Chapter 8
Serbia

JANEV, VALENTINA; PAUNOVIĆ, DEJAN;
JOVANOVIĆ-VASOVIĆ, JELENA; ORČEVIĆ, SRĐAN;
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HIGHLIGHTS

- The Serbian economy, which is composed of services (71% of GDP), industry (19% of GDP) and agriculture (10% of GDP), has gone through two recessions since the start of the global economic crisis in 2008. In 2012, the economy shrunk by 1.7% and in 2013 it recovered by 2,5%.
- The Serbian research system is centralised and governed by the Ministry of Education, Science and Technological Development (MESTD).
- MESTD has implemented the "Law on Innovative Activities" (110/2005, 18/2010, 55/2013) and the "Law on Intellectual Property Rights (IPR, 46/2006, 104/2009)" in order to create a mechanism for more intensive linkage of science, research and innovation with the wider economy.
- Currently active is the "Strategy of Science and Technology Development of the Republic of Serbia, 2016-2020" (MESTD, 2016) with legal bases in the Law on Scientific and Research Activities (Science Law, 110/2005, 50/2006, 18/2010 and 112/15).
- In terms of organizational innovations, in Serbia there is a slight delay in activities related to all different aspects of this type of innovation.
- Concerning innovation incentives, Serbian SMEs are in a better position than companies in other areas of the Adriatic region.
- As regards knowledge hiding, in Serbian companies employees usually have no problems sharing their knowledge with other employees for the benefit of the company; however, this determinant is ranked rather low in both Serbia (1,69) and the Adriatic Region (2,31).
- Research on the Adriatic Region level shows that cultural intelligence is significantly correlated with innovativeness. It is quite highly ranked in the Adriatic Region (4,54), and even more so within Serbian SMEs (5,2).

8.1 GENERAL OVERVIEW

Serbia is a country located at the crossroads of Central and Southeast Europe, covering the southern part of the Pannonian Plain and the central Balkans. Serbia borders Hungary to the north, Romania and Bulgaria to the east, Macedonia to the south, and Croatia, Bosnia, and Montenegro to the west; it also borders Albania through the disputed territory of Kosovo. The capital of Serbia, Belgrade, is among Europe's oldest cities and one of the largest in Southeast Europe. As of the 2011 census, Serbia (excluding Kosovo) has a total population of 7,2 million and the overall population density is medium as it stands at 92.8 inhabitants per square kilometre. During the 1990s, Serbia used to have the largest refugee population in Europe. It has been estimated that 300,000 people left Serbia during the 1990s, 20% of which had a higher education. According to the 2011 census, literacy in Serbia stands at 98% of population, while computer literacy is at 51%. The same census showed the following levels of education: 16.2% of inhabitants have a higher education (10.6% have bachelors or master's degrees, 5.6% have an associate degree), 49% have a secondary education, 20.8% have an elementary education, and 11% have not completed elementary education (Statistical Office of the Republic of Serbia, 2011).

After the breakup of Yugoslavia in 1991, Serbia, together with Montenegro, was part of the Federal Republic of Yugoslavia (FRY). After Montenegro's declaration of independence in 2006, Serbia continued to be an independent state within the borders that exist today. The European Council granted Serbia candidate country status in March 2012. The Republic of Serbia is a multiparty parliamentary democracy with a unicameral parliament consisting of 250 seats. Currently, the coalition gathered around the Serbian Progressive Party (SNS) has a plurality. The President and Prime Minister are members of the same party. Serbia started membership talks with the European Union (EU) after making significant progress in several domains in January 2014; the European Council decided to open the first chapters of the EU accession negotiations at the Accession Conference on 14 December 2015.

8.1.1   OVERVIEW OF THE ECONOMIC SITUATION IN THE COUNTRY

Serbia has passed through a period of dramatic change during the last fifteen years. The impact of the international financial crisis and numerous rounds of elections have slowed down the necessary structural reforms in the country. Serbia suffered a deep recession characterised by a 3.1% decline in GDP in 2009, and sharp drops in private investment, consumption and public revenues (World Bank, 2015). In 2014, Serbia's economy entered its third recession in the last six years. Real GDP con-

tracted by 1.8% as a result of severe floods in May 2014 that decimated both the industrial and the agricultural output and exports (Euler Hermes, 2014). Despite the financial crisis, the government maintained macro-economic stability, thanks to the adoption of appropriate fiscal and monetary policy and structural reforms in the financial and public sectors (World Bank, 2015).

Serbia's per-capita GDP was approximately EUR 4,781 in 2013. In the year 2012, Serbia's GDP per capita (EUR 4,158) reached 16% of the EU-28 average. The poverty rate stood at 9.2% in 2010, up from a low of 6.1% in 2008. Growing unemployment led to a record high unemployment rate of 24% in October 2011, which eventually ebbed to around 23% at the end of 2013. Serbia's unemployment rate was more than twice that of the EU-28 average of 10.5% (ERAWATCH, 2014). The budget deficit was 6.5% of GDP in 2012 and 5.0% in 2013. Government debt expanded above 60% of GDP in 2013 and is expected to approach 70% of GDP in 2014 (Instrument for pre-accession assistance, 2014).

Previously, in 2010, the main business sectors were agricultural products, which make up about 20% of total exports (mostly grains, sugar, fruits and vegetables, confectionary products and beverages), iron, steel and metal products (20%), machinery and transport equipment (17%) and chemicals (9%) (World Bank, 2010). Recently, however, Serbia's main exports have become cars and other products from the automotive sector (World Bank, 2015). Automotive exports have become the most important sector following significant investments from the Italian carmaker, FIAT. Almost 90% of all Serbian exports go to Europe: 55% to the EU and about 33% to the Central European Free Trade Agreement (CEFTA) region (World Bank, 2015).

