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**ECONOMIC EFFICIENCY OF INVESTMENTS IN THE
REPUBLIC OF SERBIA**

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Abstract: *In the current global environment, when the whole world is connected and conditioned by the market, adapting to economic trends is a much more complex undertaking than it used to be. The decision of investors to invest their own capital leads to multiple effects and conditions a widespread influence around the world. The attempt to conduct economic policy at the national level excluding the factor of foreign investments practically cannot be applied anywhere. Participants on the international scene depend on each other, so the development of the Republic of Serbia is directly dependent on a large number of influential factors of the international character. The aim of this paper is to show the structure of investments and methods of evaluating their efficiency in the Republic of Serbia. The investment policy from the year 2000 until the present time will be reviewed, the measures taken and their effects in terms of the economic progress of the Republic of Serbia will be considered. The contribution of work is reflected in highlighting the contribution of investments to the growth and development of our country..*

Keywords: *investments, efficiency, economic development.*

JEL classification: *E22, G11*

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EKONOMSKA EFIKASNOST INVESTICIJA U REPUBLICI SRBIJI

Sažetak: U aktuelnom globalnom okruženju, kada je ceo svet tržišno povezan i uslovljen, prilagođavanje ekonomskim kretanjima je znatno kompleksniji poduhvat nego što je to ranije bio. Odluka investitora o ulaganju sopstvenog kapitala dovodi do višestrukih efekata i uslovljava rasprostranjen uticaj širom sveta. Pokušaj da se na nacionalnom nivou ekonomska politika vodi izuzimajući faktor inostranih ulaganja praktično se više nigde ne može primeniti. Učesnici na međunarodnoj sceni zavise jedni od drugih, pa je tako i razvoj Republike Srbije u direktnoj zavisnosti od velikog broja uticajnih faktora međunarodnog karaktera. Cilj ovog rada se odnosi na prikazivanje strukture investicija i metoda oene njihove efikasnosti u Republici Srbiji. Sagledaće se investiciona politika počev od 2000. godine pa do aktuelnog vremena, razmotriće se preduzete mere i njihovi efekti u smislu privrednog napretka Republike Srbije. Doprinos rada se ogleda u isticanju doprinosa investicija rastu i razvoju naše zemlje.

Ključne reči: investiciona ulaganja, efikasnost, privredni razvoj.

1. INTRODUCTION

We often hear how important investments are for the further development of our country, but also of any other. Their level and structure are discussed, and they are often compared with previous periods, and adequate conclusions are drawn based on that. During the last century, the Republic of Serbia had periods characterized by a high concentration of investments, but also periods in which investments did not yield satisfactory results. Of course, in addition to monitoring investments through the past, it is necessary to return to the present and current conditions in the world economy. Comparing Serbia with other countries is of great importance, including the level of investments and their contribution to the overall development of an economy. In this way, the advantages and disadvantages of our economic policy are recognized, and the situation is viewed in a more objective way. We must not allow the mistakes of the past to be repeated, whether ours or those of other countries whose experiences we are familiar with. If the efficiency of investments in another country is higher than the efficiency of investments in our country, the task is to determine why this is so, in order to make the right decisions during the investment process.

Investment is, primarily because of its importance, one of the most frequently used words in the economic sphere. Its importance is multiple when looking at the macro aspect and the economic development of a country, but also at the development of companies at the micro level. Therefore, it is an integral

element of any economic policy. Looking at the macro level, investments represent a part of the gross domestic product that is spent on replacing and expanding fixed assets, as well as investing in working capital. It is important to emphasize that investments viewed in this way represent real investments, more precisely investments in physical capital. When looking at the level of a single economic entity, household or individual, in that case the term investment includes both real and financial investments. Financial investments include investments in shares for the purpose of receiving dividends or investments in banks for the purpose of generating returns in the form of interest. However, this paper will discuss real investments, investments that increase the production capacity of the economy.

Without investments, there is no economic growth or technological progress in a country. In order to achieve positive results at the macro level, it is necessary that the efficiency of investments at the level of individual entities is at an optimal level, in order to adequately transfer their effect to the economy as a whole. The development of a company in the long term is unthinkable without investments. This is emphasized for several reasons, but they all boil down to the fact that a company is not able to withstand market competition if it only maintains current reproduction, that is, if it does not invest.

