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# The Linkages Between Investments in Innovation and Business Performance in Serbia

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## Abstract:

**Motivation:** Driven by an increasingly competitive marketplace, the savviest businesses invest heavily in corporate innovation as a kind of competitive intelligence that gives a business what it needs to operate with poise and precision. The strategy of investments in innovation by firms can potentially explain the heterogeneity of their income increase based on market success. Such a stimulus for growth has been a motivation for the research question being examined in this paper, namely the link between corporate financing and investment decisions of Serbian firms based on the bank loans as sources of innovation and hence improved enterprise performance. The paper is based on the research of Hottenrott et al. (2014), together with Ferrando & Preuss (2017) and Aerts & Schmidt (2008) concerning the relationship between external finance and business innovation activities. This paper provides information about a bank loan as a financing source that firms use to fund their innovative activities, with the **research question** whether that has the subsequent impact on the company's performance. **The idea** of the paper is that investments of enterprises in innovation significantly affect their revenue. **Data:** Empirical research was provided by a survey in Serbia in 2017. The sample comprised 152 enterprises, mostly privately owned, of all sizes. Descriptive statistics: Cronbach's Alpha coefficient, regression analysis is used as the research tool and method. The link between business finance and innovation, and furthermore the link between innovation and income of Serbian firms have been investigated. Three groups of factors show that the degree of income and market success of the enterprise increases with the level of investment in innovative activities. These are: sources of financing and financing conditions as independent variables, and company's income revenues, as the dependent variable. **Findings:** Firms that use bank loans as financial instruments for innovation activities and investments are more likely to develop new products, methods and processes, and successfully increase their revenues and income based on developing this kind of added value. The findings indicate that tangible asset investment of SMEs is positively related to the use of bank finance, to new product development and to enterprise performance improvement. **Contribution:** Results of the research show that financial investments in business innovation directly contribute to the business sector performance improvement. They also demonstrate the theory of innovative enterprise, the significance of financing, and the impact of banking on the overall development of the economy. The results point to the need for further research in the area of access to finance, as well as in the parallel development of non-banking sources of financing.

**Keywords:** innovation, bank loans, innovation in the business sector, economic development

**JEL Classification:** O31, O32, G21, L2, M21.

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## 1. Introduction

The main aim of this paper is to demonstrate the ability of the enterprises in Serbia to use bank loans as a source for financing new product development among other investment needs, and to examine the impact of sources, conditions of such financing to business revenues and market success. In addition to the literature review, the next section describes the data, the methodology and empirical findings, discussion, conclusions and references used in the elaboration of the hypothesis.

Driven by an increasingly competitive marketplace, the savviest businesses have been investing heavily in corporate innovation as a kind of competitive intelligence that has given them what they need to operate with poise and precision in recent years. Havas (2018) suggests that putting innovation alone as a business

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driver into practice aids the uncertainty inherent in a time of political upheaval. Improvement of innovation performance at different levels, or national (regional) innovation systems are described by many authors, as: Freeman (1995), Lundvall (1992) and Nelson (1993). Strategic performance management overall demands an approach that is more oriented towards financial measures, whereas investments in science and technology are more the challenge of developed countries. According to Kim (2013) there is much to discover and learn from the experiences of non-OECD countries, on which this paper presents some results of such investments in SEE countries, mainly from the west Balkans.