Going forward, Serbia's main challenge is to improve living standards in the country and transform economic recovery into jobs in a tight fiscal environment. Increasing exports, productivity and competitiveness are recommended actions that can help propel the country's economic growth.

8.1.2 OVERVIEW OF THE RESEARCH AND INNOVATION ACTORS AND ACTIVITIES IN THE COUNTRY

The Serbian National Innovation System has its root in the potential and institutions formed in the Socialistic Federal Republic of Yugoslavia (SFRY). In the period after World War II, until 1991, the three basic organizational forms that performed research and development were independent R&D institutes (0.3% GDP allocated directly for research and innovations), research laboratories, and teams at universities and R&D centres in industrial enterprises (0.7% GDP allocated for industry centers), with the largest number of scientific and research organisations being observed around 1980

(Kutlača & Semenčenko, 2015). The attempts and efforts to define a new, modern scientific and technological innovation policy, based on the recommendations of the "Strategy of technological development Federal Republic of Yugoslavia until the beginning of XXI century", collapsed in 1992.

The structure of the policy coordination mechanisms in Serbia remained unchanged throughout the last decade: the first level of research governance is the National Parliament, the highest legislative authority in the country, and the Committee for S&T Development, which reviews and proposes to the Parliament the laws regulating the area of research and innovation. The Ministry of Education, Science and Technological Development (MESTD) govern the functioning and development of S&T in Serbia and are responsible for the fulfilment of the country's obligations in this area. The main task of the National Council for S&T Development is to design and propose to the government a strategy for S&T development and to monitor its implementation. The "Strategy of S&T Development of the Republic of Serbia 2016-2020" (MESTD, 2016) is currently active and its legal basis is in the Law on Scientific and Research Activities (Science Law, 110/2005, 50/2006, 18/2010 and 112/15). The laws stipulate, among other things: strategic changes of the method of funding, partly oriented at the entities in the economic sector as the proponents of innovation projects; regulation of intellectual property rights (IPR) protection, under the joint projects between the corporate sector and R&D organisations; and formation of joint investment funds for financing innovation projects.

The structure of the system includes:

DECISION MAKING BODIES ON A POLITICAL LEVEL

- **The Ministry of Education, Science and Technological Development** (MESTD) was established on 26 July 2012 (LAW 2012) as the legal successor of the previous Ministry of Education and Science. MESTD performs state administration activities related to education, science and innovations and improvement of the innovation system in the Republic of Serbia. Currently, it provides funding for research in many domains including the field of nuclear energy, safety of nuclear facilities, production and temporary storage of radioactive material, except in nuclear power plants, and other activities specified by law. The "Strategy of Scientific and Technological Development of the Republic of Serbia 2016-2020" was adopted by the Government of the Republic of Serbia on 3 March 2016. The new Research and Innovation Strategy 2016–2020 will be partly financed by EC) and the World Bank Group-Serbia Partnership Programme (2015). MESTD has implemented the "Law on Innovative Activities" and the Law on Intellectual Property Rights in order to create a mechanism for more intensive linkage of science, research and innovation with the wider economy.

Figure 8.1. – Structure of the Serbian National Innovation System
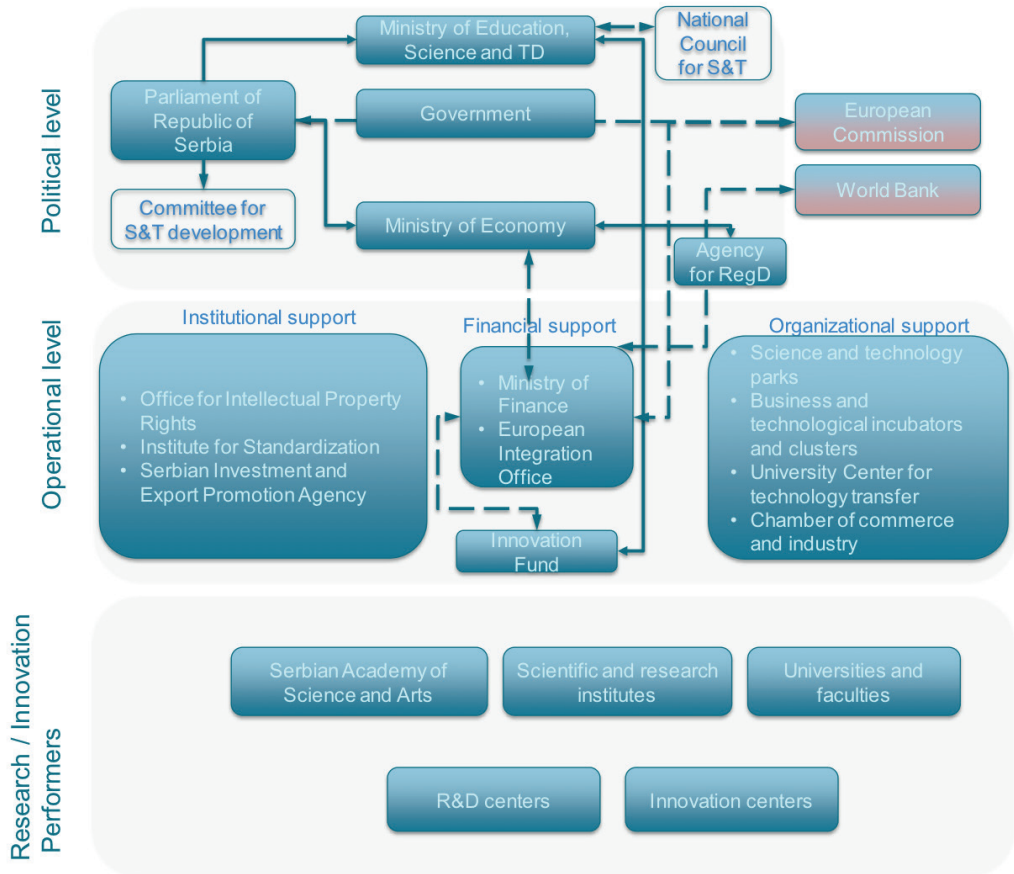
Source: Own elaboration on ERAWATCH (2014)