2. INVESTMENT STRUCTURE

The structure of investments can be observed from several aspects, and specifically, it is the economic, technical and reproductive structure of fixed investments.

The economic structure of investments represents the way in which investments are distributed across individual sectors of economic activity. A sector refers to individual economic and non-economic areas. When it comes to economic areas, these include industry, mining, agriculture, fishing, forestry, etc. Non-economic areas include education, culture, health, etc. They are further divided into subsectors, areas, branches, groups and subgroups. The economic structure of investments determines what the production structure of the national economy will look like. Depending on which sectors the largest part of investments is allocated to, the development of individual sectors differs, as well as their contribution to the development of the overall economy. Which means, if the most investment is made in a country within the industrial sector, it is normal and to be expected that it will develop the fastest and that its share in the gross domestic product will also grow. Despite all the good sides of investments in industry, it is necessary to observe the economic structure of investments over time and enable a change in priorities. When talking about shifting priorities, it is meant that in the long run it is not good to develop only

one sector at the expense of others. An economic policy must be pursued that will at all times take into account the proportions of investments in individual sectors, so that the lagging of these "non-priority" sectors does not jeopardize the entire process of economic development. When choosing the economic structure of investments, one should also consider the requirements of the international division of labor. It is necessary for a national economy to make the best use of its position in the world exchange of goods and services, and therefore it must take into account which sectors to give priority to. The economic structure of investments resolves the question of what to produce, i.e. export, and what to import.

The technical structure of investments shows which part of the investments is spent on construction works and which on equipment. In addition to these two basic units, there is the unit "other", which is of lesser importance. These include patents, licenses, financing of research during the implementation of specific investment projects, and the like (Ilić & Tasić, 2021). The technical structure of investments also determines the structure of fixed assets, the main parts of which are buildings, equipment and other things. As already mentioned, relatively large investments in construction facilities are characteristic of national economies at lower levels of development. However, as economic development progresses, the share of equipment in total investments increases, which is explained by the longer useful life of construction facilities.

The reproductive structure of investments is reflected in two aspects. The first aspect speaks about the structure of sources from which investments in fixed assets are financed. The second aspect refers to the type of reproduction of fixed assets, that is, the ratio between investments that serve as replacement and those that are intended for expanded reproduction. When it comes to sources for financing investments, we distinguish: accumulation from national income reduced by the increase in inventories, depreciation and foreign assets. Accumulation and foreign assets are entirely intended for expanded reproduction, while depreciation is partly intended for idle time and partly for expanded reproduction.

3. INVESTMENT STRUCTURE IN THE REPUBLIC OF SERBIA

In conditions where domestic savings are not sufficient to finance investments, foreign funds deserve special attention. Since 2001, Serbia has had significant inflows of foreign capital, and here we are specifically talking about foreign direct investments, as a key driver of economic development in countries in transition. The need for foreign direct investments arose due to insufficient funds for investments allocated from the budget of the Republic of Serbia, all with the aim of faster economic development. Far from it, public investments do

not have an impact on economic development, but faster progress is ensured by importing the most modern techniques and technology coming from more developed countries, than Serbia currently has. When talking about the technical structure, it was said that public funds are mainly allocated for infrastructure, construction facilities, which are precisely necessary if the quality of investments coming from the private sector is to be increased. It is crucial to emphasize that the state of Serbia today pursues a policy of foreign direct investment, which is why their importance will be discussed below (Ilić et al., 2022). When it comes to foreign capital that has arrived from 2001 to the present, the largest part came as a result of privatization, that is, the sale of domestic companies to foreign partners. A smaller part also arrived through investments in the establishment of completely new companies. The dynamics of foreign direct investment, presented in a table, according to data available to the National Bank of Serbia, looks like this:

Table 1

Foreign Direct Investments in the period 2001-2017

Year	Amount in millions of euros	% of GDP
2001	184	1,4
2002	500	3,1
2003	1194	6,9
2004	774	4,1
2005	1250	6,2
2006	3323	14,3
2007	2528	8,6
2008	2486	7,4
2009	2068	6,7
2010	1133	3,8
2011	3320	9,9
2012	753	2,4
2013	1298	3,8
2014	1236	3,7
2015	1804	5,4
2016	1899	5,5
2017	2415	6,6