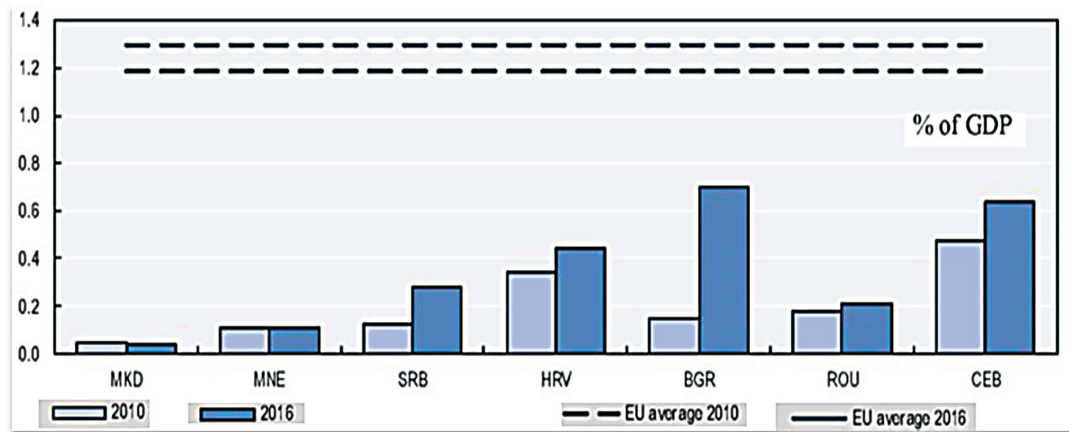
Innovation enterprises are the main force of technological innovation domestically. Recently, Serbia has been characterized by rapid economic growth, has entered a new period of normality with moderate, sustainable growth, ongoing optimization of the economic structure (however, not enough) and investment in technology innovation. Under these circumstances, implementing innovation-driven development strategies, supporting the development of innovative enterprises to accelerate the commercialization of scientific and technological achievements and promotion of the transition to economic growth momentum are particularly important. The technology sector in Serbia exhibits a healthy degree of innovation such as several health and agriculture sector technology hardware projects with success in commercialization, and software development outsourcing companies. The number of support service providers for SMEs in Serbia was estimated by the European Union to be about 500. During 2015 the government adopted a new National Strategy for the development of small and medium-size enterprises. The problem that companies encounter in seeking external sources of financing for their innovations is still serious and evident in ensuring capital from favorable sources. This is an obstacle to the development and innovation of companies in Serbia, as is a limited and expensive source of funding, linked to a number of problems: interest rate; collaterals; operating costs; bank procedures. Companies most often use their own funds, including the common assets of the owners and their families or friends in the early stages of the business, which are limited. SMEs in Serbia can also apply for participation in the Fund for innovation activity resources, international programs in the Seventh Framework Program, Eureka program, European Investment Bank programs, World Bank, European Bank for Reconstruction and Development, etc., but the level of information about domestic companies on possibilities of obtaining funds through these programs is extremely low. The use of alternative securing funds such as venture capital funds, private investment, equity funds and business angels are not developed enough in Serbia, nor is the collection of capital of the Stock Exchange, where the initial public offer of shares is also problematic due to the lack of vision of these investment companies. Table 1 presents the indicator scores for the innovation in Serbian firms in 2017, as an illustration of the general support to business innovation in Serbia.

**Table 1:** Innovation in Serbian firms, indicator scores (2017)

Qualitative indicators	Scores	Quantitative indicators	Ranking out of 140 countries
Innovation promotion	1.5	Availability of financial services	107
Financial support: competitive grants for RDI in business	4.5	Easy access to loan	116
Fiscal incentives for RDI	1.0	Soundness of banks	88
Institutional support: incubators and accelerators	2.0	Capacity for innovation	117
Institutional support: technology extension services	1.5	Company spending on RDI	107
Public procurement for innovation	0.0	Regulation of securities exchanges	109

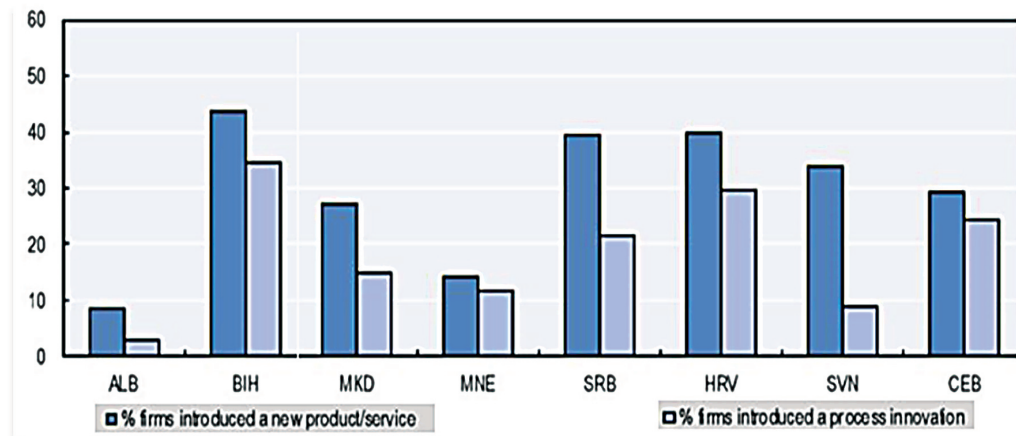
Source: OECD (2018). Competitiveness in South East Europe.

Frameworks to support innovation in firms are still at an emerging stage in SEE countries, as can be seen in Figure 1, their average scores ranging between 1 and 2. Their quantitative indicators indicate a very low capacity for innovation, limited company spending on innovation and access to loans (Grozdanic et al., 2012).



