.31

Source: MERR "Report on Small and Medium-sized Enterprises and Entrepreneurship 2009"

This is clearly seen on the indicator of the budgetary revenues per capita, where the value for the Serbia-North is twice higher than in the Serbia-South, making the Gini Index of disparity above 0.35 (in 2007 and 2008). Other observed indicators (population density, employment, unemployment and business demography) also confirm the large difference in development between the North and the South.

The NUTS 2 level in Serbia was engineered in a way that disparities between regions are often smaller than at other territorial levels. Nevertheless, as Belgrade presents an economic driving force of the country, development indicators for its region are mostly higher than in other three regions. The strong economic dominance of Belgrade is reflected in the disparity on the budgetary revenues per capita (with the Gini index above 0.3 and on the GDP indicators (thi Gini index close to 0.3). At this level, the highest disparity is in the population density where the Gini index reaches 0.6 (due to a high population concentration in the Belgrade, comparing to other three regions). At the NUTS 2 level the region of Vojvodina stands well on many indicators, mainly due to the economic power of Novi Sad and few other towns (Subotica, Zrenjanin, Pančevo, Inđija and Stara Pazova), while other two regions, Šumadija and Western Serbia and Southern and Eastern Serbia, are lagging behind on most of the observed development indicators.

At the NUTS 3 level there is a dominance of South Bačka administrative districts (due to the economic power of Novi Sad), while districts of Toplica, Pirot and Jablanica showed poor performance on most of the indicators. Nevertheless, the Gini index showed that disparity at the NUTS 3 level is stable across the years, being close to 0.3 for majority of observed indicators. Higher discrepancy at this level is on the business demography indicators, especially on the indicator of large enterprises, where the Gini index goes beyond 0.4. The Gini index on the budgetary revenues showed the least discrepancy at the NUTS 3 level, which is due to the fact that administrative districts presents functional regions where the economic wealth is fairly well distributed among municipalities of a single district.

Nevertheless, the highest disparity in development across geography is found at the local level. Disparity at this level is reaching extreme high values on the population density indicator, with the Gini index close to 0.9. The values of the Gini Index on other indicators are also very high, above 0.6 for employment and around 0.48 for unemployment. The Gini index on the budgetary revenues is comparatively smaller, with values between 0.21 and 0.23. Nevertheless, high extreme values of the disparities at the local level might be attributed to the issue of the comparability of the data since there is lack of validity in comparing urban municipalities of Belgrade and Niš or the city of Novi Sad on one side and remote rural and underdeveloped municipalities with only few thousand inhabitants on the other.

To conclude, regional disparities in Serbia across geography are high on all development indicators, including the ones analysed within this paper. Although the national government has adopted the Regional Development Strategy of the Republic of Serbia 2007-2012, so far very little has been done on its implementation. The implementation of the provision of the Law on Regional Development is also pending, especially in terms of creating mechanisms for financing regional development. Capacity of the line ministries and associated agencies to deal with the regional development issues needs to be advanced as well. Institutional capacity should be strengthened as well since only 4 out of 11 potential regional development agencies have successfully passed the accreditation process. It seems to be a breaking point for policy makers at the national level to decide whether they will introduce interventions that will target reducing spatial inequalities and redistribution of the wealth, or they will continue with the current *laissez-faire* practice combined with the high degree of centralisation of the political power and wealth. Maybe the incoming election in early 2012, and the new government will mobilise political resources to introduce necessary policy measures for balanced regional development in Serbia.

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MANAGING ENERGY STRATEGY IN FUNCTION OF IMPROVEMENT OF NATIONAL ECONOMY COMPETITIVENESS AND ENTERPRISE COMPETITIVENESS*

Upravljanje energetskom strategijom u funkciji unapređenja konkurentnosti nacionalne privrede i konkurentnosti preduzeća

Abstract

Energy issue is very much important for national economy competitiveness and enterprise competitiveness and its consideration has to respect strategic approach. That means that all important energy issues have to be considered in strategy of energy development in one country with all the necessary documents that support the strategy implementation as programs and investment projects. On the other side, in enterprises as cells of national economy, this issue deserves to be solved respecting strategic approach, too. That leads to energy strategy formulation and implementation on the level of business units and enterprise as whole entity. Great help in this job we get by using techniques of strategy map and Balanced Scorecard. This paper tries to present connection that should be made between strategic decisions on national and enterprise level with affirmation of modern techniques of strategic management in formulation and implementation of energy strategy.

Key words: *energy strategy, national economy competitiveness, enterprise competitiveness, strategy map, Balanced Scorecard*

Sažetak

Pitanje energije je vrlo važno za konkurentnost nacionalne ekonomije i konkurentnost preduzeća, te njegovo razmatranje mora da uvažava strategijski pristup.Ovo znači da sva bitna pitanja iz domena energije treba da budu obuhvaćena u strategiji razvoja energetike u jednoj zemlji kao i svim dokumentima koja podržavaju implementaciju ove strategije, kao što su programi i investicioni projekti iz ove oblasti. Sa druge strane, i u preduzećima kao ćelijama jedne nacionalne ekonomije, ova pitanja takođe treba budu rešavana uvažavajući strategijski pristup.Ovo vodi ka formulisanju i implementaciji energetske strategije na nivou poslovnih jedinica i preduzeća kao celine. Veliku pomoć u ovom poslu dobijamo koristeći tehnike strategijskih mapa i Usklađene liste. Ovaj rad pokušava da predstavi vezu između strategijskih odluka na nacionalnom nivou i nivou preduzeća sa promocijom korišćenja modernih tehnika strategijskog menadžmenta u formulisanju i implementaciji energetske strategije.

Ključne reči: *energetska strategija, konkurentnost nacionalne privrede, konkurentnost preduzeća, strategijska mapa, Usklađena lista*

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Introduction

The issue of energy sector development is one of the most important issues in focus of creators of national economy strategy and competitiveness strategy, as well as strategy of national security, ecological strategy and sustainable development of one society. In the situation of general geopolitical instability, energy becomes the cause of big turbulences, but also it becomes a link of states' integration and integration of their national economies. Energy security becomes a priority and condition of survival of national economy in the long run. Achievement of energy efficiency goals nowadays are seen to be factor of national economy competitiveness as well as enterprise competitiveness. On the other side, energy consumption indicates to stage of economy development. The logic is following: sustainable economic development should be achieved by a combination of higher economic efficiency with more efficient energy consumption at the same time [1].

Energy sector includes research and production of primary and secondary resources of energy, as well as their transformation, transfer and distribution to producing customers and end consumers. All these activities cause costs. So, by their economical doing with acceptable costs of imported energy, we can lower energy costs in producing products and services, and in that way we can lower costs per unit of production. The benefit for end consumers is in decreasing sum of money they pay for energy usage, and consequently, in discretional revenue increasing.

Looking at energy as one of condition factors of national competitiveness, we are coming to the need of establishing strategic approach to energy management on the national level, and on an enterprise level, too. Respecting strategic approach we can recognize that we have to affirm strategic planning process on both levels. Experience shows that energy strategy is much more discussed on macro level, than in micro level. Actually, strategy for energy development (as well as energy policy) is a document which is usual for the most countries in the world. On the other side, strategic plan for energy efficiency is not often reality in individual enterprises, except ones that are "energy aware". Since that awareness about need of energy efficiency has to be spread, there is necessity to establish mechanisms for its achievement. Consequently, it is useful to promote techniques which usage leads to energy efficiency. Today, very often we talk about two modern techniques of significant technical usefulness. These techniques are strategy maps and Balanced Scorecard (BSC). They are universal techniques which can be used in all industries, in financial sector, in non-profit organizations, public sector, local and national governments, etc.

Very good promotion of national economy strategy that is explained in this way we can find in [4]. In the strategy map of Serbian development 2020, Djuričin as one of relevant measures in Private sector management perspective includes two measures: energy efficiency and renewable energy production/whole energy production. Proposed task for energy efficiency is >0.57% toe /1000$GDP with initiative of adopting new Law on rational energy consumption. Proposed task for measure renewable energy production/whole energy production is >18% with initiative of adopting Program with green component. When he considers macro management perspective, he sees adopting one of the initiatives "capital increase in Elektroprivreda Srbije."

In this paper because of its limitation in extent, we will focus on the issues of strategic framework of energy management in the Republic of Serbia, and on energy strategy planning at the level of an enterprise in real sector. Strategic planning process in an enterprise from energy sector (sector of energy production) because of its specificity and complexity deserves special attention in special paper.

Strategic framework of energy management In the Republic of Serbia

The question of energy development in one country is articulated by strategy and policy of energy development. Moreover, energy policy represents a part of economic policy. It comprises goals, objectives, principles and instruments in domain of research and development, production, distribution and energy consumption with the aim of providing enough amount and structure of energy with reasonable prices. Energy strategy, on the

other side, represents document with specified goals and instrument of their achievement in domain of energy in precise period of time. Usually policy and strategy arise in collaboration of government's institutions, scientific and professional organizations. As main goals which are being realized by energy strategy implementation, we can list [9, p.102]:

- Certainly providing of energy
- Strengthening energy independence
- Providing energy with available prices
- Environment protection
- Maximizing economic effects.