Source. National Bank of the Republic of Serbia. <https://www.nbs.rs>

According to the attached data, foreign direct investment from 2001 to 2017 is estimated at slightly more than 28 billion euros. This is certainly due to the fact that hundreds of millions of euros are invested in Serbia by the world's largest companies, such as Fiat, Stada, Telenor, Michelin, Coca Cola, Microsoft, Gazprom, Intesa Banka, etc. From the above overview, it can be seen that the

inflow of foreign direct investment is very uneven, and this is all a consequence of numerous internal and external factors that have affected the Serbian economy in the past two decades. As for external factors, there is certainly the global economic crisis that occurred at the end of 2007 and which has largely influenced the stagnation of foreign direct investment. Of the internal factors, the most significant are factors related to our path towards the European Union, political instability, as well as territorial problems, all of which together created a worse image for foreign investors. All in all, today in Serbia we have a positive trend of foreign direct investment, which certainly encourages some new investors to invest here (Ilić et al., 2022a). The largest part of foreign funds arrived by investing in companies with profitable activities through the privatization process. This mainly concerns the processing industry, cement plants, tobacco factories, breweries, etc. The period until 2005 is characterized by a large number of acquisitions by Serbian banks. However, what spoils the impression of foreign direct investment is the small share of new investments, the so-called greenfield investments. The period after 2005 is characterized by some really large investments, such as the one in 2006 when Mobtel was sold to the Norwegian telecommunications company Telenor for 1.6 billion euros. In 2008, Russia's Gazprom Neft took over the management of the Oil Industry of Serbia (NIS) by paying 400 million euros for the purchase of 51% of NIS shares. Belgian retail chain Delhaize allocated as much as 933 million euros for the purchase of the retail chain Delta Maxi in 2011.

What it looked like in the period from 2001 to 2011 and which are the largest foreign direct investments, is shown in the table below.

Table 2

Initial and total investments of foreign investors in Serbia in the period from 2001 to 2011 (top 20 investors, shown in million EUR)

Rank	Company	Country of origin	Sector	Value
1	Telenor	Norway	telecommunications	1602
2	Gaprom Neft – NIS	Russia	energy	947
3	Fiat Automobili Serbia	Italy	automotive industry	940
4	Delhaize	Belgium	retail	933
5	Philip Morris DIN	USA	tobacco industry	733
6	Stada – Hemofarm	Germany	pharmaceutical ind.	650
7	Mobikom – Vip Mobile	Austria	telecommunications	633
8	Agrokor	Croatia	food industry	614
9	Banca Intesa	Italy	banking	508
10	Salford Investment Fund	Britain	food industry	500
11	Eurobank EFG	Greece	banking	500
12	Raiffeisen banka	Austria	banking	500
13	Merkator	Slovenia	retail	500
14	StarBev – Apatinska pivara	Czech Republic	food industry	487
15	CEE/BIG shopping centers	Israel	real estate	470
16	National Bank of Greece	Greece	banking	425
17	Credit Agricole Srbija	France	banking	264
18	Fondiarria SAI	Italy	insurance	220
19	Lukoil – Beopetrol	Russia	energy	210
20	British American Tobacco	Britain	tobacco industry	200

Source: <http://big.co.rs/upload/Edition/Download/201306/StraneDirektneInvesticijeUSrbiji20012011.pdf>

3.1. TELENOR

Although it is known which are the largest foreign investments in Serbia, and that Telenor has convincingly allocated the largest funds for the purchase of the majority of shares in Mobi 63, it is necessary to consider the profitability of this investment. Telenor Serbia ended 2016 with a net profit of 8.9 billion euros, which puts it in third place in terms of net profit in 2016. Only NIS and Telekom are ahead of Telenor, with a net profit of 16.1 and 15.2 billion dinars, respectively. Since its arrival in Serbia in 2006, Telenor has had a net profit that

has followed a positive trend until 2013, after which it has been constantly decreasing.