**Figure 1:** Business expenditure on RDI in SEE, 2010-2016  
 Source: European Commission (2017). European Innovation Scoreboard 2017

Firms in Serbia reported 10% of their sales originate from innovative products in 2016 (EU-28 average 15%, European Commission, 2017).



**Figure 2:** Firms introducing innovations in SEE, 2016  
 Source: European Commission (2017). European Innovation Scoreboard 2017

**Table 2:** Serbia, Types of business Innovations, 2014-2016

	Types of Innovations in total innovation activities, (%)				
	Product/service	Process	Ongoing/abandoned	Organisational	Marketing
Serbia	26.9	21.0	14.3	24.2	22.3
Small firms	25.3	19.0	13.3	22.1	20.3
Medium-sized firms	33.0	28.9	17.7	31.8	30.3
Large firms	45.4	41.7	27.7	47.3	40.9

Source: Statistical Office of the Republic of Serbia. (2017).  
 Science, technology and innovation statistics. Statistical Release, 197/IA01.

Although Serbia has accepted the National Strategy on Scientific and Technological Development for the period 2016 – 2020, it can be concluded that the excellence of scientific research and its relevance to the economic and social development of the country and society as a whole are not sufficiently supported through the system of research funding. Also, there are still no adequate financial instruments, nor the institutional framework for linking science with industry and the public sector. The system of management of the scientific and innovation systems is not sufficiently effective, and there is little coordination of work in the relevant institutions and different stakeholders. The lack of adequate human resources in scientific research organisations, industry and the public sector is also evident, and there are also no long-term measures to address this problem.

## 2. Literature Review

**Definition of innovation and performance.** Schumpeter (1934) had a broader view of innovation. He included the opening up of a new market, the conquest of a new source of supply of raw materials or semi-manufactured goods and the carrying out of the new organisation of any industry (creation of a monopoly or breaking up of a monopoly). According to him, the cyclical process is almost exclusively the result of innovation in the organisation, both industrial and commercial. According to the Eurostat definition (OECD/Eurostat, The Oslo Manual, (2005), from the aspect that can be measured at the level of the firm, business innovation means the implementation of a new or significantly improved product (goods or service), or process, a new marketing method or a new organisational method in business practices, workplace organisation or external relations.

The transformative business processes, organisational planning and models enable an enterprise to operate better and be more efficient in the market, thus increasing its income. Innovation in the business enterprise sector is used in a different context to refer to either a new organisation, business model and process or to an output. Activities include commercial innovation, as well as development, finance and strategy, and firms' innovation. Functional categories for identifying the type of business process innovations are presented in the Glossary of Statistical Terms (Eurostat, 2018). As a special type of external finance related to innovative activity, grants have received a great deal of interest in the literature. Generally, several country-level studies of Carboni (2017), Savrul & Incekara (2015) have found that a positive impact on the level of innovativeness of the economy can be observed due to the participation of the private sector in the financing of R&D. Czarnitzki & Lopes-Bento (2014), and Hottenrott et al. (2017), together with Ferrando & Preuss (2017) are the authors whose research concerns external finance related to business innovation activities. The link between corporate financing and investment decisions of European firms has been examined by Aerts & Schmidt (2008). By using a multinomial fractional response model, the authors estimate the finance-investment link. Their findings indicate that SMEs' tangible asset investment is positively related to the use of bank finance, whereas internal finance is the preferred option for intangible asset investments.

**How the results can be measured.** For the purpose of measurement of innovation activities vs. performance, Adams et al. (2006), and Singer & Peterka (2012) all involve composite indicator usage for benchmarking performance. Marinkovic et al. (2016) have focused on measuring outputs at the level of industry, academia and government, but independently of each other and with much less systematic approaches.

The results of innovation performance measurement are presented through the European Innovation Scoreboard (EIS), which provides data for international comparison, covers a relatively long period, has a strong bias towards R&D-based innovation and focuses on inputs and activities, using the Summary Innovation Index, the share of innovative enterprises, turnover from innovation, labour productivity etc. The mentioned Manual provides the guidelines on the methods and questions to be included in innovation surveys. The importance of measuring innovation performance, according to Ettl (1983), can be seen through the information derived from measurement as it serves as feedback on a firm's current standing in innovation as well as on showing a systematic process of continuous improvement. Without performance measurement, the process of innovation will not be managed effectively and improvement will be sporadic. The innovation performance measurement framework was presented in the research of Voss et al. (1993), Chiesa et al. (1996) and Stosic et al. (2016). This methodology provides the benefit of being able to identify the processes that drive innovation, combining the core processes (product generation, product development, production process innovation and technology acquisition) with the enabling processes (leadership, human and financial resource management, the adoption of systems and tools for innovation). The development of performance measures for each of the processes of innovation is valuable in as much as the overall impact of innovation on competitiveness can be assessed.

