

## NEW INDUSTRIAL POLICY AS A CARRIER OF DYNAMIC DEVELOPMENT OF SERBIA

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*Paper presented at the 10th International Scientific Symposium „EkonBiz: Economic challenges in the conditions of accelerated global changes“, Bijeljina, 16 – 17th June 2022.*

**Abstract:** *Industrial policy is an important mean that enables governments to promote industrial development and accelerate economic growth. However, specific measures adopted by successful industrialized countries cannot be easily applied to other countries, not only because of the special socio-economic conditions of individual countries but also because the changes in the global environment affect the effectiveness of industrial policy instruments. New approaches to industrial policy are present worldwide, especially after the crisis caused by COVID19 pandemic. Strengthening the industrial sector is the key to recovery. To achieve this important goal, industrial policy must be at the center of government reactions. It cannot be expected that the direction of development which is characteristic for developed countries of the world will be applied to Serbia. It is necessary to change the current strategy for the development of Serbian industry. The goal of Serbia's new industrial policy is to promote structural changes in industry in favor of higher value-added goods and services, modernization, integration into global value chain, development of a knowledge-based economy and positioning for the Fourth Industrial Revolution. The analysis is dedicated to state incentives which*

*are part of the new industrial policy of Serbia and are one of the measures by which the state influences the increase in investment, employment growth and creating a more attractive business environment for domestic and foreign investors.*

**Key words:** *industry, Serbian industrial policy, development*

**JEL classification:** L52, O25

### 1. INTRODUCTION

Recently, there has been a need to review the importance of industrial policy due to the consequences of the global economic crisis and the COVID-19 pandemic. This has led to a renewed interest in industrial policy, which is seen as a potentially effective instrument that can take the industry and the overall economy on the road to recovery. Dani Rodrik (2020) identifies a number of trends that have contributed to this. He suggests that developing countries have rebelled against the market and fundamentalist approach and that the need for proactive government policies has emerged. In addition, the pandemic has highlighted the strategic nature of certain sectors (e.g. healthcare, agriculture, logistics, ICT) and forced a

rapid shift towards specific types of production (e.g. health-related devices and services).

The importance of industrial policy in contemporary conditions was written by: Haraguzzi (2020), Cimoli (2020), Lin Yifu (2020), Mazzucato (2020), Chang (1994), Hausmann (2003), Rodrik (2008), Wade (2012), Greenwald and Stiglitz (2013), Warwick (2013), Di Maio (2014). Notable studies on industrial policy are provided by Cimoli, Dosi, and Stiglitz (2009) and Stiglitz and Lin Yifu (2013). The cases of Asia and China are particularly explored by Lee and Freire (2013). Analyzing the experiences of the USA and Europe, Mazzucato (2013) pointed out the need to implement public actions in the field of innovation and structural changes. In European countries, the importance of industrial policy was pointed out by Coriat (2004), Pianta (2010), Lucchese and Pianta (2012), Reinstaler et al (2013), Aiginger (2014). The authors agreed in their papers that the question is no longer why industrial policy is needed, but how to implement it.

Traditionally, industrial policy was primarily aimed at increasing productivity and competitiveness, in order to have a better impact on industrial growth and development. The question arises as to what extent the future industrial policy can represent a direct leverage to promote sustainable structural changes based on human development, social cohesion and sustainability.

Serbia's new industrial policy will be aimed at creating a favorable business environment, eliminating market and government failures, meeting the specific needs of individual sectors with products and services with high added value. This will create the conditions for increasing the competitiveness of Serbian industry, integration into global value chains, the development of a knowledge-based economy, the construction of sectors linked to the goals of sustainable development, and the competitive positioning of the industry for the Fourth Industrial Revolution (Lutovac, 2020, p. 205). With government support for industrial development in the form of state incentives, Serbia should respect the European Union's rules on state aid, harmonize its industrial policy with the industrial policy of the European Union, ensure the transparency of the state incentives program and constantly check the effectiveness of their use. State aid can be justified if it generates investment projects that would not be realized without the existence of the incentive program, and if the positive effects of the implementation of those projects significantly

exceed the direct and indirect costs of the existence of the investment incentive program.