Table 3

Net profit of Telenor for the period 2006 – 2016

Year	Net profit (in thousand RSD)
2006	1.484.374
2007	6.459.002
2008	3.439.381
2009	2.663.285
2010	2.112.683
2011	4.671.235
2012	10.580.559
2013	11.114.039
2014	10.549.254
2015	9.676.580
2016	8.909.168

Source. <https://www.telenor.rs/sr/o-telenoru/o-nama/finansijski-pokazatelji/>

When comparing the year Telenor arrived in Serbia and 2013, a multiple increase in net profit is evident, but the period after that is worrying. In 2016, although it is in the top three companies in terms of net profit, it has a decrease of 7.5% if we compare net profit with the previous year (Milanović, 2023). The figure of 8.9 billion dinars is certainly incredible, especially when considering that some companies are operating at a loss. A net profit of 75 million euros is a good indicator and gives hope that Telenor will continue to operate in our country. And when you look at all 11 years of operations in Serbia, it seems that a good part of the funds have returned to the owners after large initial investments. Another indicator in which Telenor is in the top ten in Serbia is the operating income. Its operating income amounts to an incredible 45.6 billion dinars. It is evident that this company has multiple benefits from doing business in Serbia, but the question is what benefits we have from Telenor. In addition to being the largest initial investor in Serbia, the investments that Telenor has made over the years are also significant, estimated at several hundred million euros (Savić et al., 2024). There is also a wide range of services that the company provides to the citizens of Serbia, where it has over 3 million users. Telenor also employs almost a thousand workers across Serbian cities. It is important to point out that Telenor generated almost \$413 million in gross value added for the Serbian economy, both directly, through the purchase of goods and services from Serbian suppliers, and through the broader economic activity

generated through employee consumption. The total fiscal contribution generated by Telenor in 2015 amounted to \$548 million, which is approximately 1.2% of the country's total tax revenues. And \$59 million of that went into the state budget through taxes and other regulatory payments, while \$490 million was made possible by Telenor thanks to its activities that it creates through consumption in the supply chain and employee consumption.

It can be concluded that both parties have multiple benefits from this type of cooperation, and therefore our country also aims for this Norwegian company to continue investing and expanding its business.

3.2. FIAT

Fiat, the Italian giant in the automotive industry, came to Serbia in 2008, where it became the majority owner of Kragujevac-based Zastava, once a symbol of the Serbian automotive industry. The value of the investment is estimated at 940 million euros. We previously saw that Fiat generated operating revenues of 132.6 billion dinars, which in 2016 placed it in third place according to the criterion of the size of operating revenues of companies operating in Serbia. As for net profit, its movement in the period 2013-2017 looked like this:

Table 4

Fiat's net profit for the period 2013 – 2017

Year	Net profit (in thousands of RSD)
2013	1.131.858
2014	2.465.358
2015	2.383.640
2016	2.122.702
2017	2.131.278

Source. <http://www.apr.gov.rs/>

In the past few years, net profit has been around two billion dinars, which is certainly not a bad value, because the company is in a big plus. However, what is worrying is the phenomenon that has appeared in each of these five years. Namely, in the financial statements, more precisely in the income statement, the item income from subsidies is at an extremely high level. An example is 2016, where these revenues amounted to 3.7 billion dinars, and in 2017 the amount was significantly lower, amounting to 1.9 billion dinars. Of course, this phenomenon is not surprising, given that the Serbian public is also aware that the state allocates large funds for Fiat, and this topic is often the subject of controversy. However, the state would not do this without this company adequately compensating it (Milanović, 2023). In addition to employing around

3 thousand workers in Serbia, Fiat also has one of the greatest influences on the economic development of our country. Although the company is supported by state interventions and exempted from paying some duties, its impact on the growth of the gross domestic product is large. The point is that, according to a report published by the Ministry of Finance, Fiat is by far the leading exporter for Serbia, and therefore the company's exports directly affect GDP growth.

In the first third of 2018, Fiat achieved exports worth 303.3 million euros. It is followed by HBIS GROUP and "Tigar" Pirot in second and third positions. The first 15 leading companies in the period January - April 2018 together achieved exports worth 1.5 billion euros. Also, if we look at the first 11 months of 2017, Fiat is again in first position with an export value of 870.2 million euros. This is almost twice as much export as the second-placed HBIS GROUP, which speaks more than enough about the importance of this company.