- **The Ministry of Economy** (ME) was founded in 2012 (previously the Ministry of Finance and Economy) and, in accordance with the Law on Ministries ("Official Gazette" No. 44/2014), performs state administration relating to economy and economic development, positioning and connecting companies and other forms of organisation for performing activities, encouraging the development and structural adjustment of the economy, the policy and strategy of economic development, proposing measures and monitoring the implementation of economic policies for economic growth, proposing measures to encourage investment and coordination of activities relating to the investment, among other things. See: http://www.privreda.gov.rs/ministarstvo/o-ministarstvu/nadleznost/

- **The National Agency for the Regional Development** (NARD) is a leading institution of the Republic of Serbia that implements the national policy of balanced regional development. It was founded in 2009 at the discretion of the Government of the Republic of Serbia as a public agency for performing development of professional and regulatory tasks of regional development. It is a legal successor of the Republic Agency for Development of Small and Medium Enterprises

In the Province of Vojvodina:

- **Provincial Secretariat for Science and Technological Development**, in accordance with the Law, performs tasks of interest for the Province of Vojvodina in the field of science, technological development and higher education. The Secretariat suggests Acts to the Provincial Government that define the work of R&D institutions in the Province, regulates matters and implements measures of provincial interest in higher education processes and in the field of student standards.

EXECUTIVE INSTITUTIONS, AGENCIES AND ORGANIZATIONAL SUPPORT
ON AN OPERATIONAL LEVEL

- **The Ministry of Finance** (MF) was founded in 2012 (LAW, 2012; previously the Ministry of Finance and Economy) and, in accordance with the Law on Ministries ("Official Gazette" No. 44/2014), performs public administration tasks related to the state budget, determining of the consolidated balance of public revenue and public spending, systems and policies of taxes, tariffs and other public revenue, public expenditure policy, management of available public funds of the Republic of Serbia, public debt and financial assets of the Republic of Serbia among other things. See: http://www.mfin.gov.rs/pages/issue.php?id=9679

- **The Innovation Fund** (IF) was established by the Innovation Law (2006) in order to provide funding for innovations, particularly through cooperation with international financial institutions, organisations, donors and the private sector. The objective of the Fund is to promote innovation in priority areas of science and technology and to support the commercialisation of technology transfer, thus enabling new technologies to reach the market. It started operating in 2011, when Serbia received the first financial support from World Bank. See: http://www.innovationfund.rs/innovation-serbia-project/

- **The Intellectual Property Rights Office** (OIPR) is responsible for the tasks related to industrial property rights (patents, trademarks, industrial designs, indications of geographical origin and topographies of semiconductor products), copyright and related rights.

- **The Serbia Investment and Export Promotion Agency** (SIEPA) is a public agency that helps Serbian companies to export their products and services and become more competitive in foreign markets. It promotes investment opportunities and provides assistance to foreign investors to start businesses in Serbia. SIEPA is actively working on the creation of new jobs, starting the domestic economy, technology transfer and the transmission of new knowledge and skills.

- **The Institute for Standardization of Serbia** (ISS), as a national body for the standardisation of the Republic of Serbia, ensures that Serbian standards are consistent with international and European standards, as well as the possibility of participating equally in European and international standardisation and developing national standards respecting approved (accepted) international and European standardisation principles.

- **S&T parks**, closely associated with universities, were established in the period 2011-2014 with the goal of opening the possibility of creating more knowledge-based companies. More info: http://www.piu.rs/projects.php

- **Business incubators** are seen as an efficient instrument of local development. They stimulate entrepreneurial activities through providing a wide range of services to start-ups, including individualised business counselling services to tenant companies, thus helping them to achieve growth and stability. Examples include: the Business Technology Incubator of Technical Faculties Belgrade L.L.C., , Business incubator Zrenjanin "BIZ" d.o.o., Business Incubator Subotica, More info: http://www.policycafe.rs/english/business-incubators_en.php

- **Technology Transfer offices** – Examples include: Center for technology transfer – University of Belgrade, Technology transfer office at University of Nis, Knowledge Transfer Center of the Kragujevac University, Technology Transfer Center, University of Novi Sad

- **Chambers**. This includes: the Chamber of Commerce and Industry of Serbia, the Belgrade Chamber of Commerce, the Regional Chamber of Commerce, Niš, the Chamber of Commerce of the Province of Vojvodina.