## **2. THEORETICAL CONTROVERSIES ABOUT THE NECESSITY OF CONDUCTING INDUSTRIAL POLICY**

In economic theory, the most commonly accepted argument in favor of industrial policy is the presence of market imperfections that intensify with the growth of international trade, as well as with significant changes in the production structure and international competitiveness. Supporters of industrial policy argue that this is the only path that brings real economic growth and structural change. In case of structural changes, development includes the production of new goods, new technologies, and the transfer of resources from traditional activities to those yet to be developed. Investing in new industries requires financial expenses, but not guaranteed results, so it seems too risky for private lenders. For this reason, some economists argue for an "entrepreneurial state", which seeks new opportunities for growth (Mazzucato, 2018). Proponents of this claim believe that developing countries will never stop being dependent on foreign aid unless they employ industrial policies that will transform their domestic industries and diversify their economies. Underdeveloped countries are still poor because markets do not encourage the structural changes that are needed. Market failures often occur because companies do not have adequate incentives to consider the effects of their actions on others. Therefore, they can move away from activities that are not profitable for the company, but which have positive externalities on other economic actors, such as e.g. investment in education or infrastructure. In his work "Industrial Policy for the 21st Century", Dani Rodrik stated two most important types of externalities in the context of industrial policy: information externalities and coordination externalities (Rodrik, 2004)

Opponents of industrial policy argue that the existence of market failures is not a sufficient reason to justify state intervention, because there are difficulties in achieving well-targeted and effective interventions in practice. Government failures can arise as side effects of horizontal or selective industrial policies, as they disrupt the market more with their interventions. Governments often lack the information and ability to design an effective industrial policy, and therefore cause rent-seeking behavior in economic subjects. "Rent-seeking" is the use of the resources of a company, organization or individual in order

to gain economic profit from others, without reciprocal benefits to society through wealth creation e.g. when a company lobbies for subsidies, grants or tariff protection. These activities do not create any benefit for society, but only redistribute resources from taxpayers to the company. Partly because of the danger of "rent-seeking", the trend in new industrial policy is to abandon traditional forms and turn towards industrial policy based on a facilitative, coordinating role, in line with a systems approach. Government failures are more common in developing countries due to the lower capacity of governments to design and implement industrial policy.

### **3. STATE INCENTIVES AS PART OF SERBIA'S NEW INDUSTRIAL POLICY**

Effective policies are crucial for the economic recovery. As certain sectors are more affected by the emerging health and economic crisis, industrial, monetary and fiscal policymakers will have a serious task to support affected businesses and populations (Lutovac, Đaković, Medan, 2021, p.19). An important lesson from the experience of developed industrialized countries is that successful industrial policy depends on the degree of alignment of industrial policy instruments and the institutions involved. Thus, policy alignment within a coherent policy package is a complex and dynamic process. The main reason is that governments create and implement policies while implementing current ones. Therefore, a new policy is never introduced in a vacuum of institutions and policies. The challenge is then to align the new policy (or set of policy instruments) with the existing package of policies and institutions.

Industrial policy activity is economically justified under certain circumstances. In the event of a certain number of market failures, government interventions may be justified in the process of resource allocation among economic activities or sectors. State incentives are an integral part of industrial policy and are one of the measures by which the state influences the market position of certain companies. They must be applied very carefully, taking into account their positive and negative sides.

One of the main reasons for the justification of state investment incentives is their direct effect on increasing the volume of investments, increasing employment and creating a more attractive business environment for domestic and foreign investors (Savić, Lutovac, 2019, p. 262).