4. METHODS FOR ASSESSING INVESTMENT EFFICIENCY

At the macro level, increased investment allocations also have an upper limit. This limit is determined by the level of the population's standard of living, which should not be violated, as this could lead to negative economic consequences. This counter-effect occurs when investment allocations are so large that the pressure on consumption is too strong (Terzić, 2014). In such situations, if they are of a long-term nature, a disincentive mechanism begins to operate, which undermines the development potential of the economy and reduces the rate of possible economic development. The economic efficiency of investments at the micro level is a key factor in the development of a company, its financial position and financial health. Namely, before implementing a specific investment activity, it is necessary to determine what results the investment project will provide in the projected time period. This is achieved by applying the so-called static and dynamic methods for assessing an investment project (Miletić et al., 2021).

It is not uncommon for an asset owner to find themselves in doubt about which investment option to choose first, or how to be sure that their investment will yield the expected results, that is, the highest possible profit in the long term. The methods presented in this paper are something that anyone can rely on, provided they have quality data and information. Static and dynamic methods for assessing the profitability of investments are fundamentally different. Static methods do not take into account the entire time in the investment and exploitation process, but only a single time interval, while this is not the case with dynamic methods for assessing investment projects, which will be explained in detail below.

4.1. DYNAMIC METHODS FOR EVALUATING INVESTMENT PROJECTS

Dynamic methods cover the entire investment period and the period of exploitation of the investment object. These methods are more widely used in practice, due to the shortcomings of static methods. Static methods are mainly used as a supplement to dynamic methods, because they are not able to solve some of the basic problems on their own. Dynamic methods start from the discounting technique, which is the process of reducing all income and expenses arising from investment, which occurred in different time periods, to their present value (Miletić & Radić, 2022). This means that these methods start from the fact that money has its own time value. Which in turn means that a certain amount of money is not worth the same today and at some point in the future, so an assessment of costs and results in the future is made, in order to reduce these values to the present moment (Savić et al., 2024). The assessment of an investment project is achieved by comparing the calculated amount of investment investments with the sum of net annual benefits achieved in individual years of investment exploitation.

In methodological terms, these methods are more complex, because they start from the application of financial mathematics, more precisely than the compound interest calculation. This calculation is applied by discounting individual amounts of cash receipts and disbursements, so that all amounts become comparable, by bringing them to the same accounting moment. The methods that will be discussed in further work are: Net present value; Profitability index; Internal rate of return of the investment project.

Net present value

This method is considered a modern, or dynamic, method. It includes cash disbursements, in the form of capital expenditures, and all cash receipts related to the net cash flow from the project's operation. This method uses a discount rate to arrive at the average cost of capital, which will be shown in the example. Therefore, the net present value is calculated as the difference between the present value of the expected annual net cash flows from the project's operation (cash receipts) and the present value of the capital expenditure (cash disbursements), where the discount rate is determined in the form of the company's average cost of capital or some other required rate of return (Gojković et al., 2023).

$$NSV = \sum_{t=1}^n \frac{CF_t}{(1+k)^t} - CF_0 \quad (1)$$

* CF_t – net cash flow from the project's operation;

CF_0 – capital expenditure;

k – average cost of capital, which represents the discount rate; n – economic life of the project.

To make all of the above clearer, several cases in which this method is applied will be shown using examples (Indić et al., 2023). We will start with the simplest example.

Example 1: A company is considering a project where the capital expenditure would be 90,000 dinars and this project is expected to generate a net cash flow of 33,500 dinars over 4 years. The average cost of capital is 10% per year. The discount factor 3.170 is crucial, but it can also be obtained by applying financial mathematics. In this example, the procedure will be explained in detail, while in subsequent examples this part will be omitted (Dondur et al., 2010).

- *If we look at the first year:*

$$33.500 * \frac{1}{(1+0,1)^1} = 33.500 * 0,90909 = 30.455$$

- *Second year of exploitation:*

$$33.500 * \frac{1}{(1+0,1)^2} = 33.500 * 0,82645 = 27.686$$

- *Third year:*

$$33.500 * \frac{1}{(1+0,1)^3} = 33.500 * 0,75131 = 25.169$$

- *Fourth year:*

$$33.500 * \frac{1}{(1+0,1)^4} = 33.500 * 0,68301 = 22.885$$

Adding these four coefficients yields a discount factor of 3.170 for a discount rate of 10% and a project life of four years. Adding the values on the right side of the equation yields the present value of the net cash flow. The key criterion for project acceptance is that the net present value is greater than zero, which is the case in the previous example, and such a project is said to be profitable (Mihajlović et al., 2024). Of course, if the net present value is less than zero, the project should be rejected. If $NPV = 0$, then there is indifference between

accepting and not accepting such a project. If there are two independent projects with a positive NPV, both of these projects are accepted, but if the projects are mutually exclusive, then the one with the higher net present value is accepted. It is much more common for investments to be made at multiple points in time before the start of exploitation, so the value of these capital investments should be reduced to the date of the start of exploitation.