In Republic of Serbia strategic document that comprises all these questions is Strategy for Energy Development in Serbia by 2015 [14]. In strategy formulation (and in policy formulation as it is written in the document), the first task is to make overview of current state in this sphere. That means that it should be formulated on the base of insight in the state of energy resources, production capacities and future energy needs, i.e. future energy consumption. As main elements of Serbian energy policy, there are listed: Basic goals, Priority programs (chosen regarding previously listed goals) and Initiatives and instruments (for the purpose of Priority programs achievement).

In Strategy for Energy Development by 2015, there are listed next types of goals: basic – energy goals, specific – technological and ecological goals and general – developing and strategic goals.

The main energy goals are:

- The safety and regularity of supply of the economy and citizens with alignment of development of energy production systems with the needs of the consumption sectors
- Economic and energy-efficient use of energy, in terms of
  - Reduction of energy intensity in industry and transport sectors and
  - Changing the structure of final energy in non-productive sectors – households and public and commercial activities
- Diversification of supply sources and routes of energy imports
- Selective use of new renewable energy sources (RES).

Specific – technological and environmental objectives are:

- Safe operation of power plants
- Reliable operation of equipment and vital systems of power plants
- Technological modernization of power plants
- Installation of equipment to reduce emissions of harmful effluents from energy sources.

General – development and strategic objectives relate to:

- Harmonizing the development of energy industry with other sector of the real economy, which will enable sustainable social, economic, technological and environmental development of Serbia
- Active participation of Serbia in planning and construction of strategic regional and pan-European energy infrastructure for transportation of oil and gas from new sources of supply (including construction of underground gas storage)
- Finding strategic partner for planning, construction and use of new power facilities in the border rivers and joint ventures in new power plants based on lignite from Kosovo and Metohija.

There are five basic priority programs by which the Strategy is implemented:

1. The Main Priority of the continuity of technological modernization in the sectors like oil, natural gas, coal (with surface and underground mining), the electric power sector with producing facilities (power plants and hydro power plants) and distribution system, as well as the thermal energy sector in terms of district heating and industrial power plants
2. Targeted Priority of rational use of high-quality energy and energy efficiency increasing
3. Special Priority of usage of new renewable energy sources, new energy efficient technologies and devices
4. Optional Priority for emergency / urgent investment in new energy sources with a new gas technologies
5. Long-term developing strategic priority at the level of the region, in terms of building new energy in-

frastructure facilities and electric power and heat sources in Serbia and the capital-intensive energy infrastructure in the framework of regional and pan-European infrastructure systems connected with our systems.

In accordance with previously established goals and priority programs, the Serbian government makes decisions on initiatives that will facilitate their implementation. These initiatives are:

- Initiatives for establishment rational market environment, alignment of tariff, price, tax, customs and anti-monopoly regulations, as well as initiatives for the structural reorganization of energy sector and more effective supervision and management of social assets in energy sector.
- Initiatives for establishment of new, modern technical regulations, standards and regulations for energy technology/ activity and the establishment of special instruments for stimulating activities for rational use and energy efficiency, including the formation of a body to monitor and manage the processes of energy reforms and to monitor the implementation of Serbian energy development strategy, the priorities of innovation and actualization of instruments, according to the country's economic development and the situation in the energy sector in the country and region
- Initiatives to achieve the conditions for equal access to the Energy Community of Southeast Europe (*ESCEE Treaty*)
- Initiatives to determine the basis for ratification of the Kyoto Protocol and our obligations arising from its implementation in our regulations and practices, including the institutional organization of our participation in the use of appropriate relief that is allowed by application of some mechanisms of Kyoto Protocol
- Initiatives to stimulate and support strategic initiatives in the area of investment in new energy sources / technologies and energy-efficient appliances / equipment for the use of energy, and Financial initiatives to encourage the private investment in economically -effective programs / projects of energy efficiency and selective use of new renewable energy sources, including initiatives for the establishment of the national fund for these programs / projects.
- Initiatives for the balanced policy of social protection of the poorest populations and protection of the economic position of the energy enterprises responsible for security of supply economy and population, through adjustment in energy prices with the real costs of electricity and heating.

Instruments for Strategy implementation are:

- The legal and institutional instruments. It is the Energy Law and the Mining Act as the primary legislation, but there are also some laws that treat giving concessions, obligations regarding environmental protection, construction and operation of public enterprises. Institutions in charge of the implementation of elements of the Strategy are the Energy Agency and Energy Efficiency Agency. Energy Agency is responsible for issuing licenses for energy activities, establishing the methodology for calculation of eligible costs in performing energy companies, preparation of draft tariff systems for energy services, etc. The Energy Efficiency Agency is responsible to promote the use of final energy and to promote the rational use of primary energy sources. Also, one of instruments for Strategy implementation is foundation of five regional centers for energy efficiency, located in five university centers (Belgrade, Novi Sad, Nis, Kragujevac and Kraljevo) with aim to promote exploitation of renewable energy sources, as well to promote old and new solutions in energy efficiency projects.
- Structural - organizational and economic instruments that made possible the establishment of new entities to perform certain energy activities.
- Program and system tools in terms of drafting and adopting the following programs:
  - The program for the rational use of energy and energy efficiency
  - The program for the selective use of new renewable energy sources
  - The Program for Environmental Protection

- The program of scientific and technological development in energy activities in Serbia
- Establishing a modern system of energy statistics.

Further, in the Strategy before the planning of energy sector development, two projections of energy consumption and need are given. Two scenarios are assumed. One scenario is with the dynamic economic development of the country, and another involves a moderate economic development. The first scenario proceeded from the rapid growth of gross domestic product (GDP) and value added industry (DVI). This approach to the formulation of the strategy is relevant considering that it respects the principle of contingency. Contingency planning is a kind of planning that includes more than one strategy, program or plan leading to established goal. For the case of every scenario there is a decision to be implemented. But, unfortunately, non-anticipated global economy and financial crisis made both scenarios optimistic ones and in that way irrelevant. The main consequence of such situation is that implementation of specific projects have to be delayed and only ones with the high priority to be implemented planned in new schedule.

The strategy is being implemented by program and projects implementation. Currently, we are in the process of implementation of the Program for Implementation of Strategy for Energy Development in Republic of Serbia by 2015 for the period 2007-2012 (in the rest of paper called *Program*) [11]. Program established the conditions, methods and time schedule of implementation of the strategy in question in all important domains: surface mining and underground mining of coal, oil economy; transportation of oil; gas industry, electric power sector (hydro and thermal power plants, thermal power plants - power plants, transmission and distribution); district heating and individual boilers; industrial energy; energy efficiency in the consumption sectors: industry, transport, buildings, and the Energy efficiency fund strategy in accordance with governing the economic development of Serbia by 2012; renewable energy sources; environmental protection in energy sector.

This document (in much more details than strategy as it is normal because of hierarchy of these decisions) on two hundred pages gives what have to be implemented in terms of programs and projects in all fields in energy production and energy consumption sectors. Respecting project approach to investment activities in this Program we can find specified list of a project's components, location and purpose, goal to be achieved, project's dynamics (feasibility, specification, contracting and construction), amount of investment, financing sources, perspective profitability in terms of Net present value and Internal rate of return, project's impact on environment in the sectors of energy production.

According to the Strategy, one of the five main priorities is the priority of rational use of quality energy and energy efficiency in production, distribution and use of energy by end users of energy services. Increasing energy efficiency is recognized as priority in strategy of development of national economy of Republic of Serbia by 2012, as well as in National program of environmental protection. There are two threats for international competitiveness of our enterprises: first, high energy costs can significantly reduce the competitiveness of our products over the foreign, and second, restrictions related to the activation of international standards in environmental protection can seriously jeopardize the position of some industrial enterprises in the market. Because of that, it is essential to develop an aggressive and organized approach to planning and promoting activities related to energy efficiency improving.

One of big barrier for enhancement of energy efficiency is lack of solid base of energy indicators for consumption sector. Of course, there are data about energy consumption but not on the level useful for energy management on the highest quality level. Another big barrier for establishing energy efficiency is low prices of electrical energy. In developed countries, high electricity consumption per capita is the result of its intensive use in the production process and the creation of new value. Unfortunately, in Republic of Serbia high energy consumption is the consequence of a large electricity use in households and public and commercial activities primarily for heating. The main reason why this price is such low is that it is the way government tries to make costs of living lower (known as "maintaining social peace").

Perhaps the best way to make someone aware about necessity to be energy efficient is to make energy costs real ones. In that job, crucial role has national government. Additional role has to be given local authorities. Local authorities are in any way responsible for making plans of energy development on local area, for energy consumption monitoring as well for gathering all data needed for making energy balance of the Republic of Serbia. From local authorities it is expected to establish new managerial position – energy efficiency manager and new managerial practice - energy management.