"State aid is any actual or potential public expenditure, or reduced realization of public income, by which the beneficiary of the state aid acquires a more favorable position on the market compared to competitors, thereby distorting or possibly distorting competition on the market. The provider of state aid is the Republic of Serbia, an autonomous province and a unit of local self-government, through competent authorities and any legal entity that manages and/or disposes of public funds and grants state aid in any form" (Republic of Serbia, Commission for State Aid Control, 2020, pp. 4-5).

In the Republic of Serbia in 2019, state aid was granted in the total amount of 110,724 million dinars. The share of state aid in the gross domestic product in 2019 was 2%, which is a slight decrease compared to 2017 when the share was 2.2% (Republic of Serbia, Commission for State Aid Control, 2020, p. 12).

The share of state aid granted in the industry and services sector in GDP in 2019 was 1.4% and remained at the same level as in the previous year, while slightly decreasing compared to 2017. In absolute terms, the state aid allocated to the industry and service sectors in 2019 recorded an increase compared to the previous two reporting years (Republic of Serbia, Commission for State Aid Control, 2020, p. 18).

State aid in the Republic of Serbia was awarded in 2019 through the following instruments: subsidies, tax incentives (tax credit, cancellation of tax debt, tax write-off); loans - favorable loans, guarantees, other instruments (sale of real estate in public ownership free of charge or at a price lower than the market price, exemption from paying taxes, feed-in tariffs) (Republic of Serbia, Commission for State Aid Control, 2020, p. 24).

Subsidies are the most represented state aid instrument, through which 55.4% of the total state aid was allocated in 2019 (Republic of Serbia, Commission for State Aid Control, 2020, p. 25).

### **4. EMPIRICAL RESEARCH ON THE IMPACT OF STATE INCENTIVES ON EMPLOYMENT IN SERBIAN INDUSTRY**

In the paper, employment was analyzed in successfully implemented investment projects in the period from 2006 to March 2017. These are projects where incentive funds were allocated and which were successfully implemented (investments made, new persons employed, monitoring period successfully completed, number of new employees maintained). The research was conducted on the basis of data from the Ministry of

Economy, for projects that are beneficiaries of incentives for attracting investments and new employment in the Republic of Serbia in the period from 2006 to March 2017. (More in: Lutovac, M. (2020). *Nova industrijska politika kao pretpostavka efikasnog razvoja industrije Srbije*. PhD thesis. Belgrade: Faculty of Economics and Business.).

For the purpose of conducting this research, the *t*-test for dependent samples and the *Chi-square* goodness-of-fit test were used. The Student's *t*-test analyzes the experimental units before and after receiving incentives, and the *Chi-square* test examines whether the distribution of the number of employees after the incentives deviates from the expected distribution.

#### 4.1. *t*-test for dependent samples

*t*-test for dependent samples is a statistical procedure used to examine differences between the

means of the sets from which such samples are drawn. This test compares the mean value of a variable in two groups of related people or cases, or compares the mean value of a variable of one group examined in two different time periods (Ross, Willson, 2017, pp.17-19.).

The subject of this research consists of 54 successfully implemented investment projects where employment is analyzed before and after receiving incentives (in further research it will be assumed that it is a random sample).

Although there were 72 companies, the effective sample includes 54 companies due to missing data for 18 companies. The goal is to determine whether the incentives for the creation of new jobs have a positive effect on the increase in employment in companies that receive investment incentives. Below is a table with descriptive statistics depicting the results of the analysis.

**Table 1.** Descriptive measures of employment in a sample of 54 companies

	Mean	Sample size	Standard deviation	Standard error of the mean
Employment before subsidies	106,5926	54	173,99236	23,67736
Employment after subsidies	231,0185	54	245,23439	33,37217

Source: MATLAB output

The first column shows the mean value of employment in the observed companies before receiving incentives and the mean value of employment after receiving incentives. It can be seen that after receiving incentives employment increased significantly in the observed sample. The second column shows the size of the sample. The third and fourth columns contain the values of the standard deviation from the sample as well as the standard errors of the mean.

