

MACROECONOMIC AND LEGAL FRAMEWORK OF COMPETITIVENESS OF ECONOMY AND ICT SECTOR IN SERBIA

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Abstract

Information and communication technology is a driving force and key component of economic development. The contribution of ICT sector lies in increase of production and export of the very sector and of the competitiveness of economy as a whole. Competitiveness is a synonym for productivity and can be enhanced by rational use and investments in resources, by applying latest knowledge in practice, investing, increasing efficiency of business activities and by introducing modern technologies to the process of production. Competitiveness also implies development of infrastructure, telecommunications and intensive use of the Internet. According to the Global Competitiveness Index, Serbia is poorly positioned. Greatest advantages exist in the fields of elementary and higher education, level of technological readiness and innovativeness. An analysis of technological readiness and degree of innovativeness within the global competitiveness of Serbian economy in 2009 indicates a high level of competitiveness and potential to be developed. Transfer of technology from developed countries is a basis for long-term sustainable economic growth and development. This paper focuses on analysis of competitiveness of Serbian economy, international economic environment and determinants of competitiveness.

Keywords: competitiveness of the ICT sector, global competitiveness index, legal regulation of ICT sector.

INTRODUCTION

Numerous problems are present in the process of market adjustment of production. Modernization, structural changes of production, program organization, increase of productivity and efficiency in production and stimulating economic policy of development are necessary conditions for raising the level of socio-economic growth and competitiveness of Serbian economy. In the 2001-2008 period gross domestic product increased at a rate of 5.2%. In the year 2009 gross domestic product decreased at a rate of 3.5% due to adverse economic developments and effects of the world economic crisis. Sectors which most significantly contribute to increase of GDP are service industries, construction and industry and agriculture and food industry.

Competitiveness of a country signifies ability to employ national resources in terms of specialization and international trade, in such a way that growing level of real income i.e. living

standard is ultimately rejected (Bruce, 1985). Competition is the driving force of economic development and growth; it encourages producers and processors to make products for which a need and demand exists, while making minimal investments. Competitors strive to provide quality products and services with minimum expenses and maximum profit.

ECONOMIC COMPETITIVENESS OF OTHER COUNTRIES AND OF SERBIA

In study of competitiveness, there is a classical concept which puts national economy as a whole in the center of competitiveness and a newer concept which places enterprise in the center of analysis. The classic approach uses level of interest rates, exchange rates, budget deficit, cost and available labor force, available national resources and national economic policy to explain competitiveness. It is believed that that the classic approach cannot give account

for competitiveness as a whole. A newer approach to study of competitiveness emphasizes that competitiveness implies improvement of position of individuals, manufacturers, enterprises and countries in comparison with others. It is necessary to improve competitive positions of producers and processors on domestic and international markets by positioning and improving quality, brand and image of a product. For competitiveness in foreign trade, ability of producers, processors and exporters to capture new markets and to win them over for permanent purchase of their products is also crucial. A system of global indices to describe economic activity in a particular country was developed in the field of economics, i.e. macroeconomics. The aim of so-called macroeconomic aggregates (variables) is to conduct a quantitative analysis of economic development and to be able to compare global indices of several countries.

The level of competitiveness in international framework is evaluated by using aggregate indices. The following indices have been used in the analysis: trade deficit and indebtedness of a country. In 2001-2009 period trade deficit amounted to € 5 228.66 million on average. The analysis of foreign exchange of products and services in recent years indicates an increase of exports and imports. The highest increase was recorded in import and export of means of labor. Import of equipment lags behind when compared to import of capital products. The result of low level of import of equipment is a low level of competitiveness of products and services in international market. Iron, steel, non-ferrous metals, vegetables, fruits and grains are mostly exported from Serbia. Competitiveness of Serbian economy is at a low level. Competitiveness has decreased and as a result the rank on global competitiveness list has lowered (from place 77 in the year 2003 to place 93 in the year 2009).

According to global competitiveness index, Switzerland, The United States and Singapore are at the top of the ranking. Other former Yugoslav Republics rank higher than Serbia. In the year 2009 Slovenia (37th) was the best

positioned former Yugoslav Republic, followed by Montenegro (62nd), Croatia (72nd) and Macedonia (84th). Bosnia and Herzegovina rank lower according to global competitiveness index.