Energy management as practice should be imposed by Law on Rational Use of Energy. Moreover, responsibility for energy management is imposed for every consumer whose total installed capacity is greater than 1 MW. This means that this entity is obligate for energy monitoring and constant concern about energy efficiency increasing. The measure will be introduced gradually, it does not require special investment funds, and it is financed from current investment maintaining costs. The experience of developed countries where this practice has been around for years, bringing the minimum annual savings in industry, municipal energy consumption and enterprises where the founder are local authorities is about 3 % of final energy consumption in these sectors [11, p.157].

Strong financial support for implementation of activities for energy efficiency increasing has to be foundation of Energy Efficiency Fund. This fund has not been established yet, and its formation in the jurisdiction of Ministry of infrastructure and energy is planned for January 2012.

After this short consideration of macro energy framework we can now analyze how should look like energy strategy on micro level, i.e. level of an enterprise, and tools for its successful implementation.

Enterprise energy strategy - map and Balanced Scorecard

Energy strategy is not a common strategy as regular strategic decision determined at the enterprise level, but certain elements of energy management very likely existed, especially in the leading companies in the world. Energy is an input and as such is object of management. Management of inputs (inventory management) is the subject of operations management. Optimization of energy use as input also can and should be the subject of operations management. However, energy management should not result only in energy efficiency as a result of optimization, but also in energy effectiveness. In explanation of this term we can start from the original concept of efficiency and effectiveness. While the efficiency is related to optimization of inputs in output production, or the manner in which the selected activity is performed, the effectiveness is related to goals and methods of their achievement ("doing the right things"). In terms of energy management, energy efficiency means minimizing energy use and costs without compromising business processes in one company. What would be the energy effectiveness? It means that one enterprise is able to create offer that will be attractive from the standpoint of energy - energy-attractive products and services.

Due to the evident potential of energy management for satisfaction of requirements of effectiveness and efficiency, we can (and should) talk about the energy strategy at the enterprise level. At the very least, the energy strategy can be considered as complete strategic theme with its own strategy map and Balanced Scorecard. It follows that the energy strategy can be described, explained and changed into operational actions in the simplest way by using techniques of strategy map and Balanced Scorecard. For this reason, in the next part of text, we give an overview of the first two techniques, and after that we will be able to apply these techniques to the processes of energy management within a single enterprise in real sector of a national economy.

The strategy map as a technique of strategic management is used to articulate the strategic intent, programs and projects that lead to the realization of adopted goals. The emergence of this technique is related to the requirements of enterprise in the information era. In industrial era the most valuable resources were physical ones, but the most valuable resources in IT era are "intangible" ones. Intangible assets became the main source of competitive advantage and market value. The most valuable intangible assets related to relationships with customers, employees and their skills, knowledge, information technology and

organizational culture fertile for innovation, problem solving and general improvement of the organization [5].

Goals and their measures - measures of performance, the Balanced Scorecard concept, derived from the vision and strategy of a company and they are defined from four perspectives:

1. financial perspective,
2. customer perspective,
3. perspective of internal business processes
4. perspective of learning and growth [8].

Defining objectives and performance measures of financial and non-financial perspective is not something unusual. Most successful companies, before the advent of BSC, formulated goals and performance measures according to different categories with the main purpose of short-term technical control operations (business decisions). However, such systems of performance were not balanced. BSC provides exactly this balance on three grounds:

1. balance between external measures relating to shareholders and customers and internal measures relating to internal business processes and learning and growth;
2. balance out the measure of success, as a result of past actions and measures of future performance;
3. balance between the objective, easy-to-quantify measure of success, and subjective and qualitative performance measures. [8, p.10]

In addition, as balanced approach to performance measurement, the BSC has made another very important advantage over other key performance indicators systems. BSC makes it possible defining the cause-effect relationships within a single strategy. Strategy is a hypothesis about the cause-effect relationships between activities (leading indicators) and the desired outcomes (lagging indicators).

In defining a strategic hypothesis we start from the perspectives of owners (shareholders) and costumers. The basic question is "what are the financial goals in terms of revenue growth and productivity increase? What are the main sources of growth?" When one defines the goals of the financial perspective, the next question would be "who are the target customers that will provide revenue growth and profitable mix of products and services? What are our goals in this perspective and how to measure success in achieving them? Costumer perspective includes the definition of "value proposition". The value proposition defines the way a company differentiates from competitors in terms of product mix, pricing, services, customer relations and image to attract and retain target customers and deepen relationships with them. Financial and customer (marketing) objectives are the desired outcomes, but they also do not specify the ways in which they reach. The perspective of internal processes in which, for example, are included product design, brand and market development, sales, services, manufacturing and logistics, define the activities needed to create the desired value proposition and differentiation and consequently desirable financial outcomes. The fourth perspective, the perspective of learning and growth reveal the conditions and capabilities necessary to conduct internal business processes. These are an organizational infrastructure, skills, abilities and knowledge of employees, the technology which employees used, as well as the climate in which they work [6, p.76].

However, for authors Kaplan and Norton, BSC, designed in this way, became the basis for formulating a new framework for describing and implementing strategies under the popular name of a strategy map. The strategy map is a logical and comprehensive architecture for the description of a strategy. It describes the critical elements of the strategy and their interrelationships [7]. Strategy maps are particularly useful tool nowadays when intangible assets are of the biggest importance for the market value of companies. Companies in the energy sector predominantly use material assets. However, this does not mean that this technique can be applied. Moreover, the application of these techniques will enable more effective and efficient achievement of the objectives defined by business strategy.

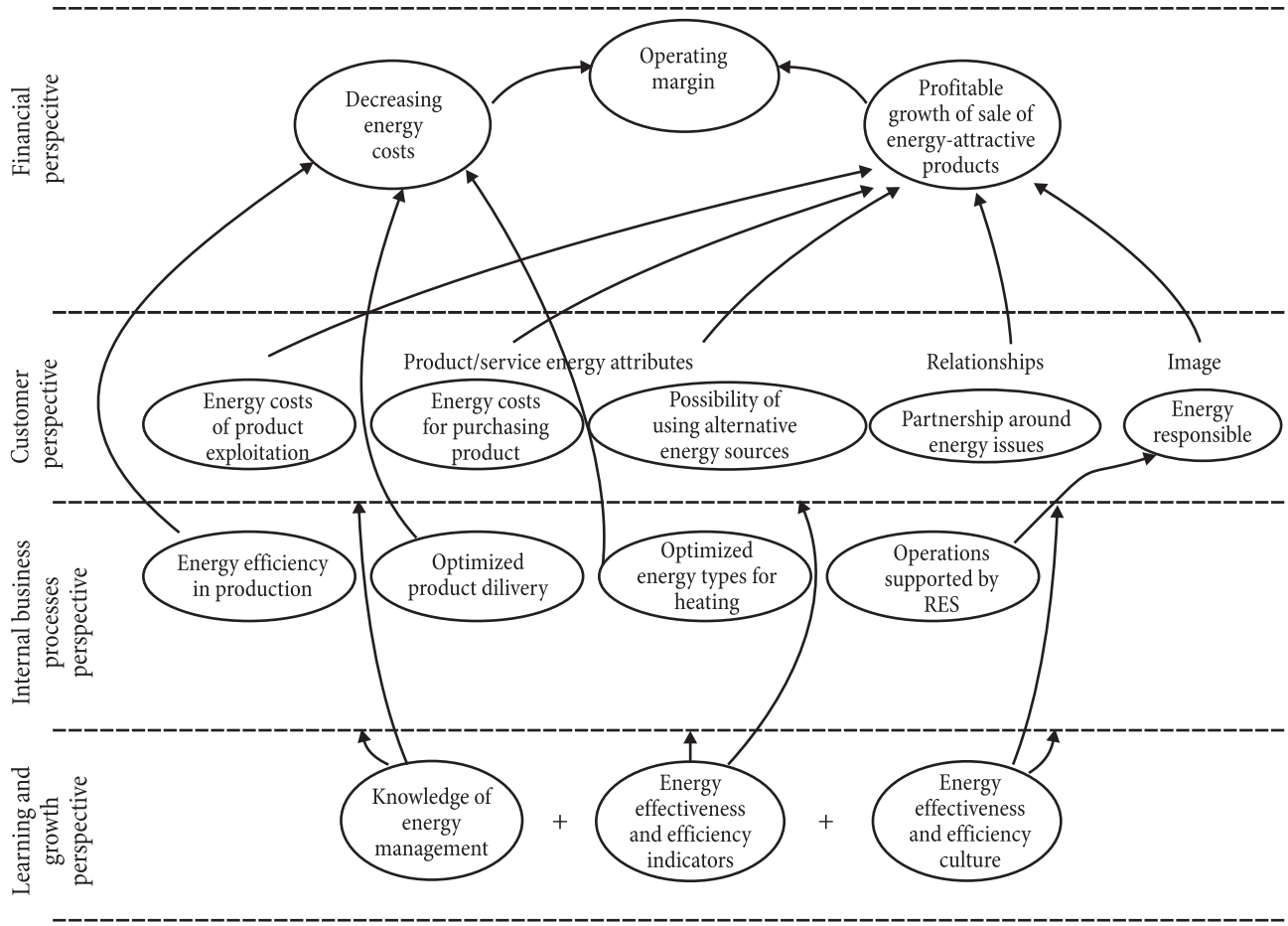
Energy strategy that would be formulated should be part of a comprehensive business strategy that is adopted at the enterprise level, as well as strategy that is formulated at the level of one business unit. The issues it touches include a number of business activities, and from that side it can not be placed on the same level or category of functional strategies. Moreover, many elements of this strategy have been previously formulated by functional strategies of

production, supply chain, marketing and distribution, et al. That is the why elements of energy strategy could be incorporated into strategy map and BSC in three ways: first, adding a fifth perspective to the BSC, second, developing a separate energy BSC, and third, integrating the measures throughout the four perspectives (similarly done with sustainability measures in [2]). In this paper we opted for second option as it will be presented later.