RESEARCH PERFORMERS (STATE OWNED OR PRIVATE)

- Research performers are private and public research organisations in government, higher education and the business enterprise sector; however, the public R&D sector dominates in both research manpower and performing research activities.
    - The Serbian Academy of Sciences and Arts (SASA);
    - 15 accredited universities, 79 accredited state-owned faculties and 18 accredited private faculties. See more info http://www.mpn.gov.rs/images/content/akreditacija_NIO/Akreditovani_fakulteti_i_univerziteti-2014_02.pdf.
    - 60 accredited institutes (32 R&D, 28 scientific), See: http://www.mpn.gov.rs/images/content/akreditacija_NIO/Akreditovani_instituti-2014_02.pdf
    - Top R&D performers in the private sector such as Fiat Automobili Srbija, Naftna Industrija Srbije, Comtrade Group, Telekom, Srbija, Rudarski basen Kolubara, Nectar, Swisslion-Takovo and Delta Holding

INVESTMENT IN R&D

- More than EUR 400 million of non-budgetary resources will be invested in R&D and innovation in Serbia from 2010 to 2018 (Djelić, 2014).
- Total Gross expenditure on R&D in the country (GERD) in 2012 was EUR 287.34 million; this was funded al follows: private sector (5.78%), public sector (51.30%), higher education sector (33.68%), private non-profit sector (0.06%) and foreign investment (9.19%) (EUROSTAT, 2015).
- GERD, as a percentage of GDP, increased from 0.32% in 2006 (ERAWATCH, 2014) to 0.99% in 2012 (World Bank, 2015).

8.1.3   RECENT CHANGES IN R&D AND INNOVATION SYSTEM IN THE COUNTRY

Serbian budget allocations for science grew significantly in the last fifteen years, from the modest sum of EUR 28 million in 2001, to about EUR 100 million per year in 2008 and 2009. A EUR 400 million investment programme in research infrastructure commenced in 2011 and is expected to be completed in 2015. The Summary Innovation Index is 0.358, which is an increase from 0.344 in 2012, 0.282 in 2011 and 0.284 in 2010 (ERAWATCH, 2014).

The Science Development Strategy 2010-2015 was prepared following a top-down approach with contributions from informal panels in selected S&T fields. Some of the main goals of S&T policy were: (1) 45-55% ratio of basic financing, as opposed to applied research, should change to 60% in favour of applied science in the next five years; (2) partnership within the R&D system through the ratio-

nalisation of the R&D network and close cooperation between research institutes and university faculties; (3) partnership with industry through an Innovation Fund, a new legal framework for intellectual property, and incentives and support for innovation activities; and (4) increasing and diversifying R&D expenditure. The goal is to reach 1% of total GDP expenditure on science by 2015, not including investments in infrastructure.

After the adoption of the national R&D strategy, covering the time period 2010-2015, several changes in budgetary commitments were introduced (MESTD, 2010). A new grant program for interdisciplinary and integral research was introduced, taking up almost a third of national R&D financing, addressed to the realisation of the R&D and innovation projects. The program was meant to bring together large teams from different institutions to address Serbia's R&D priorities. A small portion of the national RDI budget (about 2%) was spent on innovation projects (ERAWATCH, 2014).

The construction of S&T parks in Belgrade, Novi Sad, Niš and Kragujevac (approximately a EUR 30 million investments over the period 2011-2014) (World Bank, 2013) BIBLIOGRAPHY was one of the key elements of R&D policy for the immediate future that promotes the diversification of sources of finance for scientific projects through better cooperation with business partners.

8.2   MACRO-LEVEL ANALYSIS OF INNOVATION ENABLERS AND INHIBITORS

In this section, the most relevant macro-indicators of innovation in the country are presented[1]. These indicators concern six categories of the national innovation system: the economic situation of the country, figures regarding human resources as well as the education system, the innovation investments made by both the public and private sectors and the scientific output. The indicators are synthetically represented in Figure 8.2 and described after that. In the figure, 100 represents the EU average, while the dotted part of the histograms shows the Adriatic Region average.

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1   A more detailed picture about the country's innovation profile can be found at: http://www.adriaticinnovationmap.eu/country-profile/.

Figure 8.2 – Serbian Innovation System, selected indicators
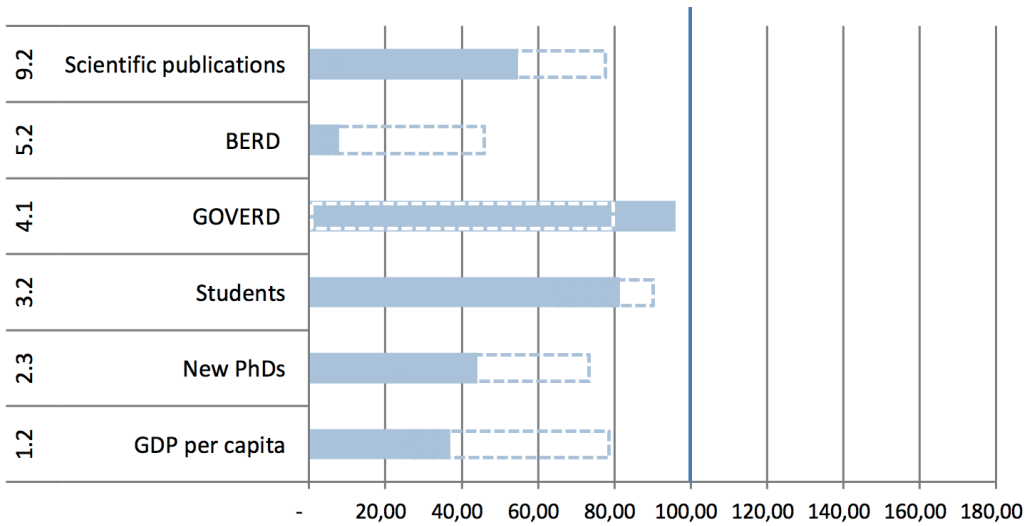
The economic data include the general economic figures of the country, such as GDP per capita, total exports, unemployment rate, current account deficit, etc. In the analysis for Serbia we have included the unemployment rate and GDP per capita and compared it to the Adriatic Region mean, as well as the EU-28 mean. The Serbian GDP per capita places the country far below the average of the Adriatic Region and EU-28 mean. The Region itself is also positioned lower than the EU-28 average GDP per capita. Comparing the unemployment rates across Europe, we can conclude that Serbia's position was difficult in this respect for the period 2011-2013. The current unemployment rate (2016) is lower by 3% and is currently 19% (the number of people actively looking for a job as a percentage of the labour force).