Table 1. Global competitiveness indices in the 2003-2009 period

Country	GCI2009	GCI2008	GCI2007	GCI2006	GCI2005	GCI2004	GCI2003
	(133)	(134)	(131)	(125)	(114)	(104)	(102)
USA	2	1	1	5	1	2	2
Switzerland	1	2	2	1	4	8	7
Denmark	5	3	3	4	3	5	4
Sweden	4	4	4	3	7	3	3
Germany	7	7	5	8	6	13	13
Finland	6	6	6	2	2	1	1
Singapore	3	5	7	6	5	7	5
Japan	8	9	8	7	10	9	11
Great	13	12	9	10	9	11	15
The	10	8	10	9	11	12	12
Slovenia	37	42	39	33	30	33	31
Croatia	72	61	57	31	64	61	60
Romania	64	68	74	60	67	83	75
Bulgaria	76	76	79	72	61	39	64
Montenegro	62	65	82	-	-	-	-
Serbia	93	85	91	87	80	89	77
Macedonia	84	89	94	80	75	84	81
Bosnia and	109	107	106	89	88	81	-
Albania	96	108	109	90	100	-	-

Source: GCR 2003-2004, GCR 2004-2005, GCR 2005-2006, GCR 2006-2007, GCR 2007-2008 and The Global Competitiveness Report 2009-2010, 2009 World Economic Forum

Serbia is in the second stage of economic development. There is a need for investments in education, new technologies, quality products, a need to attract foreign direct investments and to stabilize financial market. Out of 133 countries, Serbia is in the 93rd place with an index 3.8. Advantages are present in the fields of health care, primary education, market size, technological readiness and innovativeness. The weakest areas are institutions, macroeconomic stability, infrastructure, market efficiency and business complexity.

Table 2. Global competitiveness indices of countries in Stage 2 group

Global competitiveness index	Serbia 2008 (rank)	Serbia 2009	
GCI	85	93	-8
Subindex A: BASIC REQUIREMENTS	88	97	-9
1st pillar: Institutions	108	110	-2
2nd pillar: Infrastructure	102	107	-5
3rd pillar: Macroeconomic stability	86	111	-25
4th pillar: Health and primary education	46	46	0
Subindex B: FACTORS OF EFFICIENCY	78	86	-8
5th pillar: Higher education and training	70	76	-6
6th pillar: Efficiency of goods market	115	112	3
7th pillar: Efficiency of labor market	66	85	-19
8th pillar: Complexity of financial market	89	92	-3
9th pillar: Technological readiness	61	78	-17
10th pillar: Market size	65	67	-2
Subindex C: INNOVATION	91	94	-3
11th pillar: Business	100	102	-2
12th pillar: Innovations	70	80	-10

Source: The Global Competitiveness Report 2009-2010, 2009 World Economic Forum

Analysis of technological readiness and level of innovation of Serbian economy within global competitiveness in the year 2009 indicates a high level of competitiveness and a potential to be developed. In the scope of technological readiness, best results in Serbia have been achieved in the fields of mobile telephone subscriptions (56), Internet users (69), Personal computers (46) and Broadband Internet Subscribers (58). Regarding innovations, best results have been achieved in the fields of Quality of scientific research institutions (54), Utility patents (67) and Availability of scientists and engineers (77).

ICT sector in Serbia is a respectable economic branch. Even though the market is small and the number of enterprises and employees is low, this sector contributes to 5%

of GDP. The value of ICT sector in Serbia in 2003 amounted to \$ 340 million. Selling hardware and software packages constitutes approx. 70% of turnover in the ICT sector. In 2006 and 2007, Serbian ICT market was one of the fastest growing markets; compared to neighboring countries, it was more dominant. In 2008 Serbian ICT market amounted to € 545 million. Computer equipment (€ 366 million), software packet programs (€ 64 million) and ICT services (€ 115 million) have the biggest share on the ICT market. However, it is necessary to significantly increase investments in order to achieve positive effects of ICT market on the enterprise level and on the level of the national economy. In 2008 ICT investments amounted to € 74 per capita (€ 31 in 2004), which was significantly less than in Croatia (€ 218) and Slovenia (€ 334). Successful development of ICT sector requires substantial investments in ICT infrastructure of faculties and institutes. Improvement of education and prevention of brain drain will enable Serbia to become a part of universal technology and information flows.