Example 2: Capital expenditure on 31.12.2008 is 200,000 dinars, on 31.12.2009 the expenditure is 250,000 dinars, while on 31.12.2010 it is 300,000 dinars and on 31.12.2011 it is 700,000 dinars. Regular exploitation of the project will begin on 1.1.2012. The project is expected to generate an annual net cash flow of 350,000 dinars over the economic life of the project of 10 years. The average cost of capital is 12%.

$$200.000 * (1 + 0,12)^3 = 281.000$$

$$250.000 * (1 + 0,12)^2 = 313.500$$

$$300.000 * (1 + 0,12)^1 = 336.000$$

capital investment: 700.000

total: 1.630.500

From the date of the first investment in the project in the amount of 200,000 dinars to the start of its exploitation, 3 years pass, so interest on interest is calculated for 3 years. The same is true for other investments that occur before the start of the project's exploitation itself. There is also a situation in which capital investment can occur after the start of the project's exploitation, so these amounts should be discounted, or reduced to the present value on the day the project's exploitation begins.

Example 3: Capital investment in this project amounted to 100,000 dinars on 31.12.2008, 30,000 dinars on 31.12.2010, and 25,000 dinars on 31.12.2011. Regular exploitation was supposed to begin on 1.1.2009 and an annuity annual net cash flow of 25,000 dinars is expected in the next 8 years. The average cost of capital is 11%. The conclusion is clear, since the net present value of the project is a negative quantity, i.e. less than zero. This kind of project is unprofitable, and it will not be accepted.

Profitability index

The profitability index can be determined by comparing the present value of the net cash flow and the present value of the capital expenditure. It can be concluded that this index is nothing more than a relative representation of the net present value, which represents an absolute indicator (Savić & Bonić, 2022).

So, if the profitability index is 1.34, it means that 1.34 dinars of the present value of the net cash flow is expected per dinar of investment. A profitability index of 1 corresponds to a net present value of 0. If the profitability index is greater than 1, the project is profitable, however, if it is less than 1, the project is rejected.

Internal rate of return

The internal rate of return can be defined as the discount rate that equates the present value of net cash flow and the present value of capital investment (Savić et al., 2023). So when we put things this way, the clear conclusion is that this method equates the net present value to zero (Joksimović, 2011).

$$\sum_{t=1}^n \frac{CF_t}{(1 + ISP)^t} = CF_0 \quad (2)$$

Here, instead of the discount rate, the internal rate of return is used to reduce the net present value to zero. The problem is that the internal rate of return cannot be calculated using a formula, so it is most often determined by an iteration process, that is, by calculating the present value of income and expenses for different rates, until a rate is reached at which the present value of all income is equal to the present value of all expenses. The entire procedure will be explained using Example 1. First, the calculation of the payback period (capital expenditure / net cash flow). Since this is a uniform annual net cash flow, the payback period is $90,000 / 33,500 = 2.687$ years.

The procedure for uneven cash flows is more complicated, but the essence is the same. In the process of calculating the internal rate of return, financial tables are used, where you can read which interest rates the internal rate of return falls between. Lesser difference compared to capital expenditure / Difference in present values of net cash flow = $115 / 1,708 = 0.07$, so the internal rate of return is equal to $18 + 0.07 = 18.07\%$. This is a profitable project, because its internal rate of return is 18.07%, which is higher than the average cost of capital, which in this example is 10%. So it can be concluded that if the internal rate of return is higher than the average cost of capital – k , then the project is accepted, if the rate is lower, the project is rejected.

4.2. STATIC METHODS FOR EVALUATING INVESTMENT PROJECTS

This method is based on taking parameters from only one year, the average year of the project's exploitation period. This method of evaluating an investment project does not take into account the entire time, but only a single time interval (Arandelović & Petrović Randelović, 2011). In this way, the assessment of the

economic effectiveness of investments is simplified, but the possibility of taking into account the effects of the entire investment and exploitation period of the investment is lost.