After the theoretical notes and explanations, in order to verify the research hypothesis, the following statistical hypotheses are set:

$H_0$ : There is no difference in average employment before and after incentives (i.e.  $H_0: \mu_1 - \mu_2 = 0$ , where  $\mu_1$  is the average number of employees before receiving incentives, while  $\mu_2$  is the average number of employees after receiving incentives),

$H_1$ : Employment has increased after incentives (i.e.  $H_1: \mu_2 > \mu_1$ ).

Thus, a one-tailed test is used. The *t*-statistic is calculated as follows. Firstly,  $d_i$  is the difference between paired values of variable from two dependent samples, and  $n$  is the number of pairs ( $n = 54$ ) (Prca et al, 2017, p. 54). Further on:

$$\bar{d} = \frac{1}{n} \sum_{i=1}^n d_i, \quad (1)$$

is the sample mean of the difference. The standard deviation of the differences of the matched pairs is calculated as follows:

$$S_D^2 = \frac{1}{n-1} (\sum_{i=1}^n d_i^2 - n \cdot \bar{d}^2), \quad (2)$$

and the corresponding *t*-statistics has the form of:

$$t = \frac{\bar{d}}{S_D / \sqrt{n}} \quad (3)$$

and has  $n - 1$  degrees of freedom.

The test results were obtained using the SPSS software package, the output of which is shown in Table 2.

Table 2. Results of one-tailed *t*-test based on dependent samples

	Mean	Statistic	Degrees of freedom	<i>p</i> -value
Employment before subsidies	-124,42593	-3,511	53	0,0005
Employment after subsidies				

Source: MATLAB output

The results presented in Table 2 show that the realized value of the *t*-statistic is -3,511. As the *p*-value is 0.0005, which is less than 0.05, it can be concluded that there is enough evidence to reject the null hypothesis and to support the claim that employment increased after receiving the incentives.

### 3.2. Chi-square test of goodness-of-fit

The goodness-of-fit tests the null hypothesis that the frequencies achieved in the experiment follow a certain or theoretical distribution. It is called a goodness-of-fit test, because it tests the null hypothesis that the realized frequencies "fit well" to a particular model (Mann, 2009, p. 543).

At the beginning of this research, data was obtained from the Ministry of Economy of the Republic of Serbia on employees by company. Companies are divided into five categories. The first category are companies whose contract stipulates the number of employees from 1 to 50 (there are 14 such companies), the second group

includes companies whose contract stipulates 51 to 60 employees (there are 17 companies), the third group are companies with 61 to 110 employees (there are 14 companies), the fourth group has between 111 and 200 employees (there are 13 companies) and the fifth group consists of companies whose contract stipulates from 201 to 1750 (there are 14 such companies). This distribution of the number of employees provided for in the contract represents the expected distribution in this research.

This research examines whether the distribution of the number of employees after receiving incentives in 72 successfully implemented investment projects deviates from the expected distribution. In order to test this hypothesis, the following procedure is applied. Firstly, the null and alternative hypotheses are formulated:

$H_0$ : There was no change in the distribution of the number of employees after the incentives, that is, the empirical distribution does not deviate significantly from the expected one,

Table 3. Distribution of companies according to the number of employees

Number of employees	Empirical frequency (O)	Expected frequency (E)
First category (1-50)	7	14
Second category (51-60)	5	17
Third category (61-110)	16	14
Fourth category (111-200)	19	13
Fifth category (201-1750)	25	14
Total	72	72

Source: author's processing based on data obtained from the Ministry of Economy of the Republic of Serbia

$H_1$ : There was a change in the distribution of the number of employees after the incentives, that is, there was a deviation from the expected distribution.