The human factor plays a critical role in innovation, as the competitive advantage built on human resources is not easily imitable. In order to assess and compare human resources in Serbia with the Regional and EU-28 average, we have included the total number of new PhD graduates (as a percentage of the active population) in the analysis. With regards to this indicator, Serbia is in a bad position in comparison with the Regional and EU-28 mean.

Education plays a central role in building the country's innovation capacity. The indicator of the total number of students (tertiary education participation) shows that Serbia is well below the Regional mean and the EU-28 mean.

The commitment of the **public sector** to the generation of new ideas is measured by government expenditure on R&D. In Serbia, government expenditure on R&D, relative to the GDP, is above the Regional mean and very close to the EU-28 mean.

The private sector represents an engine of economic growth and job creation, as commercial enterprises constantly incorporate new technologies in their businesses due to market pressures and an imperative to stay competitive. To measure this, we have used the amount of business R&D expenditure in the country, relative to GDP. In the private sector dimension, it is evident that Serbia lags significantly behind the Region, while the Region lags behind the EU-28 countries.

The scientific output of a country is closely related to its innovation capacity; at the same time, it can be used as an indicator of a country's innovation performance. To measure this, the number of SCImago scientific journal articles (per million active population), has been used. For Serbia, this relative indicator shows a better situation in comparison to the Regional mean, yet it is below the EU-28 average value.

8.3   MESO-LEVEL ANALYSIS OF INNOVATION ENABLERS AND INHIBITORS

The survey of innovative small and medium companies in Serbia has mainly targeted service-oriented ICT companies. The Mihajlo Pupin Institute conducted the survey in the period from July-December 2014. The survey was sent via e-mail to the selected companies, however the response rate was very low. Therefore, the team organised meetings with the companies and, in cooperation with the company representatives, filled in the paper version of the survey. This way, 103 responses were completed at the level of 80% (cut-off criteria) and, hence, used for further analysis.

The sampling strategy was formulated together with the Business Technology Incubator of Technical Faculties Belgrade L.L.C, (see http://www.bitf.rs/cms/item/home/en.html). A thorough analysis of the structure of national industries via economic activities was performed; we concluded that the most expansive sector with the biggest number of innovative companies is the ICT sector. Thus, data related to SMEs in the ICT sector was extracted from the national database. The sampling frame was created using the following criteria:

- Fewer than 250 employees;
- Active enterprises that have submitted the yearly financial report in 2013.

The main results show that the percentage of product innovations is slightly above the Adriatic Region average, while Serbian companies lag behind the Adri-

atic Region average in processes of innovation. The surveyed companies operated worldwide, however, their turnover came mainly from the domestic market, followed by the Adriatic Region and European markets.

Innovation inhibitory factors are similar as in other Adriatic countries; however, Serbian companies have enough qualified personnel who are well acquainted with new technologies and market opportunities. In terms of innovation incentives, Serbian SMEs are in a better position than companies in other areas of the Adriatic Region.

8.3.1   ORGANIZATIONAL INNOVATION

The analysis of collected data points to minor differences in ranking of the respondents' perceptions between Serbia and the Adriatic Region average; the exception

Chart 8.1 – Organizational innovation
(Serbia in comparison to the Adriatic Region average)
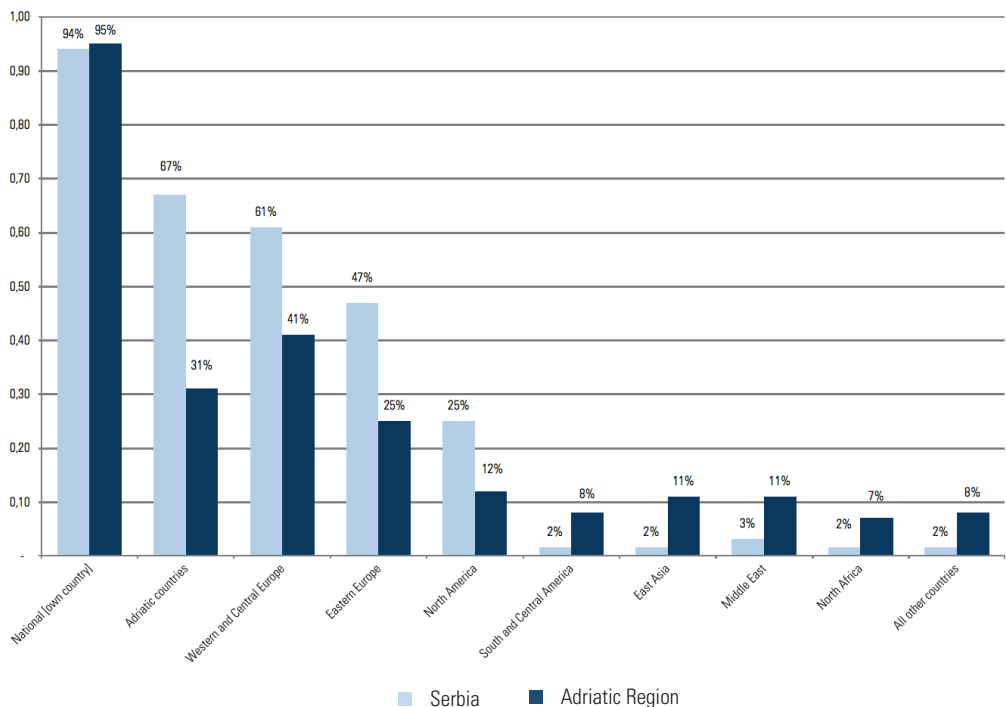