According to Jevtic et al. (2013), Grozdanic et al. (2012a) and Curcic et al. (2017) the ability to innovate has a direct impact on the competitiveness of a firm and thus its performance. The connection of business innovation and the success of a company in the market has been discussed in literature. So, Ezzi & Jarboui (2016) suggest that innovation is closely linked to business performance, as the production of new products or processes strengthens a firm's competitive position in relation to its rivals. Innovating firms are able to achieve a larger market share and higher growth rates and profits; Dodgson & Rothwell (1994), Hoflinger, et al. (2018), and Campart & Pfister (2013), have shown that the technological performance of the firm is positively associated with its market value. Franko (1989) and Dave et al. (2013) demonstrated the link between

R&D expenditure and subsequent sales revenues of a firm. Archibugi & Michie (1997) and VanderPal (2015) have confirmed that investment in technology and performance are related.

**The way of financing firm performance.** The generation of innovation requires efforts starting from R&D, development of new techniques and products to market penetration. One important element of the overall process is the availability of either internal or external sources of funding. As the innovation imperative is placed in the centre of the policy agendas of many emerging challenges in technology, the economy and the environment, business innovations play an increasingly important role in all sectors. The mentioned Manual opened the way for measuring key dimensions of innovation and technology and encouraged the systematic monitoring of investment in research and development around the world. A business enterprise seeks to transform productive resources into goods and services that can be sold to generate revenues. Lazonic (2002) provides explanations on the ways that productive transformation occurs and the revenues are obtained. A company's strategy, organisation and finance are, in theory, generic activities in which the business enterprise engages. Through these resources investments are allocated to innovation, organisational transformation of technologies and value creation capabilities in order to generate new products and services for the market. From the time at which investments in productive resources are made to the time at which financial returns are generated through the sale of products, finance is needed to sustain the process of technology development and market assessment.

The Hypothesis of the research is based on the idea that a certain financial commitment can transform finance (in this case bank loan) into innovation. The allocation of funds, in the form of the so-called patient capital, helped by internal strategic and organisational controls sustains the process of innovation until it generates returns. The distinguishing characteristics of a particular industry derived from its competitors, markets and its specificities, indicate where resources and finance should be allocated, along with how the organisation of the company should be adjusted to achieve a successful innovation strategy. The income that the innovating firm generates can be critical to sustaining its business, to make it grow or increase success. Financial resources for the innovating firm not only fund new investment, but also enable the firm to keep its learning organisation intact.

### 3. Materials

The purpose of this empirical research is to express the views of the representatives of enterprises about the investments of bank loans in innovations and their impact on the income and business of the given company. The entire territory of Serbia was covered in 2017. The main hypothesis, an idea of the work, is:

#### **H1: Business innovation investment affects the company's performance and increases its revenues**

To secure sufficient evidence of the main hypothesis, empirical research was conducted by the questionnaire tool examining the views of the representatives of 152 companies about the following input factors, which are essential for investing banks' credit funds in business innovation and their further impact on the revenues and business performance of the company itself:

- Group of factors: sources of financing of business innovations, includes the impact of: the level of loan funds required from the bank, the level of funds earmarked for investments in business innovation, the development of new products and services in comparison to the total investment funds in fixed and working capital in the company, human resource development and settlement of legal obligations. This group of factors, abbreviated as "CFS"- company's financial sources, presents an independent variable in this model;
- Group of analyzing factors concerning the conditions for financing business innovation of the company includes: the level of interest rates, collaterals, credit repayment period, banking procedure, the level of trust in the banking system and the availability of subsidized funds with tax incentives for innovation. This group of factors, abbreviated as "CFC"- company's financial conditions, presents another independent variable in this model; and
- Group of analyzing factors concerning the business revenues, abbreviated as "CR"- company's revenues, one that includes: the level of finding clients, level of business competition, general access to financial resources, costs of production of new products and services, and the level of corruption, the level of investments in the country, presents a dependent variable in the model.

3.1. Data collection

Descriptive statistics of the research sample are presented in the following Table 3.