Energy strategy under this name has not been appeared (and still does not appear), so much as it will be in the future. The reasons are simple - it is a consequence of projected growth of the importance of energy for sustainability of businesses and a rising costs of energy usage. Therefore, when defining a strategic energy plan, you should ask the following questions [12, p.7]:

1. How vulnerable are our business to energy-price volatility and/or increase?
2. What energy risks do our products and services create for our customers?
3. How vulnerable are our operations to energy supply disruptions?
4. How much energy does the organization require to function effectively today?
5. Who is accountable within our organization for procuring and managing energy use at both executive and operations levels?
6. What energy use or cost savings are possible?
7. Are energy productivity and efficiency goals in place with achievement measured and recognized?
8. Are our programs and processes for managing energy and climate risk sufficient?
9. Do our equipment and site selection strategies include energy efficiency and climate risk as critical decision factors?
10. Do our policies make it easy to invest in energy efficiency or greenhouse gas emissions reductions?
11. What investments can be made now that will have

Figure 1: Map of energy strategy



large payoffs in the future?

12. Do we envision new business opportunities in the changing energy context in areas in which we operate?

Perhaps the best way for making consistent answer on all this questions would be promotion of strategic map of energy strategy. Again, strategy mapping imposes to us asking several questions regarding each of perspectives of BSC. In financial perspective a key issue is how much savings in energy costs can we make and thus ensure the growth of operating profit, and how we can increase revenue side of income statement respecting energy constraints and trends. From the customer's perspective, the key question is whether customers perceive us as an energy and environmental (and thus socially) responsible company and whether our products help them become more energy efficient. From the viewpoint of internal business processes a crucial question is in which business processes energy efficiency can be achieved, how to do it and how to measure it. In the last, learning and growth perspective, the key question is how will be managers and employees able to make responsible decisions on energy issues and do we create and use key performance indicators regarding energy as well.

Trying to find answers on all above questions, we dare to make a proposition of generic map of energy strategy as it is given in Figure 1.

In mapping energy strategy we are starting with its goal. The goal can be described as triple E – Energy effectiveness and efficiency. Energy effectiveness relates to revenue growth side of profit in terms of profitable growth of sale of energy-attractive products. Energy efficiency relates to savings in energy costs, i.e. productivity in energy use in all business processes inside an enterprise. Energy effectiveness has its financial expression in "profitable growth of sale of energy-attractive products". Energy efficiency has its financial expression in terms of "decreasing energy costs". Profitable growth of sale of energy-attractive products is a consequence of several benefits and perceptions customers have about products and services: lowering energy costs in product using, lowering energy costs in purchasing product, increasing possibility for using alternative energy sources, partnership focused on energy issues (especially in case of B2B), and connection with enterprise with image of good corporate citizen. On the other side, goal of decreasing overall energy costs could be achieved by previously achieving several goals in internal business process perspective: energy efficiency in production and distribution, as well as efficiency in heating, etc. Goals from learning and growth perspective include all necessary conditions to be fulfilled in order to achieve goals in financial and customer perspective. These goals relate to achieving a high level of knowledge of energy management, creating base of indicators regarding energy effectiveness and efficiency and creating "triple E" culture.

After creating strategy map, next step in energy strategy "operationalization" is creating BSC as a system of balanced measures, objectives and initiatives. The greatest challenge is to find appropriate measure which will show progress in achieving previously determined goals in strategic map.

The financial perspective of one energy strategy should include several measures which examines the impact of energy strategy on overall financial performances of an organization. It relates to lagging indicators that show the costs of energy use. Energy strategy through cost reduction activities leads to the objectives of profit maximization. The actual costs of energy use can not be controlled in a manner of control of energy prices, but should be controlled by energy usage. The starting point is that the costs are the valorization of the use of inputs, this time of energy. On the other hand, regarding goal called profitable growth of sale of energy-attractive products, measures should express revenue achieved through including such products into product assortment. The most appropriate example for this kind of products are ones with characteristic like "energy star" or products with "energy" sticker with level A,B,C or D. Usual measures of goals of energy efficiency and energy effectiveness in financial perspective are given in Table 1:

Fuel and energy costs are different from the cost of raw materials. Material substance is included in the product. Other materials, fuel and energy, on the other hand, are spent in the processing of materials in product manufacturing and other processes. These costs are treated

Table 1: Financial Perspective Measures [modified 12, p.8]

Measure	Formula	Example
Cost of energy per dollar of sales	Cost of energy / Sales revenue	$\frac{\$50.000}{\$1.000.000} = \$0,05$
Cost of energy used in manufacturing as a percentage of total costs	Cost of energy used in production / Total production costs	$\frac{\$50.000}{\$600.000} = 8,3\%$
Cost of energy used in manufacturing per unit of production	Cost of energy used in production / Units of production	$\frac{\$50.000}{250.000} = \$0,20$
Fuel cost per km for delivery vehicles	Delivery fuel costs / Total delivery km	$\frac{\$30.000}{250.000} = \$0,12$
Heating/air conditioning cost per heating/ cooling degree day	Total heating and air conditioning cost / Total heating/cooling degree days	$\frac{\$8.000}{750} = \$10,67$
Revenue from sale of energy-attractive products as percentage of total sales	Revenue from sale of energy-attractive products / Sales revenue	$\frac{\$250.000}{\$1.000.000} = 25\%$

Table 2: Internal Business Process Perspective Measures [12, p.9]

Measure	Formula	Example
Production:		
Energy usage per unit of production	Kilowatt-hours used / Units of production	$\frac{20.000}{250.000} = 0,08$
Energy used from waste products and sources	Amount of joules of heat produced from waste products	8.000.000
Number of activities supported by renewal energy sources	Number of using renewal energy	180
Number of facilities using energy from heat by-product	Number of facilities	20
Distribution:		
Energy usage per delivery km	Amount of fuel used for delivery / Number of delivery km	$\frac{18.000}{216.000} = 0,083$
Number of partial load deliveries	Number of loads delivered that were not full loads	300
Administration:		
Energy usage per heating/cooling degree day	Kilowatt-hours used / Number of degree days	$\frac{64.000}{750} = 85,33$
Use of renewal energy sources as a percent of facility electricity use	Kilowatt-hours of green energy used / Total kilowatt hours used	$\frac{20.000}{64.000} = 31,25\%$
Percent of offices with occupancy sensors to turn off	Number of offices with sensors / Total number of offices	10

as overheads and only one part of the proportional volume of activity. On this basis, we can conclude that among them there are fixed costs [13, p.89].

Financial measures are lagging indicators. They are result of performing the relevant activities within business processes. So, performance measures, defined as energy costs are consequence of energy usage in business processes. The usual group of processes that are induced by Kaplan and Norton are: innovation management, operations management (production), customer relationship management and managing relationships with public and regulatory community. On the other hand, the use of energy is clearly recognized in the following processes: manufacturing, distribution and administration. Therefore, the performance measures should include the use of energy in these processes (as shown in the Table 2).

This list of performance in perspective of internal business processes probably will be extended with performance about tax savings that could be achieved by construction of energy-efficient buildings and buying energy-efficient vehicles (hybrid ones, for example). Of course, this savings are possible only if they are enabled by law [more in 3, p.99].

Performance measures in the customer perspective should reflect the perception customers have about energy performances of products / services. Today as never before, as consumers we are very interested in using products that do not cause the high costs of energy, car that consumes less fuel and on that basis to reduce costs. However, here we can add another dimension to look at the problem of energy "suitability" of a product / service. Energy-aware consumers are generally environmentally aware, and among them can be developed the reasoning: "the lower level of energy consumed by using a particular product / service, the less needed energy to be produced. Additionally, if this energy is produced in power plants that are among the biggest polluters of air, then the consumption of such products will help us to protect the environment".