Legend: Serbia, Adriatic Region
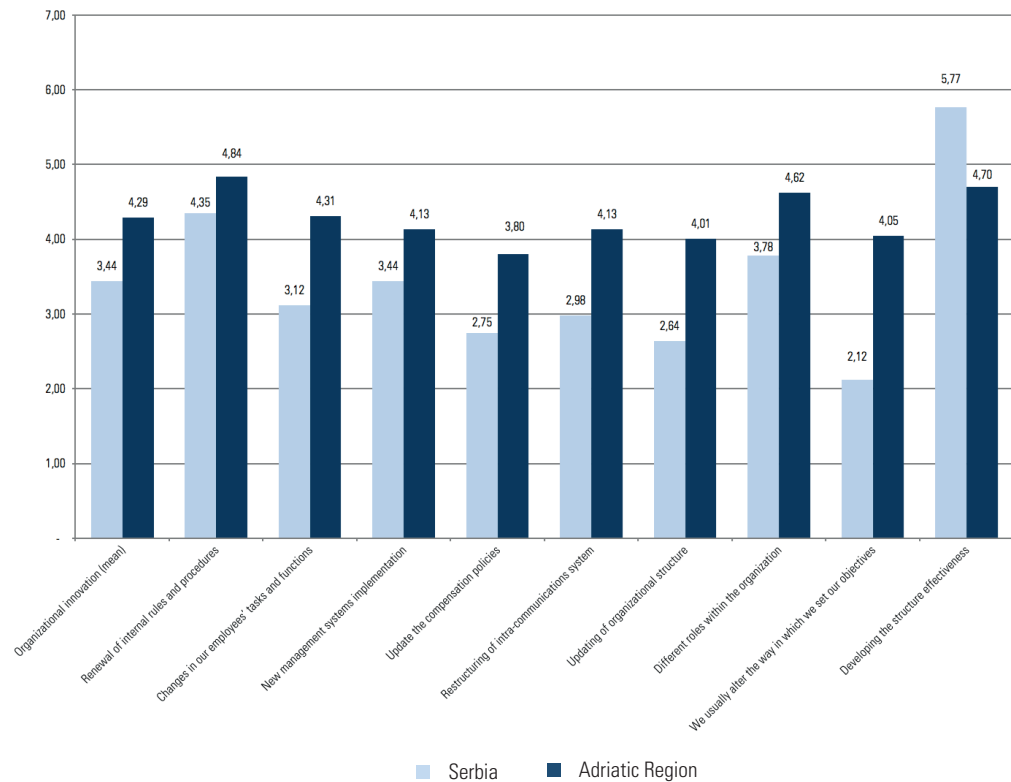
to this is find innovative ways for boosting effectiveness (5.77), where Serbia holds the highest ranking on the scale from 1 to 7. The biggest disparities in favour of the Adriatic Region can be seen in the setting objectives.

8.3.2   INTERNATIONALIZATION LEVEL AS INNOVATION ENABLER

In the period from 2011-2013, the surveyed companies from Serbia operated world-wide, however they mainly earned their turnover on the domestic market (94%), followed by the Adriatic Market (67%) and the European market: Western and Central Europe (61%) and Eastern Europe (46.88%). They were considerably less active on the markets in East Asia, South and Central America, the Middle East and North Africa. When it comes to exporting activity, 20% of the sampled companies were not exporters and 36% exported to up to 6-10 markets.

Chart 8.2 – Geographic markets where enterprises sold goods and/or services during 2011, 2012-2013
**(Serbia in comparison to the Adriatic Region average)**

Comparing the activities of the Serbian companies and the Adriatic Region's average, it can be concluded that Serbian SMEs are performing better in the region and in Europe and North America, while are behind the Adriatic Region's average in other markets.

8.3.3   INNOVATION INCENTIVES AS INNOVATION ENABLERS

One of the significant factor preventing innovative activities is the lack of financial support. As the results show, Serbian innovators have received limited public support (from regional or central government authorities (up to 15%), and less than 10% from the European Union). Although the level of received support was low, according to the results, Serbia's SMEs were in better position than companies in other areas of the Adriatic region. It is evident that the level of received support was low for all three forms of financing and in both Serbia and the Region as a whole. The financial support provided by national institutions was higher than the support received from the European Union.