**Table 3:** Descriptive statistics of the research sample

Level	Sub-Level	Count	Prob
The business sector of the company	Production	106	0.6909
	Services	46	0.3091
	Total	152	1.0000
The legal form of the company	Private-owned	128	0.8421
	Part of a larger system	34	0.1578
The respondent's position in the company	Owner	48	0.3333
	Directors	31	0.4469
	Manager	48	0.1212
	Consultant	25	0.0984
The number of employees in the company	< 10 to 49 employees	95	0.6315
	from 50 to 249 employees	45	0.2894
	over 250 employees	12	0.0789
The company's revenues origin	Domestic market	125	0.8223
	Foreign market	27	0.1776
The level of the company's income in 2017	< from €100.000	40	0.2302
	from 100.001 to €500.000	44	0.2631
	from 500.001 to €2.000.000	68	0.4473
The bank loan invested in the business innovation impact on company's revenues in 2017:	Revenues increase	53	0.2894
	Revenues Sustainability	66	0.4013
	Revenues Decrease	13	0.3093

3.2. Tools

In the research presented in this paper, statistical, mathematical and data collection methods were used. In the collection of empirical research data, the survey method with questionnaire was used with the questions divided into three sections: details about the enterprise, characteristics of any bank loan as a source of funding with conditions of the funding and factors related to the revenues. For obtaining key results the following was used: Cronbach's alpha coefficient to ensure consistency and a correlation analysis that determined the interconnections between phenomena. In this case, the relevant phenomena were the company's sources of financing of innovation ("CFS"), conditions of financing ("CFC") and business revenues of the company ("CR"), as the result of the impact of these two variables. Also, regression analysis, linear regression, ANOVA test, Person's correlation were used for the interpretation of the possible links between independent and dependent variables. A multiple linear correlation and regression analysis were further used to show the influence of several independent variables of sources of financing of innovation and the conditions of financing of innovations on the dependent variable revenues of the company.

3.3. Key findings

Independent variables in this research are: the sources of financing ("CFS", company financial sources) and the conditions of financing ("CFC", company financial conditions) the business innovation, and the dependent variable is the company revenues ("CR"). Descriptive statistics of the analyzed model "CFS", "CFC" and "CR" are given in Table 4.

**Table 4:** Statistics for variables „CFS“, „CFC“ & „CR“

		Statistics		
		CFS	CFC	CR
N	Valid	152	152	152
	Missing	0	0	0
Mean		3.8575	3.7773	3.8701
Std. Error of Mean		.05660	.05963	.07438
Std. Deviation		.69779	.73522	.91708

The views of the respondents from the model created through the interpretation of Person's correlation, are given tabulated in Table 5. The directions of all possible links between independent and dependent variables are positive, which means that there is a positive correlation between these variables (the positive impact of the sources and conditions of financing the company's innovation on the company's revenues).

Table 5: Correlation coefficients

Correlations				
		CFS	CFC	CR
CFS	Pearson Correlation	1	.737**	.662**
	Sig. (2-tailed)		.000	.000
	N	152	152	152
CFC	Pearson Correlation	.737**	1	.848**
	Sig. (2-tailed)	.000		.000
	N	152	152	152
CR	Pearson Correlation	.662**	.848**	1
	Sig. (2-tailed)	.000	.000	
	N	152	152	152

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The large variability is identified between the independent variables - the conditions of financing of innovations ("CFC") and the dependent variable income - the business of the company ("CR") and amounts to 0.718 or 71.8%. Then comes the variability between the independent variable - sources of financing innovation ("CFS ") and independent variables - the conditions of financing innovation ("CFC ") amounting to 0.543 or 54.3%. The variability between an independent variable - sources of innovation financing ("CFS") and dependent variables - "CR") amounts to 0.438 or 43.8%.

Multiple correlation coefficient r is 0.850, and multiple determinations of R amount to 0.722. This means that 72.2% variability of independent variable "CFS" and "CFC" impacts the dependent "CR" variable, as it is displayed in Table 6.

Table 6: Model summary

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.850 <sup>a</sup>	.722	.718	.48697	.722	193.265	2	149	.000
a. Predictors: (Constant), CFC, CFS									
b. Dependent Variable: CR									

3.4. Multiple correlation and regression analysis for all three variables of the model "CFS", "CFC" and CR"

The statistical significance score is shown in Table 7, by the ANOVA test of the main hypothesis, H: that r<sup>2</sup>=0 is confirmed, because the statistical significance is [F (2,149) =193.265 p<0, 0001].