Table 3. Competitiveness of Serbian ICT sector in the year 2009

ICT index in 2009	84
Subindex A: Environment component	90
1 th pillar: Market environment	114
2 nd pillar: Political and regulatory	99
3 rd pillar: Infrastructure environment	57
Subindex B: Readiness component	66
4 th pillar: Individual readiness	33
5 th pillar: Business readiness	99
6 th pillar: Government readiness	95
Subindex C: Usage component	84
7 th pillar: Individual usage	60
8 th pillar: Business usage	93
9 th pillar: Government usage	106

Source: The Global Information Technology Report 2009-2010, 2010 World Economic Forum

During the 90s special attention was paid to development of technology in most countries. Ireland developed from an underdeveloped European country into an economic miracle with the export of ICT products and services amounting to 60% of GDP. India became a

leader in production and export of software with a high annual rate of growth. In 2009 Serbia was better positioned according to the technology index than according to global index of competitiveness. Out of 134 countries Serbia ranked 84th. Greatest advantages in Serbia exist in the fields of Individual readiness (33), Infrastructure environment (57) and Individual usage (60). Total tax rate (44), Time required to start a business (41) and No. of procedures required to start a business (55) are best positioned within market environment of ICT sector. Best positions within the infrastructure of ICT sector belong to Number of telephone lines (39), Electricity production (47), Quality of scientific research institutions (54), Tertiary education enrollment (59) and Internet bandwidth (42).

PROBLEMS IN THE DEVELOPMENT OF ICT SECTOR AND MEASURES FOR THEIR OVERCOMING

Difficulties in the development of ICT sector are a result of the fact that there were no legal regulations in this area until recently. Several important laws in this area, as well as amendments to existing legislation, have been adopted in the recent few years, so as to provide complete security of e-business (Law on Electronic Signature, Law on Electronic Documents, Law on Electronic Communications, Law on Protection of Competition, Law on the Organization and Jurisdiction of State Organs against High-Tech Crime, Law on Ratification of the Council of Europe Convention on Cybercrime, Criminal Code). Protection of intellectual property was regulated within the Criminal Code in the group Criminal Acts against Intellectual Property. Competition in the field of telecommunications is minimal and support of state to the development of ICT sector is insufficient.

The following measures need to be taken in order to ensure quality performance of the ICT sector:

1. Constant improvements of legal security for use of ICT services and products, including legal security of electronic transactions and legal protection of electronic data.

2. Insist on more comprehensive protection of intellectual property, as a basis for protection

of copyrights, patents, trademarks and fight against piracy (conditions for accession to the World Trade Organization and the European Union). Without effective protection of intellectual property there are no conditions for development of innovativeness, the basic driving force of the ICT industry.

3. Develop competition in open market; only competition can stimulate technological innovation, reduce the costs of ICT services and products and therefore provide wider access to new technologies.

With purpose to gain insight into modernity, adequacy and level of compliance with the EU regulations in this area, we will analyze current legal norms which have direct and indirect significance for the quality of functioning of ICT sector and which were adopted in the Republic of Serbia in the last few years.

- 1. Law on Electronic Signature¹.** Law on Electronic Signature is an organic law that gives force of law to documents and transactions in the electronic form. Without this law, e-business is not legally protected nor regulated. This law regulates the use of electronic signature in legal affairs and other legal arrangements and operations, as well as rights, duties and responsibilities in relation to electronic certificates. The law entered into force in 2004.

- 2. Law on Electronic Documents².** This law regulates conditions and manner of dealing with an electronic document (its production, distribution, storage, protection and time stamp) in legal dealings, administrative, judicial and other proceedings, as well as rights, duties and responsibilities of companies and other legal entities, entrepreneurs and natural persons, state authorities, territorial autonomy and local self-government bodies, enterprises, institutions and individuals entrusted with matters of state authority or public authority related to this document. The law entered into force in 2009.

- 3. Law on Electronic Communications³.** This law regulates terms and conditions for conducting activities in the field of electronic

¹ Law on Electronic Signature, "Official Gazette of the Republic of Serbia", No. 135/04

² Law on Electronic Documents, "Official Gazette of the Republic of Serbia", No. 51/09

³ Law on Electronic Communications, "Official Gazette of the Republic of Serbia", No. 45/10

communications; competence of state authority in the field of electronic communications; position and operation of the Republic Agency for electronic communications; remunerations; conducting public consultations in the field of electronic communications; performing activities of electronic communications in general authorization regime; design, construction or installation, use and maintenance of electronic communication networks, related assets, electronic communications equipment and terminal equipment; right of easement and joint use; interconnection and access; provision of universal service; determining markets which are subject to previous regulation; market analysis, determining operators with significant market power (SMP) and authority of the Republic Agency for electronic communications in relation to the operator with SMP; management and use of addresses and telephone numbers; management, use and control of radio frequency spectrum; distribution and broadcasting of media content; protection of rights of users and subscribers; security and integrity of electronic communication networks and services; confidentiality of electronic communications; lawful interception and data retention, supervision of the implementation of this Law, as well as measures for acting contrary to provisions of this Law. The law entered into force in the year 2010.