The realization of "energy" goals and objectives in this perspective leads to the realization of the objectives of the generic perspective of customers which are related to customer satisfaction based on use of products that create lower cost, environmentally speaking are superior, and will, ultimately, lead to repeat purchases and growing sale on that basis. These are products that enable customers of an enterprise to improve performance on several points: in terms of savings in the exploitation of products / services; regarding the possible tax advantages of using such products, and third, in the terms of contribution to corporate social responsibility rating of a client; contribution to its image of energy (and environmental) responsible entity. Common performance measures in customer perspective are given in Table 3.

Performance measures in learning and growth perspective should reflect the organizational skills and attitudes of employees on the occasion of achieving energy goals. These are leading indicators that have an indirect connection with the strategic objectives of the company. Here we should distinguish three types of performance. The first type of performance should include organizational skills an organization need to successfully focus on energy issues, as well as organizational culture colored with triple E (energy effectiveness and efficiency). The easiest way to check this is through the analysis of adopted procedures to ensure energy savings and employees' attitude toward energy issues. Another type of performance from this perspective refers to the ability of IT to accurately measure energy use and costs that arise on this basis. The third type of performance refers to the ability of employees to personally contribute to lower energy costs. Common performance measures in learning and growth perspective are given in Table 4.

Here are listed only some measures needed for tracking progress in realization of goals from strategy map. As we

Table 3: Customer Perspective Measures [12, p.9]

Measure	Formula	Example
Number of products that can use alternative energy sources	Number of products	25
Number of products with Energy Star Ratings (or A, B, C, D)	Number of products	150
Energy required to operate vehicle	Km per gallon	48 kmpg

Table 4: Learning and Growth Perspective Measures [modified 12, p.11]

Measure	Formula	Example
Percentage of facilities with electric meters	Number of facilities	35
Hours of training provided in energy-saving procedure	Hours of training	3.200
Percentage of employees who have had training in energy saving procedures	$\frac{\text{Number of employees trained}}{\text{Total number}}$	60 %
Hours of training for product developers in energy saving procedure	Hours of training	800
Number of suggestions received from employees for saving strategy	Hours of suggestions	400
Number of suggestions (innovations) with green component	Number of suggestions	50

can see there is a possibility to include more measures than one for one goal form BSC perspective. In that way we get precise picture of energy strategy implementation progress. But, common rule that BSC shouldn't be cluttered with measures of not great importance is relevant here, too.

Conclusion

Because of high importance of energy for competitiveness of national economy, strategic approach to its development is needed. Strategy for Energy Development in Serbia by 2015 includes basic goals, priority programs and measures and instrument, and they together in the form of cause-effect relationship should lead to goals of "macro" energy management in terms of: certainly providing of energy, strengthening energy independence, providing energy with available prices, environment protection, maximizing economic effects. One of the most useful documents for strategy implementation is Program for Implementation of Strategy for Energy Development in Republic of Serbia by 2015 for the period 2007-2012. In the Program we can find all important investment projects in energy sector to be implemented in the specified period of time. Unfortunately, global economic and financial crisis made implementation of many projects impossible at this moment and delayed. Also, in the Program there are still good analyses and projections of needed projects in energy consumption sectors as industry, transport, buildings and construction.

Macro energy strategy is solid framework for strategic thinking and strategic planning on an enterprise level. Today and in the future in conditions of uncertainty of supply for many energy types and permanent rising of energy prices, every enterprise should has its own energy strategy. It is a product of micro energy management. Energy strategy should contribute to implementation of overall corporate strategy. We can say that this strategy should make achievable legitimate goal of every company – energy effectiveness and efficiency. Energy efficiency is well known concept regarding to efforts for decreasing energy costs in all business processes. Earlier that issue was in the competence of production and logistics managers. Today it deserves special attention and responsible person / organization unit in the form of energy manager (energy expert). On the other side, we introduce concept of energy effectiveness. This concept relates to requirements contemporary enterprises that have to respect. Customers want to buy and use products / services with optimal using energy for their buying and exploitation and do that with feeling they think and behave responsibly about energy and environmental issues. It causes enterprise's efforts to create energy-attractive products / services. Earlier the issue of creating new products was in exclusively competence of marketing and research and development departments. Today we think that this question is too important to be left only to marketing experts and engineers in R&D department. Knowledge about energy management has to be shared between departments and business units. That is the reason why we this issue include in energy strategy, too. Once again we can see that techniques of strategy map and balanced scorecard help in synchronizing efforts of different units in an enterprise to create profitable growth. Once again we can see that these techniques are of the greatest usefulness for strategy formulation and its translation into operational terms. Once again, we can see that they are solid techniques for describing how intangible assets could lead to tangible outcomes. We will agree that knowledge of energy management, solid base of energy indicators and sound culture that focuses on results in terms of energy effectiveness and efficiency are intangible assets used in business processes for achievement tangible outcomes for enterprise's customers and its owners in terms of created value.

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THE IMPORTANCE OF STRENGTHENING THE ROLE OF THE BOARDS OF DIRECTORS IN STATE-OWNED ENTERPRISES IN SERBIA*

Značaj jačanja uloge borodova direktora u državnim preduzećima u Srbiji

Abstract

As in many other countries, state-owned companies in Serbia are generally characterized by poor performances, non-transparent operations, corruption scandals and lack of accountability. Since the state sector has a high share in the overall Serbian economy, it seriously undermines the competitiveness of the whole economy. Some research has shown that by enhancing corporate governance of these enterprises comparable results can be achieved as in the case of their privatization. Recently Board of Directors has become the only potentially active mechanism of corporate governance in Serbian state-owned companies, so this study was focused on making recommendations for strengthening the role of the Board of Directors. We gave two sets of recommendations: recommendations for the setting up of effective Boards of Directors and recommendations for improving the efficiency of such boards. Prior to that, we briefly analyzed the current situation of corporate governance legislation and practice in Serbian state-owned enterprises.

Key words: *state-owned enterprises, corporate governance, Board of Directors, competitiveness, company performances*

Sažetak

Kao što je slučaj u mnogim zemljama, državna preduzeća u Srbiji odlikuju loše performanse, netransparentno poslovanje, korupcijski skanadali i nedostatak odgovornosti. S obzirom da ima visoko učešće u celokupnoj spskoj ekonomiji, državni sektor značajno podriva konkurentnost celokupne privrede. Neka istraživanja pokazuju da se unapređenjem korporativnog upravljanja ovih preduzeća mogu postići rezultati koji su uporedivi sa rezultatima koji se mogu ostvariti njihovom privatizacijom. Bordovi direktora, od nedavno, predstavljaju jedini aktivni mehanizam korporativnog upravljanja u državnim preduzećima u Srbiji, usled čega je ova studija fokusirana na davanje preporuka za jačanje uloge Bordova direktora. Dali smo dva seta preporuka: preporuke za uspostavljanje efikasnog borda direktora i preporuke za unapređenje efikasnosti bordova direktora. Pre toga, detaljno je analizirana tekuća regulativa i praksa korporativnog upravljanja u državnim preduzećima u Srbiji.

Ključne reči: *državna preduzeća, korporativno upravljanje, Bord direktora, konkurentnost, performanse preduzeća*

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Introduction

State-Owned Enterprises (SOEs)[1] in many countries are dominant in utilities and infrastructure industries whose performance is of great importance to population and to all industries within the country. Almost the whole sector of public utility companies in Serbia has remained in state ownership, including the most important companies in the field of energy, transport, telecommunications, etc.

The study of Serbian SOEs in the context of improving competitiveness is important for at least two global reasons: the size of the sector in the overall national economy and the extent of problems that these companies face. In reference to the first, although there are no reliable data, in Serbia there are 715 state and local public enterprises[2], with a workforce of about 150,000 employees, which accounts for 8.5% of total employment in Serbia. Some analyses also show that SOEs participate in the total income of the Serbian economy with more than 14 percent. Problems that these companies face are numerous and some of them are: low profitability and losses (current and cumulative), high debt (state is acting as guarantor for a large portion of these loans), surplus employees, etc. Despite these facts many of Serbian SOEs provide rather high wages relative to average wages in the country - in 2010 up to 38.4% higher than the average in Serbia (43.8% in 2009).[3] Cumulative losses of SOEs constitute 18,5% of the total losses in economy and 71% of SOEs yearly revenues. The biggest losers "EPS" and "Železnice" partake in 80% of the accumulated losses of SOEs (42.9% and 37.1%).[4] Taxpayers in Serbia "were punished" for SOEs in another way, too: according to the government's report on state aid (adopted in November 2008) in the period 2003 to 2006, the state spent around 2.5 billion EUR, while very little is known of how this assistance was to be meaningful, and where exactly has it been awarded. State aid ranges from 2.5 to 4% of GDP, while in the European Union up to 1.5% of GDP is considered normal[5]. Finally, the media frequently bring some new information related to the corruption scandals, loss of property, and employment for political, friendly and relative lines in SOEs, etc.