Table 7: ANOVA for variables „CFS“, „CFC“ & „ CR“

ANOVA <sup>a</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	91.662	2	45.831	193.265	.000 <sup>b</sup>
	Residual	35.334	149	.237		
	Total	126.996	151			
a. Dependent Variable: CR						
b. Predictors: (Constant), CFC, CFS						

Table 8 specifies the size of the contribution of independent variables: "CFS", "CFC" in the prediction of dependent variable "CR". In this case, this most contributes to the independent variable- conditions of financing innovation ("CFC"), which is 0.788. On the basis of the obtained results, the H: can be confirmed: that the levels of sources, and financial conditions for the company's innovation investments significantly affect the business of the company and its respective revenue increase.

**Table 8:** Coefficients for variables „CFS“, „CFC“&„CR“

Coefficients <sup>a</sup>						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-.254	.231		-1.100	.273
	CFS	.107	.084	.081	1.272	.205
	CFC	.983	.080	.788	12.320	.000

a. Dependent Variable: CR

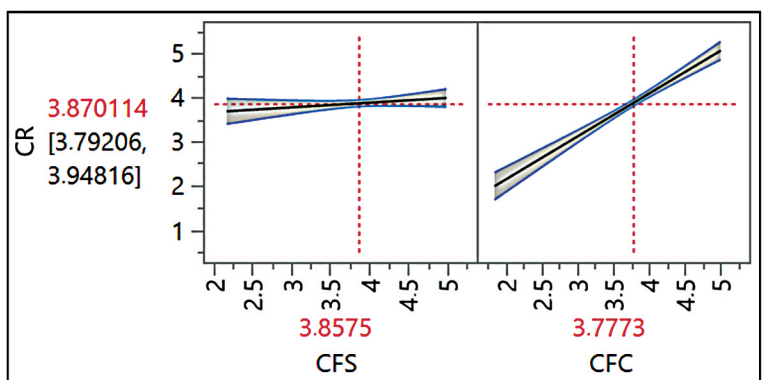
For the compilation of the regression equation, the non-standard coefficients from (Table 8) are used and the equation reads (1) and (2):

$$y = -0.254 + 0.107 \cdot x_1 + 0.983 \cdot x_2 \tag{1}$$

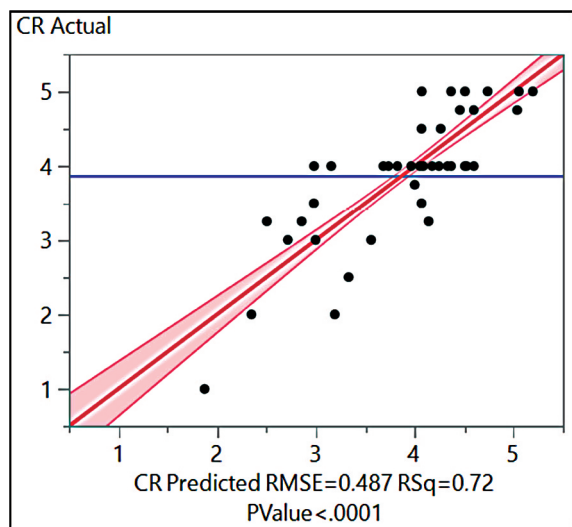
or

$$CR = -0.254 + 0.1067 \cdot CFS + 0.983 \cdot CFC \tag{2}$$

In diagram 1, Partial diagrams of regression equations for the formed model "CFS", "CFC" and "CR" are given, and in diagram 2. Multiple regression equation for the formed model "CFS", "CFC" & "CR" is given.



**Diagram 1:** Partial diagram of regression equations of influence for the formed model "CFS", "CFC" and "CR"



**Diagram 2:** multiple regression equation for the formed model "CFS", "CFC" and "CR"



## Discussion and Conclusions

In this paper the results of the empirical research on the attitudes of 152 companies in Serbia in 2017 on their activity of financing innovation from bank loans and the impact of these investments on increasing revenues are presented. The research involved owners, managers and consultants of manufacturing companies of all sizes. Among them there were 46 companies from the high-tech sector. The effects of 3 groups of factors in these investments were divided into sources of financing, terms of financing and income of enterprises.

The results of the research confirmed the validity of the scientific hypothesis of the work, determined on the basis of the statistical significance analysis by the ANOVA test of the hypothesis that  $r^2=0$ , and the statistical significance which did not exceed the limit  $p<0.0001$ . H<sub>0</sub> can be confirmed: that the levels of sources, and financial conditions for the company's innovation investments significantly affect the business of the company and its respective revenue increase.