Chart 8.3 – Public financial support (%) for the innovation activities in enterprises during the 2011-2013 coming from the government (Serbia in comparison to the Adriatic Region average)
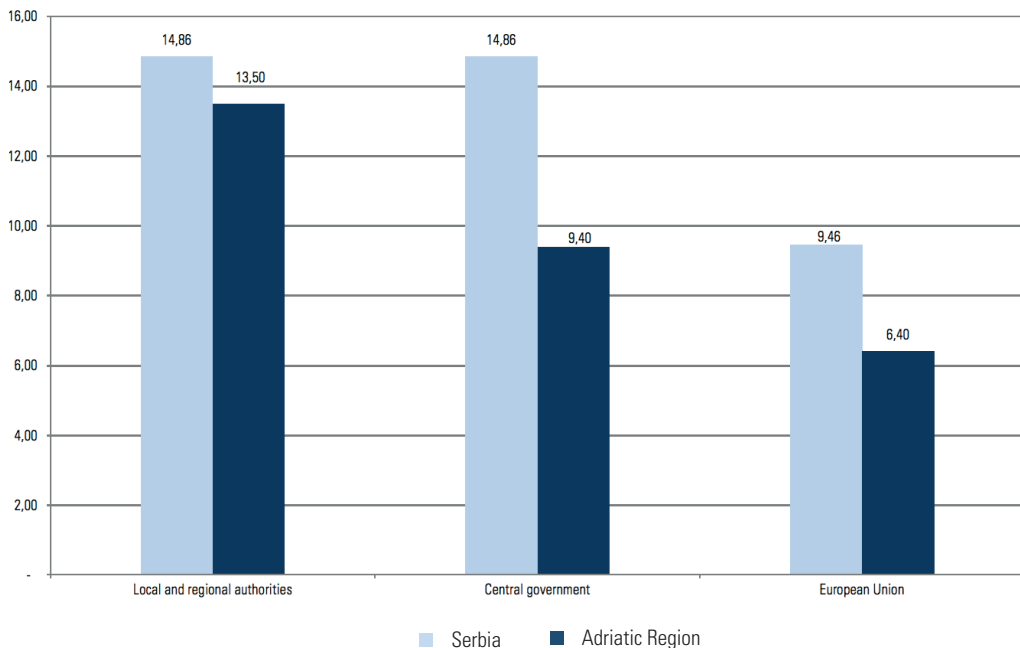
8.4   MICRO FOUNDATIONS OF INNOVATION

In Serbia, two innovative companies participated in the study. The first company was a medium-sized company from the IT and software business sector with 105 employees. The second one was involved in the automation and control systems domain, usually the system integrator and project leader in most of complex projects in the electric power industry. This company had 71 employees.

With regard to the demographic characteristics of the sample,, the gender structure was rather misbalanced in the analysed Serbian companies, with the ratio of men to women being 71% and 29%, respectively. The average employee age was 39.8. The majority of employees held master's and bachelor's degrees.

The following graph presents the average descriptive results for Serbia in comparison with the Adriatic Region in reference to the results of the multi-level analysis at the Adriatic level. Here, it is important to take into account certain cross-country in-

Chart 8.4 – Micro-determinants of innovation in Serbia and the Adriatic Region
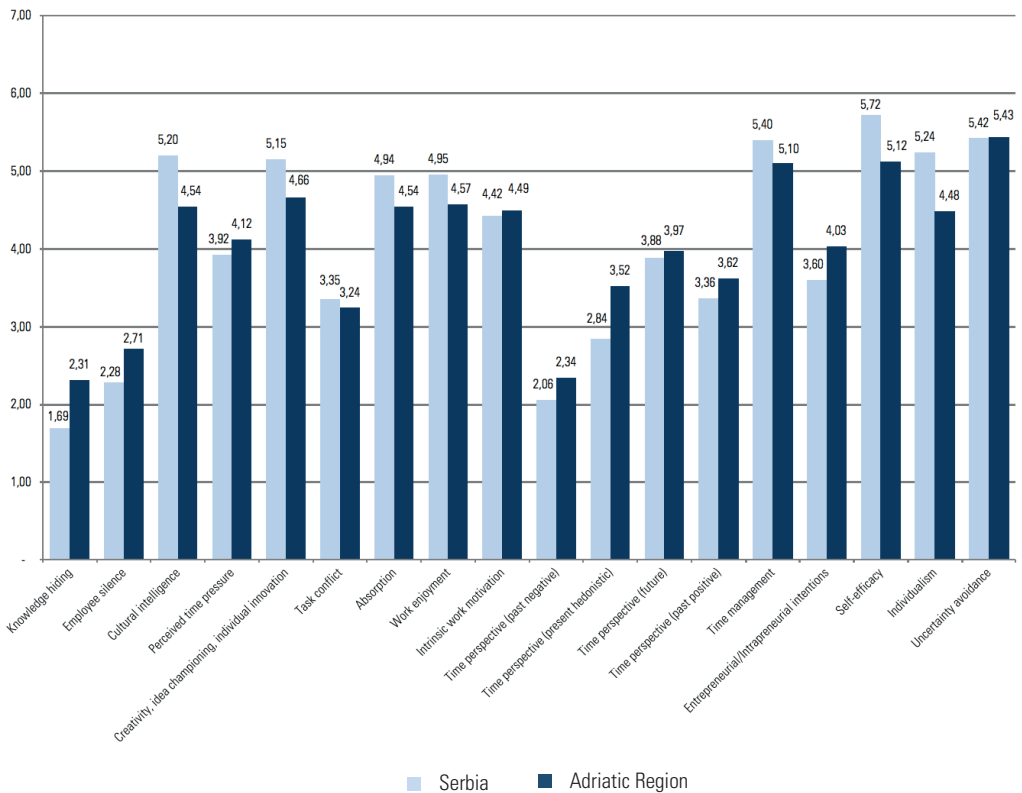
terpretation limitations, since the provided answers could be culturally conditioned, due to the fact that the questions in the survey mostly deal with perceptions. Serbian companies that participated in the study belonged to IT/software engineering and automation control sectors. If we had selected companies from some other innovative sectors, the obtained results could have been significantly different.