The causes of problems of Serbian SOEs are numerous and multifaceted, but certainly one of the most important causes is the fact that they lacked adequate corporate governance. Literature and practice of corporate governance has revealed several important mechanisms of corporate governance, but almost none of these mechanisms are active and effective when it comes to Serbian SOEs. This observation applies in full when it comes to the *market for corporate control* and *bankruptcy procedures,* since the domestic SOEs are completely protected from these important mechanisms that prevent the destruction of value and discipline of inefficient and wasteful oriented managers. Our opinion is not much different in relation to other important mechanisms of corporate governance: the possibilities of disciplining SOEs managers through penalties provided by *compensation systems* that link performance and wages and risk to be removed by either *internal* or *external managerial labour market* are minimal. Absurdly, even the Board of Directors has no power to dismiss inefficient managers. So, practically the only existing mechanism of corporate governance does not function properly.

The Board of Directors stands at the heart of many systems and structures encompassing the whole of corporate governance. The European Commission stresses that Boards of Directors have a vital part to play in the development of responsible companies (EC, 2011). On this track Fama (1980) argues that Board of Directors is the central internal control mechanism for monitoring managers. Empowering and improving the quality of board is particularly important if other mechanisms of corporate governance do not work or work poorly, as is the case with the Serbian SOEs. Therefore, this article is dedicated to strengthening the role of the Board of Directors as a thoroughly fundamental step in improving corporate governance of SOEs. Good governance of SOEs is crucial in order to ensure their positive contribution to efficiency and competitiveness of the country. Also,

1 Term "SOEs" refers to enterprises where the state has significant control, through full, majority, or significant minority ownership.

2 National Bank of Serbia (2011).

3 According to Current Economic Trends 7-8 (Ministry of Finance) companies "Transnafta", "JAT" and "Srbijavode" have wages 2.6, 2.5 and 1.9 times larger than average wages, respectively.

4 Ibid.

5 NALED, web site.

corporate governance has direct impact on privatization effects because it makes the enterprises much more or less attractive to prospective investors.

Specific features of corporate governance of SOEs

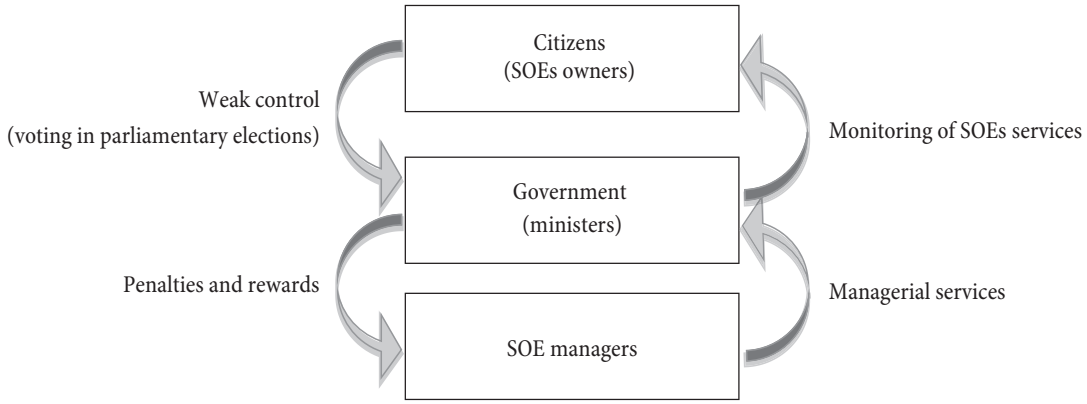
Unlike the companies in the private sector, the SOEs are not usually primarily focused on profit and are not the means for creating wealth for investors. SOEs, particularly those that operate in areas of strategic importance, generally have social objective - providing services under the market prices to make them available to all citizens and development objective - encouraging the development of certain regions or industries. Multiple objectives arise either because they are determined by legislation or because a number of ministries are in a position to influence SOEs functioning. It is obvious that these political objectives may be in some conflict with the "business paradigm".

SOEs also face some specific governance challenges different from the companies in private sector. A dilution of accountability is one of them because of the fact that the accountability for the performance of SOEs involves a long chain of agents, such as management, Board of Directors, ministries, the government, etc. These authorities may use SOEs to achieve their short-term political goals at the cost of both efficiency and longer-term objectives.

The main differences in corporate governance between private and public enterprises are given in the following table.

Much of literature about corporate governance is based on the Agency theory view. However, as can be seen in the previous table, one of the important specifics of SOEs is a *double agency relationship* - one between the citizens (principal) and the government (agent), and another between the government (principal) and the managers of SOEs (agent) (see Figure 1).

Figure 1: SOE double agency relationships



Partially adapted from Talosaga, Heatley, Howell (2011)

Table 1: Differences in governance between private and public sector enterprises

	Private companies	SOEs
Objectives	• Clear focus on profit or value maximization	• Pursue commercial and non-commercial objectives • Objectives influenced by national politics • Boundaries vague
Agency issues	• Single agency: concerned about self-interested behaviour of managers	• Double agency: concerned about self-interested behaviour of managers and politicians/ bureaucrats
Compensation	• Strong work motivations driven by job security and opportunity for financial rewards • Easy to remove or reassign employees	• Standardized pay and limited opportunities for extra rewards for effort • Difficult to provide feedback on performance • Difficult to remove or reassign employees
Transparency	• High level of disclosure (for listed companies)	• Low level of disclosure

Adapted from Wong, S. C. Y. (2004) and Rondinelli (2008)

Citizens have no direct interaction with SOE managers in the capacity of owners. Since citizens are not able to significantly exercise the ownership interests of shareholders, most control mechanisms have been delegated to the ministers. Agency relationship between citizens and ministers is much weaker then second agency relationship. Citizens have slight direct control of ministers' activities and lack strong incentives to analyse and monitor their performance. The only way that citizens can influence an SOE is indirectly by voting for a different government (Talosaga, Heatley, Howell, 2011).

As previously mentioned, SOEs are often protected from two major threats that are essential for the control over the management in private companies, such as takeover and bankruptcy; an SOE generally cannot have its Board of Directors changed via a takeover or proxy contest, and most cannot go bankrupt. The absence of potential takeovers and proxy contests reduces the incentives of board members and managers to maximize the value of the company, and the lack of bankruptcy can introduce a *soft budget constraint,* which reduces pressure to contain costs (World Bank, 2006, p.4) These constraints are "soft" because another institution will pay the shortfall for mismanagement of the SOE, that is, state is more likely to bail out a mismanaged SOE. Managers of the SOE do not fear the negative consequences of bad mistakes and, moreover, expect this sort of external financial assistance as something completely normal.

In many countries managers in even SOEs with enormous losses are less likely to be fired by the Board of Directors, because the board is simply not assigned with the legitimacy or formal power to do so. Moreover, Boards of Directors frequently are not provided with any role in the selection of CEO and senior management and may also encounter difficulties in monitoring management. Finally, in many instances SOE boards are not granted full responsibility and the authority necessary for strategic guidance and control over disclosure. If there is a strong link between the management and Ministry or government, management will tend to report to the government directly and thereby avoid the board. SOE Boards of Directors may see their roles and responsibilities encroached from two ends; by the government and by the management. In developing countries SOEs are characterized by frequent political interference from the government. The ministries and government may be tempted to become too involved in strategic issues, although it is their responsibility to define the overall objectives of the company, particularly since the difference between defining objectives and setting strategies can be rather unclear (OECD, 2005).

Whereas the government, as the shareholder of SOEs, has a legitimate right to influence SOEs, the scope and extent of influence in practice has been excessive and calls for some limitations. Namely, appropriate roles for the government include setting objectives and performance targets, appointing directors, monitoring the performance of the enterprise and it's Board of Directors. Aside from these intervention rights – which need to be clearly spelled out and publicly disclosed – the remaining authority should sit with a professional Board of Directors and management (Vagliasindi, 2008).

Board members may feel to have a reduced liability, particularly those nominated by the government. Protecting the interests of ministers is an implicit task of SOE Boards of Directors that is often in collision with efficiency requirements. Even where targets of performance were set, inadequate explanations for shortfalls in performance are not questioned.

Unlike private companies where formal procedural rules for Board of Directors member selection and evaluation process are generally well developed, in SOEs little attention has been paid to these important areas of corporate governance. Too often, SOE boards are populated with people chosen for their political allegiance rather than business acumen Vagliasindi (2008).

Curent regulation of SOEs Boards of Directors in Serbia

Governance of Serbian SOEs is regulated by Law on Public Enterprises and Performing Activities of General Interest (Official Gazette RS, 25/00, 25/02, 107/05, 108/05). Serbian model of SEOs Board of Directors is two-tier, but comparing it with EU countries company laws are somehow specific. The main advantage of two-tier Board of Directors model mentioned in the literature is increased independence and

better monitoring of management. However, in Serbia there is no increased more independence as members of Board of Directors as well as of Supervisory board are appointed by the state (e.g. the republic, city, or municipality). Additional overseeing is also questionable since according to Serbian law Supervisory board is not entitled to nominate and revoke Board of Directors as in almost all EU countries' company laws. Thus, that body does not justify its existence, while an increasing the number of qualified people need to carry out corporate governance. In our circumstances this can be an issue because building competent and well-functioning SOE boards is more difficult in emerging markets, not least because there are fewer qualified individuals available to serve as directors (Coombes, Wong, 2004). According to our insight, the number of members of the Serbian SOEs boards range from 8 to 11, while the Supervisory boards consist of 3 to 5 members. So the total number of people in both tires is 11-15. The literature shows that smaller Boards of Directors are more effective than large boards and are accompanied by high firm value (Jensen, 1993, Bennedsen et al. 2008).