Static methods are used as a complement to other dynamic methods, because they do not respect the time value of money. Static methods include a large number of indicators, and examples of these methods are given here (Savić et al., 2022): payback period and accounting rate of return.

Refund period

This indicator refers to the time period that needs to elapse in order for the initial capital investment to be repaid from the net cash flows from exploitation. When an annuity annual net cash flow is expected, the payback period is obtained by dividing the capital expenditure by the annual cash flow, and this case is shown in one of the previous examples (Mihajlović & Savić, 2024). Namely, the situation changes when the cash flows from the exploitation of the facility differ by year.

Example 4: For a project, it is expected that the annual net cash flow will be 50,000, 50,000, 40,000, 40,000, 30,000, 30,000 dinars in 6 years. It can be clearly seen that to cover the capital expenditure of 120,000 dinars, it is necessary for 2.5 years to elapse ($2 + 20,000/40,000 = 2.5$ years). This criterion relies heavily on management's subjective judgment, which is a serious shortcoming of the payback period method. If two mutually exclusive projects are compared, it is logical to give preference to the project with the shorter payback period. In order to better respect the time value of money, cash flows are discounted to their present value.

Example 5: It was assumed that the cash flows from the operation of the project were the same as in Example 4, and the average cost of capital was 11%. At the end of the first year, 45,050 dinars were recovered, at the end of the second year 40,600 dinars, and at the end of the third year 29,240 dinars, leaving 5,110 of the capital expenditure to be recovered. The payback period is equal to 3.193 years ($3 + 5,110 / 26,360$).

Accounting rate of return

The following formula for the accounting rate of return is most often used in the literature (Gogić, 2009):

$$\text{Average annual net profit} / \text{Average initial capital investment in the project}$$

In a large number of cases, the average capital expenditure is taken as the value of the initial capital investment divided by two, so that in practice, linear depreciation of fixed assets over their useful life is assumed.

Example 6: The initial capital expenditure is 200,000 dinars, and net profits are expected in the following years: 30,000, 35,000, 38,000, 33,000, 29,000 dinars. The average annual net profit is 33,000 dinars - $(30,000 + 35,000 + 38,000 + 33,000 + 29,000) / 5 = 33,000$ dinars. The average capital expenditure is 100,000 dinars $(200,000 / 2 = 100,000)$, so the accounting rate of return is:

$$33.000 / 100.000 = 0,33 = 33\%$$

This result means that for every 100 dinars of invested capital, there are 33 dinars of net profit. The manager is required to set a criterion, in the form of a minimum accounting rate of return, and to compare the result with that rate, in order to consider the acceptability of the project. If there are competing investment objects, the project with the higher rate of return is accepted. The main disadvantages of this method are that it does not respect the time value of money, and that the benefit of the investment project is expressed through net profit, instead of through net cash flow. The aforementioned disadvantages can be easily seen in example 7.

Example 7: We are talking about two projects M and N, which have the same capital expenditure of 12,000 dinars and the same total net profit of 11,100 dinars. The difference is in the distribution of net profit by year (6 years). Depreciation costs are 2,000 dinars per year. The average cost of capital is 18%, the required minimum accounting rate of return is 20% and the required maximum payback period is 3 years. Based on the accounting rate of return, it can be said that both projects are profitable, because their rates are equal and amount to 30.83%, which is higher than the required minimum rate of 20%. However, if we look at the net present value, as a better and more reliable indicator, it tells us that project N is unprofitable, because its net present value is less than zero. While the payback period indicates the acceptance of project M, due to the faster return on investment. Based on all of the above, as well as due to the shortcomings of the accounting rate of return, this method is rarely used, primarily as a supplementary method to other dynamic methods.

5. ECONOMIC EFFECTIVENESS OF INVESTMENTS AT THE MACRO LEVEL

In order to see the results of investments in a country, it is necessary to compare them with the total production that the country achieves. In this way, we will gain insight into the effectiveness of investments and how much they have contributed to progress and economic development. Two indicators are used to express the economic effectiveness of investments: the marginal capital ratio and the marginal investment effectiveness ratio (Devetaković et al., 2016).