The goodness-of-fit test statistic is calculated as follows:

$$\chi^2 = \sum \frac{(O-E)^2}{E}, \quad (4)$$

and the number of degrees of freedom is:

$$df = k - 1, \quad (5)$$

where *k* is the number of categories, in this case it is 5.

Table 4 shows the results of the conducted test.

**Table 4.** Chi-square goodness-of-fit test results

	Test statistic	Number of degrees freedom	<i>p</i> -value
Chi-square test	23,992	4	0,000

Source: SPSS output

As the *p*-value is less than any level of significance, a decision is made to reject  $H_0$  and it is concluded that there has been a change in the distribution of the number of employees after receiving incentives, i.e. that there has been a deviation from the expected distribution.

The overall empirical research has shown that incentives for the creation of new jobs in Serbia have a positive effect on the increase in employment in industry.

### CONCLUSION

In theory and practice, industrial policy has a long history and appeared with the beginning of capitalism. The importance of industrial policy has changed due to changes in national economies and the global economy, especially in the last two decades. In modern economic theory, the new industrial policy can be defined as: "the application of a series of measures and practical policies implemented by public institutions in order to create a favorable business environment and encourage the opening of new enterprises" (Government of Republic of Serbia, 2011, p. 39). Over the past decades, a gradual transition to a horizontal industrial policy has been observed, which improves the overall industrial competitiveness.

The new industrial policies encompass a range including inclusion in the global value chain, the knowledge-based economy and the new industrial revolution. Serbia's new industrial policy will be aimed at creating a favorable business environment, eliminating market and government failures, meeting the specific needs of individual sectors with products and services with high added value.

This will create the conditions for increasing the competitiveness of Serbian industry, integration into global value chains, development of a knowledge-based economy, construction of sectors related to sustainable development goals and competitive positioning of Serbian industry for the Fourth Industrial Revolution (Lutovac, 2020, p. 205).

One of the most important reasons justifying state investment incentives in Serbia is their concrete effect on the creation of new jobs, i.e. increasing

employment in the country. Based on the empirical analysis conducted in the paper, it can be concluded that the creation of new jobs in Serbia had a positive effect on the increase in employment in industry and the overall economy.

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## SUMMARY

*In recent times, there is a need to reconsider the importance of industrial policy, mostly due the global economic crisis and the crisis caused by the COVID-19 pandemic. Hence the renewed interest in industrial policy, which is seen as a potentially effective instrument in inducing structural transformation and economic growth, has appeared.*

*The most commonly accepted argument in favor of industrial policy economic theory sees in the presence of market failures that intensify with the growth of international trade, as well as significant changes in production structure and international competitiveness. Proponents of industrial policy argue that this is the only path that brings real economic growth and structural changes. Opponents of industrial policy argue that the existence of market failures is not a sufficient reason to justify state intervention, as there are difficulties in achieving well-targeted and effective interventions in practice.*

*New industrial policy of Serbia will be aimed at creating a favorable business environment, eliminating market and government failures, meeting the specific needs of separate sectors with products and services with high added value. In that way, conditions will be created for increasing the competitiveness of Serbian industry, integration into global value chains, development of knowledge-based economy, construction of sectors related to sustainable development goals and competitive positioning of Serbian industry for Industry 4.0.*

*State incentives are integral part of industrial policy and are one of the measures by which the state influences the market position of individual companies. They must be applied very carefully, taking into account their positive and negative sides.*

*In this paper, employment is analyzed in successfully implemented investment projects in the period from 2006 until March 2017. These are projects in which incentives have been allocated for attracting investments and new employment in the Republic of Serbia, and which have been successfully implemented. For the purpose of conducting this research, t-test for dependent samples and a Chi-square test are used. t-test analyzes the experimental units before and after receiving the incentives, and the Hi-square test*

*examined whether the distribution of the number of employees after the incentives deviates from the expected distribution. The empirical research has shown that incentives for job creation in Serbia have a positive effect on employment growth in industry.*