Structure of the Board of Directors is not prescribed by Law; it is left to be determined by the corporate statutes. The number of employees' representatives in Board of Directors is not regulated by law.[6] Employees may also be appointed in the Supervisory board. Law does not require inclusion of independent directors on the board. It is well documented that independent directors monitor management more in shareholder interests than to the inside directors (Fama 1980, Jensen, 1993). More recently, Dahya et al. (2008) find a positive relationship between Board of Directors independence and operating performance.

The Law does not require possession of any specific knowledge, skills or different expertise for members of the Board of Directors, as for state representatives and for employees' representatives. Also, the process of nomination and election is not regulated. The OECD SIGMA Assessment for Serbia disclosed that the appointment of directors and members of the management board of the most significant public enterprises often reaches the spotlight of public controversy. Tensions usually rise between political parties as they struggle to ensure that their "people" are appointed, since public enterprise top management is not appointed in public competition procedures, but according to political party interests (OECD, 2011, p.27).

Neither Board of Directors nor Supervisory board of Serbian SOEs have power to hire, fire and set the compensations of the executive director or staff head and other key employees. CEO is appointed and dismissed by the state. In domestic SOEs, Boards of Directors are not entrusted with the full range of board responsibilities and can therefore be overruled by senior management and ownership by the entities themselves. In such circumstances it sometimes seems that the CEO controls the Board of Directors rather than the other way round. The power to hire and fire the CEO and determine the terms of his or her employment should reside with the board. This is one of the board's most important functions and key to effectiveness for private companies. Empirical study of Canadian government enterprises where the chief executive was appointed by the government shows that many CEOs did not feel accountable to the Board of Directors (Vagliasindi, 2008).

Recommendations for setting effective SOEs Board of Directors

Improving the governance of SOEs requires more effective and powerful Boards of Directors. It is important that SOEs have strong Boards of Directors that can act in the interest of the company and effectively monitor management without excessive political interference. In order to achieve that, it will be necessary to ensure the competency of SOE boards, enhance their independence and improve the way they function. Board empowerment must be facilitated by the government. Our policy recommendations emerge from the review of the literature and are mainly based on OECD Guidelines on Corporate Governance of Government-Owned Enterprises (OECD, 2005).

The Government must regulate the following issues related to SOEs Boards of Directors' setting: 1) clarifying the role and responsibility of Board of Directors, including fiduciary responsibilities and monitoring of CEO and

6 In practice this number is usually 3, except, for example "Vojvodinašume" where Board of Directors has 5 employees' representatives.

senior management, 2) determining the structure and necessary competencies of board members by law, 3) strengthening the process of selection and appointment of board, through transparent, structured and skill based nomination process, 4) undertaking board training, 5) evaluating board performances, 6) setting compensations.

First, the Boards of Directors of SOEs should have the necessary authority, competencies and objectivity to carry out their function of strategic guidance and monitoring of management (OECD, 2005). An independent director in a SOEs board should not only be independent of the executive management, but also independent of the government and the political parties. SOE Boards of Directors should not react to policy requirements until they are officially approved by the Parliament or particular procedures. The government should respect independence of SOE boards and allow them to exercise their duty of care. An independence of board members means that they should not be guided by political or some other concerns when exercising their duties. Board of Directors must be professional, not political.

The Boards of Directors of SOEs should be assigned a clear tenure and ultimate responsibility for the company's performance. The responsibilities of SOE boards should be articulated in relevant legislation, regulations, the government ownership policy and the company charters. The collective and individual liability of board members should be clearly declared.

Many times directors are removed before completion of their terms without any form of explanation. In order to avoid frequent changes in boards correlated with changes of government and to provide their stability it is recommended to define the minimum tenure of directors, for example at 3 years.

Second, we recommend one-tier model of Board of Directors with several specialized committees. Board structure and number of board committees should be mandated by law. Since experience indicates that smaller Boards of Directors are effective we suggest limiting the number of board members from 7 to 9. The state should reduce the number of political appointments on SOE boards and increase the number of directors who have previous business experience that would be useful in running a company (Sokol, 2009). Composition of Board of Directors should be as follows: a) at least one-third of the directors should be non-executive directors appointed through open competitive process, b) at least one-third of the directors should be elected from SOEs employees, 3) remaining directors on the board would be selected by the government.

SOE boards have to set up specialised committees, particularly in areas of audit, risk management, compensation and public procurement. To achieve the enhancement of the Board of Directors skills, information and independence, the committees should be composed of one board member and two experts from among the employees. Specialised board committees should have written terms of reference that define their duties. They should report to the full board and the minutes of their meetings should be circulated to all board members. Audit committee and Board of Directors should take responsibilities that had previously belonged to Supervisory board.

Third, establishing the transparent and structured nomination process with clearly defined criteria, such as competency, is the best way to minimize political interference, increase Board of Director's independence and professionalism. Moreover, setting up structured nomination processes allows government to perform this selection task even with limited administrative capacity. The process of nomination and selections of board members should be prescribed by the law. It should be clear that they should not act as individual representatives of the constituencies that appointed them; their duty is to act in the best interests of the company as a whole. A central requirement to enhance the objectivity of SOE boards is to nominate a sufficient number of competent non-executive board members who are capable of independent judgment. Board of Directors should have the relevant mix of competencies and experience aligned with the company's activity and long term strategy. Their expertise could also include qualifications related to the SOE's specific objectives.

Disqualification conditions and situations of conflict of interest should be carefully appraised and guidance provided about how to handle and resolve them. In particular, this implies that government representatives should neither

take part in regulatory decisions concerning the same SOE nor have any specific obligations or restrictions that would prevent them from acting in the company's interest (Dewan, 2006, p.194). All potential conflicts of interests concerning any member of the Board of Directors should be reported to the board, which is in charge of managing these issues and disclosing this information.

As regards to non-executive directors selected through public vacancy announcement quality of the search process could be enhanced if nomination committee uses services of professional employment agencies. These practices would help in enlarging the pool of qualified candidates for SOE boards, particularly in terms of private sector expertise and international experience.

Employees' representatives in the Board of Directors and the committees would be elected in accordance with a structured process of nominations that would be prescribed by the SOE statute. Members of the senior management team cannot be appointed to the board or to specialized committees.

Related to nomination of state representatives, nomination committees can be set up outside the Board of Directors structure, helping to focus the search for good candidates and in structuring further the nomination process. Nomination committee should include representatives of ministries concerned with particular SOE business. It could also be useful if government maintain a database of qualified candidates. Good example is Poland Ministry of State Treasury that has database which includes 35,000 names for 5,000 positions as of 2005 (Vagliasindi, 2008). When the process has been completed, nominations are to be disclosed publicly.

Fourth, training should be organized in order to inform SOE board members of their responsibilities and liabilities. Such induction training enhances board of Directors professionalism. It could include the following areas: board procedures, board responsibilities and relationship with the government and Ministries concerned. If necessary, subsequent trainings should also include lectures on corporate finance, management, business plans, accounting, restructuring, marketing, state aid for enterprises, etc.

Fifth, special government unit in charge for SOEs monitoring must actively oversee Boards of Directors on an on-going basis. Procedures and mechanisms to evaluate and maintain the effectiveness of board performance and independence should be developed. The appraisal of Board of Directors performance is crucial for demonstrating accountability and creating public trust. It is necessary to observe the involvement of the individual board member in order to provide members with the opportunity of improving their own effectiveness. Assessment must also include examination of board as a whole, its processes and performances.

Sixth, the government should ensure that compensation schemes for board members promote the long term interest of the SOE and attract and stimulate qualified professionals. There is a strong trend of bringing the remuneration of board members of SOEs closer to private sector practices. Compensation plans should contain penalties for directors that breach their fiduciary duties.

Recommendations for improving the efficiency of the Board of Directors

Professional, responsible, competitive and trained Board of Directors can initiate major changes in the SOEs operations. Empirical results reported in Aivazian, Ge, Qiu (2005) point out that, even without privatization, corporate governance reform is potentially an effective way of improving the performance of SOEs; such reforms represent a policy alternative for countries seeking to improve SOE performance short of privatization. Furthermore, Omran (2004) indicates that privatization is not necessarily a good way to improve SOEs operations because privatized Egyptian SOEs do not exhibit significant improvement in their performance relative to non-privatized ones.

In order to carry out their role, SOE Boards of Directors should actively: 1) formulate, monitor and review corporate strategy, within the framework of the overall corporate objectives, 2) establish appropriate performance measurement system, assess and follow management performances, and develop effective compensation plan for senior management tied to performances, 3) monitor

the disclosure and communication processes, 4) establish practice of self-evaluation. It is, however, crucial that, 5) the Board of Directors ensures the practice of internal auditing and 6) a proper overseeing of the risk management processes.