Different items were mostly measured on a 7-point scale, with 1 marking the lowest and 7 the highest level of agreement with a particular statement. In some cases (such as time perspectives variables) the constructs were measured using a 5-point scale.

The results of the research show that **knowledge hiding** in both Serbia (1,69) and the Adriatic Region (2,31) does not occur often. It is interesting that the results of the econometric analysis on the Adriatic Region level suggest that knowledge hiding positively impacts innovativeness, which is contradictory to previous empirical studies.

The construct employee silence is significantly negatively related to innovativeness in our research at the Adriatic Region level, since it generally means that employees do not want to share their ideas openly. This construct was ranked rather low in both Serbia (2,28) and the Adriatic Region (2,71).

Cultural intelligence is significantly correlated with individual-level innovativeness, according to the results of the research at the Adriatic Region level. This means that the more culturally conscious the employees are, and the more familiar they are with different languages, cultural values, etc., the more innovative they are likely to be. This determinant is highly ranked in both Serbia (5,2) and the Adriatic Region (4,54).

Perceived time pressure, according to the research at the Adriatic Region level, does not have any significant correlation with the level of innovativeness in the surveyed companies of the Adriatic Region. The ranking of this determinant is 3,92 in Serbia and 4,12 in the Adriatic Region.

Idea championing and **individual innovation** are ranked high, according to the conducted research at the Adriatic Region level. The ranking of these determinants is 5,15 in Serbia and 4,66 in the Adriatic Region.

Task conflict, as a measure of the extent of disagreement between group members, is not present to a large degree, in either the Adriatic Region (3,24) or Serbia (3,35). The low representation of this determinant may be interpreted in a positive way as task conflict has been recognised as a potential innovation inhibitor.

Absorption/flow at work, work enjoyment and **intrinsic work motivation** are ranked rather high (ranging from 4,42 to 4,95 in Serbia and around 4,5 in the Adriatic Region). However, the research at the Adriatic Region level has shown no significant correlation between these constructs and individual-level innovativeness.

Regarding **time perspectives**, this research has shown that on the level of the Adriatic Region, only **past positive** and **present hedonistic** time perspectives significantly correlate with innovativeness. Past positive time perspective is negatively correlated with innovativeness at the level of the Adriatic Region, and it is similarly ranked in Serbia (3,36) and the Adriatic Region (3,62). On the other hand, present hedonistic time perspective is marginally positively correlated to innovativeness on the Regional level, and it is ranked somewhat lower in both Serbia (2,34) and the Adriatic Region (3,52). **Past negative** and **future time perspectives** did not show any significant correlation with innovativeness in our study for the Adriatic Region. The low ranking of past negative time perspective may be interpreted as a positive result.

According to the conducted research in the Adriatic Region countries, time management is highly correlated with innovativeness and is one of the largest determinants of individual-level innovativeness. This determinant is ranked high in both Serbia (5,4) and in the Adriatic Region (5,1).

According to our research in the Adriatic Region, **entrepreneurial and intrapreneurial intentions** are considerably related with employees' innovativeness. The entrepreneurial skills may be of potential benefit for the company, as they are associated with competence in the process of opportunity identification and creation and the ability to capitalise on identified opportunities, thus stimulating innovation processes. This determinant is mid-ranked: 3,6 in Serbia and 4,03 in the Adriatic Region.

This research has shown that **self-efficacy** has the strongest impact on individual-level innovativeness in the surveyed companies of the Adriatic Region. It is ranked very high in both Serbia (5,72) and the Adriatic Region (5,12), which makes us conclude that employees in selected companies are very optimistic regarding their abilities to perform new or difficult tasks.

Individualism, as another construct that measures national culture, is highly ranked both in Serbia (5,24) and the Adriatic Region (4,48). The empirical analysis has shown that this determinant does not play as a significant role in explaining individual-level innovativeness in the Adriatic Region.

Uncertainty avoidance holds rather high and almost equal rank in both Serbia (5,42) and the Adriatic Region (5,43), which implies some specific cultural characteristics of risk aversion in the Adriatic region. However, according to the conducted research in the countries of the Adriatic Region, this determinant is not considerably related with employees' innovativeness.

8.5   CONCLUSIONS

This chapter has summarised the results of several studies related to innovation enablers and inhibitors in Serbia that were conducted in the PACINNO project framework during 2014 and 2015.

Aimed at better understanding the findings presented in Section 8.2 (Macro-level analysis of innovation enablers and inhibitors), Section 8.3 (Meso-level analysis of innovation enablers and inhibitors) and Section 8.4 (Micro foundations of innovation), the first section briefly described the economic situation in the country and the research and innovation actors and activities in the country.

Serbia is a candidate country for EU accession. Due to the major steps that Serbia has taken in several domains in the past year, the European Council decided to open the first chapters of the EU accession negotiations at the Accession Conference on 14 December 2015. On 3 March 2016, the Government of the Republic of Serbia adopted the "Strategy of Science and Technology Development of the Republic of Serbia 2016-2020", which was suggested by the Ministry of Education, Science and Technological Development. It is expected that the EU accession negotiations and the Strategy, whose legal basis is in the Law on Scientific and Research Activities (Science Law, 110/2005, 50/2006, 18/2010 and 112/15), will efficiently support the integration of the business enterprise R&D sector into a national innovation system, creating infrastructure for innovative entrepreneurship and enabling a culture for technological entrepreneurship in the higher education sector and public R&D laboratories and institutes.

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