Since the development of new products, business models, organizational and modern production processes are crucial for improving the competitiveness of the economy, investment in innovation within the business sector is extremely important. The present data of Eurostat, OECD and EIB on enterprise investment in innovations in SEE countries, where Serbia belongs, confirms that these activities are in development. Key findings from the field research on business innovation investments show that these investments are still low and are not on the priority list of enterprises in Serbia, but even so, they have a positive impact on business revenues, and income increase, and more than 28.94% of researched enterprises believe that they have helped them increase their revenues and competitiveness in the market. In this regard, this research points to the positive impact of these investments on the company's performance and the need for further research for a more favourable access to financial sources and services for investment needs in innovation.

The availability of sources of funding for innovation of SMEs is influenced by numerous factors in the offer as well on the demand side. Challenges also can be seen in the development of the investment and lending linkage business which can lawfully and effectively increase the source of funds for commercial banks to offset the credit risk of loans to technology innovative small and medium enterprises. The challenges that commercial banks face in the field of product design (investment subsidiaries for innovation) in their business concept and model are even higher.

## REFERENCES

- [1] Adams, R., Bessant, J., & Phelps, R. (2006). Innovation management measurement: A review. *International Journal of Management Reviews*, 8(1), 21-47. DOI: 10.1111/j.1468-2370.2006.00119.x
- [2] Aerts, K., & Schmidt, T. (2008), Two for the price of one? Additionality effects of R&D subsidies: A comparison between Flanders and Germany, *Research Policy*, 37(5), 806-822. DOI: 10.1016/j.respol.2008.01.011
- [3] Archibugi, D., & Michie, J. (Eds.). (1997). *Technology, globalisation and economic performance*. Cambridge, UK: Cambridge University Press. ISBN: 9780521556422
- [4] Campart, S. & Pfister, E. (2013). Technological races and stock market value: Evidence from the pharmaceutical industry, *Economics of Innovation and New Technology*, 215-238, DOI: 10.1080/10438599.2013.825427
- [5] Carboni, O.A (2017). The effect of public support on investment and R&D: An empirical evaluation on European manufacturing firms, *Technological Forecasting and Social Change*, 117, 282-295. DOI: 10.1016/j.techfore.2016.11.017
- [6] Chiesa, V., Coughlan, P. & Voss, C. A. (1996). Development of a technical innovation audit, *Journal of Product Innovation Management*, 13(2), 105-136. DOI: 10.1016/0737-6782(95)00109-3
- [7] Curcic, N., Vukajlovic, Dj., & Grozdanic, R. (2017). The influence of innovation on the enterprise competitiveness, International conference: Economic and Social Development, May 18-19, 2017, 126-137, Belgrade.
- [8] Czarnitzki, D., & Lopes-Bento, C. (2014), , *Industry and Innovation* 21(5), 380-409. DOI: 1080/13662716.2014.973246
- [9] Dave, P., Wadhva, V., Aggraval S., & Seetharaman, A. (2013). The Impact of Research and Development of the Financial Sustainability of Information Technology (IT) Companies Listed on the S&P Index, *Journal of Sustainable Development*, 6(11), 122-138, DOI: 10.5539/jsd.v6n11p122
- [10] Dodgson, M. & Rothwell, R. (eds.) (1994). *The handbook of industrial innovation*, Cheltenham, UK: Edward Elgar, ISBN: 9781858984452
- [11] Ezzi, F., & Jarboui, A. (2016). Does innovation strategy affect financial, social and environmental performance?, *Journal of Economics, Finance and Administrative Science*, 21(40), 14-24. DOI: 10.1016/j.jefas.2016.03.001