4. Criminal Code of the Republic of Serbia⁴ in the head XXVII, in the group of criminal acts against the security of computer data, regulates eight criminal offences related to misuse of computers and information technology: Damage of computer data and programs; Computer sabotage; Creation and spreading of computer viruses; Computer fraud; Unauthorized access to a protected computer, computer network or electronic data processing; Prevention and restriction of access to public computer network; Unauthorized use of computer or computer network, Making, procuring and providing other persons with means for execution of criminal acts against the security of computer data.

The same Law regulates five criminal acts

related to abuse of intellectual property rights in Chapter XX, in the group of criminal acts against intellectual property: Infringement of moral rights of authors and performers; Unauthorized use of copyrighted works or objects of related rights; Unauthorized removal or change of electronic information on copyright and related rights; Infringement of invention rights; Unauthorized use of design. The latest amendment to this Law, which regulates in most detail so far criminal legislation in this area, entered into force in 2009.

5. Law on the Organization and Jurisdiction of State Organs against High-Tech Crime⁵. This law regulates education, organization, jurisdiction and authorization of special organizational units of governmental organs for detection, prosecution and trial for: 1) criminal acts against security of computer data determined by the Criminal Code; 2) criminal acts against intellectual property rights, property, economy and legal dealings, in which computers, computer systems, computer networks and computer data appear as an object or a instrument for perpetration of criminal acts, as well as their products in tangible or electronic form, if the number of copies of copyright work exceeds 2000, or caused material damage exceeds the amount of 1 000 000 dinars; 3) criminal acts against freedom and rights of man and citizen, against sexual freedom, against public order and constitutional order and security of the Republic of Serbia, which can be regarded as criminal acts of high-tech crime, due to manner of perpetration or means employed. Latest amendments to this law came into effect in 2009.

6. Law on Ratification of Convention on Cybercrime⁶ acknowledges Convention on Cybercrime, done at Budapest on 23rd of November, 2001, in English and in French. The provisions of the Criminal Code on criminal acts against security of computer data, as well as the Law on Organization and Jurisdiction of State Organs against High-Tech Crime were adopted on the basis of this Convention. The Law on Ratification of Convention of Cybercrime entered into force in 2009.

⁴ Criminal Code of the Republic of Serbia, "Official Gazette of the Republic of Serbia", No. 85/2005, 88/2005, 107/2005 i 72/2009

⁵ Law on Organization and Jurisdiction of State Organs against High-Tech Crime, "Official Gazette of the Republic of Serbia", No. 61/05, 104/09

⁶ Law on Ratification of Convention on Cybercrime, "Official Gazette of the Republic of Serbia", No. 19/09

7. Law on Protection of Competition⁷.

This Law regulates the protection of competition in the market of the Republic of Serbia for the purpose of economic advancement and wellbeing of society and especially in order to achieve benefit of consumers, as well as establishment, position, organization and authorization of the Commission for protection of competition. The Commission is an independent organization which exercises public authority in accordance with this Law.

In recent years, the Republic of Serbia has opened the door to legal regulations in the field of information technology. This area requires arrangement of content of various existing legal areas due to its complexity and wide extent. In this process the criminal justice aspect is distinguished, owing to the fact that parallel with development of this segment, possibilities for its abuse arise. It is perceived from the analysis of legal solutions that these steps are just a beginning in regulation of this matter and that it is necessary to work on constant completion of legal regulation in this extremely significant area, both in terms of quality and quantity, by means of adoption of proposed solutions from international documents and by using experiences of other countries from both common law and civil law areas.

CONCLUSION

According to estimation of World Bank, Serbia is well-positioned within global competitiveness according to its level of technological readiness and innovation. Individual readiness and infrastructure of ICT sector in 2009 indicate a high level of competitiveness. Further development of scientific research and transfer of technology create a foundation for long-term sustainable economic growth and development. It is possible to raise competitiveness of Serbian economy and ICT sector by intensifying market reforms and creating an efficient legal framework for business. Competitiveness of economy depends on investments in infrastructure, education and information technology. The place and role of ICT sector in Serbia's economic development is an important strategic issue.

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