First, it is not simple to find a right measure of government involvement in management of SOEs. It is certain that the government should not be involved in the day-to-day management. The government could provide strategic guidelines and a course of action, and it should be formally determined and publicly disclosed in which areas and types of decisions the government is competent to give instructions. Managerial and business autonomy to SOEs should not be viewed as autonomy to the CEO of the SOEs. It implies autonomy of the Board of Directors in taking decisions and ultimate accountability for managing SOEs efficiently and effectively to achieve objectives as mandated by the government, which rests with its Board of Directors.

Second, the key function of SOE Boards of Directors should be the appointment and dismissal of CEOs.[7] It is difficult for SOE boards to completely exercise their monitoring function and feel responsible for SOEs' performance without this authority. Rules and procedures for nominating and appointing the CEO should be transparent and appointments should be based on professional criteria. SOE Boards of Directors should carry out their functions of monitoring management and strategic guidance, subject to the objectives set by the government. It follows from their obligation to assess and follow management performance that the SOE boards should also have a decisive influence over the compensation of the CEO. To this end SOEs board must establish appropriate performance measurement system. They should ensure that the CEO's compensation is tied to performance and properly disclosed.

The government should suspend the practice of periodical review of the performance of SOEs because it is a waste of government resources as it duplicates an activity that is the responsibility of the Board of Directors. CEO could not directly interact with the government through this process, above the board. Consequently, this cruelly restrains the independence and authority of the Board of Directors to control and monitor the management and dilutes the accountability of the board.

Third, SOEs should be particularly careful and must improve transparency by disclosing financial and non-financial information. This implies that members of SOE Board of Directors are responsible that financial statements appropriately and fairly present the operations and financial condition of the SOE in all material aspects. With regards to compensation of board members and senior management, it is viewed as good practice to carry this out on an individual basis. To underline the board's responsibilities, a Directors' Report should be provided along with the financial statements and submitted to the external auditors. The Directors' Report should contain information and comments on the organisation, financial performance, material risk factors, significant events, and relations with stakeholders.

Fourth SOE Boards of Directors should perform an annual self-evaluation to assess their performance. A systematic evaluation process is a necessary tool in enhancing SOE board professionalism, because it emphasizes the responsibilities and duties of the board and its members. It is also helpful in identifying required competencies and board member profiles. Finally, it is a useful incentive for individual board members to devote sufficient time and effort to their duties as board members. The evaluation should examine both, the overall Board of Directors performance and the effectiveness and contribution of individual board members. The evaluations could also be instrumental in developing effective and appropriate induction and training programmes for new and existing SOE board members.

Fifth, large SOEs should develop efficient internal audit procedures and establish an internal audit function that is monitored by the Board of Directors and the audit committee. To enhance their independence and authority, the internal auditors should work on behalf of and report not to management but directly to the Board of Directors and its audit committee. Their reporting is vital for the board's ability to evaluate actual company operations

7 In some cases, this might be done in concurrence or consultation with the government.

and performances. Consultation between external and internal auditors should be encouraged. Finally, it is also recommended as good practice that an internal control report is included in the annual reports, describing the internal control structure and procedures for financial reporting.

Sixth, the Board of Directors and the government must bear in mind that elimination of risk is not the objective of risk management. The result of successful risk management does not imply absence of risk, but understanding the risk factors and their control, as well as adequate and comprehensive communication of all relevant information on risks to the senior management and Board of Directors. Effective implementation of risk management approach involves consideration of an organization as a whole, and not focusing just on lower organizational units such as business units, product lines and the like. Prior compliance to the strategy with the defined risk appetite and the existing organizational and information infrastructure for risk management is an important prerequisite for successful risk management. In terms of corporate governance bodies which should handle risk, it has long been thought that the Audit Committee should focus on internal control and that monitoring risk management process should be transferred to a new body - the Risk management committee comprising of non-executive independent directors exclusively, who possess the sophisticated knowledge and the necessary business experience in this field.

Finally, the Board of Directors of SOEs should also develop, implement and communicate compliance to programs for *internal codes of ethics*. These codes of ethics should apply to the company and its subsidiaries. This is in the long term interest of any company as a means to make it credible and trustworthy in its day-to-day operations and with respect to its longer term commitments. In the case of SOEs, there may be more pressures to deviate from high ethical standards given the interaction of business considerations with political and public policy ones. The code should contain guidance on procurement processes, specific mechanisms for protecting and encouraging stakeholders, particularly employees, to report on illegal or unethical conduct by SOE managers. These codes of ethics should also indicate how confidential information passed on to the government from these board members should be handled. SOE Boards of Directors could grant employees or their representatives a confidential direct access to someone independent on the board, or to an ombudsman within the company (OECD, 2005).

Conclusion

Although state ownership of enterprises has declined in recent decades, SOEs and similar entities continue to account for a significant part of the economy in many countries including Serbia. Improving the governance of SOEs can bring many advantages for the SOEs as well as for entire economy. Better corporate governance can enhance productivity and contribute to the government's financial position, allow greater reinvestment and improve overall economic performance both directly and by reallocating resources within the government sector and across the economy as a whole. Also, better corporate governance in the government sector can create a model for and increase pressure on the private sector to improve its own governance (World Bank, 2006).

Empowering SOE Boards of Directors can minimize political interference with SOEs. The government cannot take part directly in the day-to-day management of the SOEs like the controlling group of shareholders in private companies, because political and bureaucratic interference has adverse impact on SOE's performance. The government should award full autonomy and independence to the Board of Directors. The government should not have excessive representation, through government officials in the Board of Directors, but should appoint professionals in their place with relevant mix of competencies and experience in accordance with the company's activity and long-term strategy.

The current domestic regulation of corporate governance in SOEs is far away from good practice. Lack of regulation has to be eliminated through clear legislative guidelines defining: the role and responsibility of the Board of Directors, its structure and competencies required

for members, a structured and transparent process of selection and appointment to the board, and transparent and incentive compensation schemes. The important role is played by board training and evaluation processes. Once professional, responsible, competitive and trained Board of Directors is set, it can initiate major changes in SOE operations. In order to achieve its goals, board must work continuously on the formulation and monitoring of corporate strategy, building adequate performance measurement systems that will serve to monitor and assess the performance of managers, and this assessment will be used to adjust managers' compensation. Finally, appointment and dismissal of the CEO and senior management decisions rights has to be left to the Board of Directors. Throughout this process Board of Directors must not forget the internal audit, risk management, as well as questions of disclosures, transparency of operations and code of ethics.

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FAX: 011/222-67-98
www.hypo-alpe-adria.rs

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FAX: 011/3107-492
www.itm.rs

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FAX: 011/3229-911
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FAX: 011/3440-033
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FAX: 011/2642-029
www.kombeg.org.rs

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www.carina.rs

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FAX: 011/2025-647
www.europen.rs

"SAVA OSIGURANJE"a.d.o.
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FAX: 011/3644-889
www.sava-osiguranje.rs

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TEL: 011/3011-400
FAX: 011/3113-752
www.societegenerale.rs

JP SRBIJAŠUME
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FAX: 011/311-5036
www.srbijasume.rs

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PIROT, NIKOLE PAŠIĆA 213
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FAX: 010/42 00 12
www.michelin.rs

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FAX: 011/3305-138
www.triglav.rs

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011/3343-017
www.ubbad.rs

UNIVERZITET U BEOGRADU EKONOMSKI FAKULTET
BEOGRAD, KAMENIČKA 6
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FAX: 011/2639-560
www.ekof.bg.ac.rs

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FAX: 024/546-486
www.ef.uns.ac.rs

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FAX: 021/334-055
www.vps.ns.ac.rs

ZAVOD ZA URBANIZAM
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FAX: 021/455-395
www.nsurbanizam.rs

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POVERENJE

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- Najveći srpski proizvođač sredstava za zaštitu bilja sa učešćem na tržištu od 25%
- Portfolio od 100 visoko kvalitetnih proizvoda od čega dominira sopstvena robna marka sa preko 70 proizvoda
- Ukupno 149 zaposlenih, od čega je 71 sa visokom stručnom spremom različitih obrazovnih profila (hemičari, tehnolozi, inženjeri zaštite bilja...)
- Sertifikovan sistem menadžmenta kvalitetom u skladu sa zahtevima standarda ISO 9001:2008
- Akreditovana laboratorija za fizičko hemijska istraživanja prema standardu SRPS ISO/IEC 17025:2006
- Savremena proizvodnja sa softverskim sistemom za automatsko upravljanje
- Članstvo u Evropskom udruženju generičkih proizvođača sredstava za zaštitu bilja od 2006. godine
- Puna odgovornost prema
  - poljoprivrednim proizvođačima
  - stanovništvu
  - životnoj sredini

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Strategic and tactical measures to overcome
real sector competitiveness crisis in Serbia