- [12] Ettlie, J. E. (1983). Organizational policy and innovation among suppliers to the food processing sector, *Academy of Management Journal*, 26(1), 27-44.
- [13] European Commission. (2017). *European Innovation Scoreboard 2017*. Luxembourg. Retrieved from <https://ec.europa.eu/docsroom/documents/24829>
- [14] Eurostat. (2018). *Glossary of Statistical Terms*. Luxembourg. Retrieved from [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business\\_functions](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business_functions)
- [15] Ferrando, A., & Preuss, C. (2017). Investment and investment financing patterns in Europe, A Survey-Based Approach, European Investment Bank Group. Retrieved from [https://eventi.uniurb.it/sbbfig/wp-content/uploads/2017/04/1-Ferrando-Preuss\\_URBINO\\_presentation\\_FINAL.pdf](https://eventi.uniurb.it/sbbfig/wp-content/uploads/2017/04/1-Ferrando-Preuss_URBINO_presentation_FINAL.pdf)
- [16] Franko, L. G. (1989). Global corporate competition: who's winning, who's losing, and the R&D factor as one reason why, *Strategic Management Journal*, 10(5), 449-474. DOI:10.1002/smj.4250100505
- [17] Freeman, C. (1995). The 'National System of Innovation' in historical perspective, *Cambridge Journal of Economics*, 19 (1), 5-24.
- [18] Grozdanic, R., Radovic-Markovic, M., Papic, Z., Kvirgic, G., & Jevtic, B. (2012). Investment in Innovation of SMEs, evidence from Balkan countries, *Metalurgia International*, XVII (10), 176-179.
- [19] Grozdanic, R., Radovic-Markovic M., Vucic M., Jevtic B., & Jovancevic D. (2012a). Links of SMEs Innovation to Export, In: Catalin, M., Druica, E. (eds.), International Conference: Entrepreneurship Education - A Priority for the Higher Education Institutions, October 8-9, 2012, 99-103, Bucharest.
- [20] Havas, A. (2018). Social and Business Innovations: Close links in practice –but two worlds apart in theorising? , Bridging Social and Business Innovation ISIRC 2018, Heidelberg, 3–5 September 2018. Retrieved from [https://www.isircconference2018.com/media/presentation\\_attila\\_havas\\_isirc\\_2018\\_heidelberg.pdf](https://www.isircconference2018.com/media/presentation_attila_havas_isirc_2018_heidelberg.pdf)
- [21] Hofflinger, P. J., Nagel, C., & Sandner, P. (2018). Reputation for technological innovation: Does it actually cohere with innovative activity?. *Journal of Innovation & Knowledge*, 3(1), 26-39. DOI: 10.1016/j.jik.2017.08.002
- [22] Hottenrott, H., Lopes-Bento, C., & Veugelers, R. (2017). *Direct and cross scheme effects in a research and development subsidy program*, Dusseldorf: Dusseldorf University Press, ISBN 9783863041519.
- [23] Jevtic, B., Dedjanski, S., Beslac, M., Grozdanic, R., & Damjanovic, A. (2013). SME Technology Capacity Building for Competitiveness and Export - Evidence From Balkan Countries, *Metalurgia International*, XVIII (2013), Special Issue no. 4, 162-170.
- [24] Kim, S. J. (2014). Government R&D funding in economic downturns: Testing the varieties of capitalism conjecture, *Science and Public Policy* 41(1):107-118, DOI: 10.1093/scipol/sct040
- [25] Lazonick, W. (2002). Innovative Enterprise and Historical Transformation, *Enterprise & Society: The International Journal of Business History*, 3(1), 3-47, DOI: 10.1017/S1467222700005589.
- [26] Lundvall, B.-A. (ed.) (1992). *National Systems of Innovation. Towards a Theory of Innovation and Interactive Learning*. London: Pinter Publishers, ISBN 9781855670631.
- [27] Marinkovic, S., Rakicevic, J., & Levi Jaksic, M. (2016). Technology and Innovation Management Indicators and Assessment Based on Government Performance, *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, 21(78), 1-10. DOI: 10.7595/management.fon.2016.0001
- [28] Nelson, R.R. (ed.) (1993). *National Innovation Systems: A Comparative Analysis*. Oxford: Oxford University Press. ISBN: 9780195076172.
- [29] OECD. (2018). *Competitiveness in South East Europe: A Policy outlook*, OECD Publishing, Paris. .
- [30] Savrul, M., & Incekara, A. (2015). The Effect of R&D Intensity on Innovation Performance: A Country Level Evaluation. *Procedia - Social and Behavioral Sciences*, 210,388-396 DOI: 10.1016/j.sbspro.2015.11.
- [31] Schumpeter, J.A. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. Cambridge, MA: Harvard University Press, ISBN 9780674879904
- [32] Singer, S. & Peterka, S. O. (2012). Triple Helix Evaluation: How to test a new concept with old indicators? *Ekonomski pregled*, 63 (11), 608-626. Retrieved from <https://hrcak.srce.hr/93446>
- [33] Statistical Office of the Republic of Serbia. (2017). Science, technology and innovation statistics. Statistical Release, 197, IA01. Retrieved from <https://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdfE/G20171197.pdf>.
- [34] Stosic, B., Mulutinovic R., Zakic, N., & Zivkovic, N. (2016). Selected indicators for evaluation of eco-innovation projects, *Innovation: The European Journal of Social Science Research*, 29 (2), 177-191.
- [35] OECD/Eurostat (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. Paris: OECD, DOI: 10.1787/9789264013100-en Retrieved from <https://ec.europa.eu/eurostat/documents/3859598/5889925/OSLO-EN.PDF>