The marginal capital ratio represents the ratio of investments to production growth. This ratio shows how many units of investment are needed to achieve a one-unit increase in production. Every national economy aims to have its marginal capital ratio as low as possible, that is, to achieve an increase in production by one unit with as little investment as possible. It should be noted that the marginal capital ratio can be presented in gross and net terms, depending on which investment and production aggregates are used in its calculation (Ivanišević, 2011). In the case of the net capital ratio, net investments and national income growth are compared ($k_{m1} = NI_{ft} / \Delta ND_t$), while the gross capital ratio shows the ratio of gross investment to gross domestic product growth ($k_{m2} = BI_{ft} / \Delta Y_t$).

When talking about the marginal efficiency ratio of investments, it is important to say that it represents, nothing more than the reciprocal value of the marginal capital ratio. Therefore, the formulas that follow are quite clear, ($e_{m1} = 1 / k_{m1} = \Delta ND_t / NI_{ft}$) or for the gross expression ($e_{m2} = 1 / k_{m2} = \Delta Y_t / BI_{ft}$). The designation ft next to the aggregates related to investments emphasizes that these are investments in fixed assets in the corresponding year. The goal is certainly to make this coefficient as high as possible, or more precisely, to achieve the highest possible increase in production per unit of investment. The effectiveness of investments can also be expressed in a different way, namely when the investment rates and the production growth rates are compared (Vukadinović & Jović, 2012).

$$k_{m1} = i_1 / r_{ND} \quad \text{ili} \quad (3)$$

$$k_{m2} = i_2 / r_Y \quad (4)$$

In this case, the marginal capital ratio shows how much of the gross domestic product is invested to obtain 1% growth in gross domestic product, and the same applies when talking about national income. In further analysis, data related to the aggregate - gross domestic product will be used.

The marginal capital ratio, as well as the marginal efficiency ratio, can be simultaneous or with a time lag, the so-called technological. The simultaneous marginal capital ratio is the ratio of investments from one period to the increase in production from the same period. The marginal capital ratio with a time lag (technological) takes into account the activation period of investments, i.e. the time lag required for investments to be "converted" into active production funds. The formulas for the technological marginal capital ratio are (Simeunović & Zekić, 2017):

$$k'_{m1} = NI_{f(t-m)} / \Delta ND_t \quad (5)$$

$$k'_{m2} = BI_{f(t-m)} / \Delta Y_t \quad (6)$$

In this case, the increase in production in year t is the result of investments that took place earlier, more precisely m years earlier, where m is the activation period of investments. As for the formulas for the marginal efficiency coefficient of investments, it is also the reciprocal of the above formulas.

6. ECONOMIC EFFECTIVENESS OF INVESTMENTS IN THE REPUBLIC OF SERBIA

When we talk about investments in Serbia and their effectiveness, this section will focus on investments that took place in the 21st century. This period is relevant for drawing any conclusions about the direction Serbia is heading, because the 1990s were disastrous for our economy (Đuričin et al., 2015). After all the wars, inflation, and sanctions, the time has finally come to conduct economic policy on a sound basis. Thus, we have a situation of accelerated economic recovery from 2001 to 2008, with a real GDP growth rate ranging from 4.4% to 9%.

Table 5

Movement of the marginal capital ratio in the period 2001 - 2017.

Year	Investment share, % of GDP	Real GDP growth, %	Km
2001.	12,9	5,0	2,58
2002.	16,2	7,1	2,28
2003.	18,3	4,4	4,16
2004.	20,5	9,0	2,28
2005.	20,1	5,5	3,65
2006.	22,3	4,9	4,55
2007.	25,3	5,9	4,29
2008.	24,9	5,4	4,61
2009.	19,7	-3,1	-6,35
2010.	18,6	0,6	31,00
2011.	18,4	1,4	13,14
2012.	21,2	-1,0	-21,20
2013.	17,2	2,6	6,62
2014.	16,7	-1,8	-9,28
2015.	17,7	0,8	22,13
2016.	17,7	2,8	6,32
2017.	18,5	1,9	9,74

Source. Public Finance Bulletin for January 2018, <http://www.mfin.gov.rs>

For this period, this was a completely satisfactory growth rate even by European standards. All of this took place with a constant increase in the share of investments in GDP, starting in 2001. During that period, investments that took place in the Republic of Serbia yielded concrete and visible results, which was their goal. However, the global economic crisis and 2008 were turning points for the global economy, including Serbia itself. In the period from 2009 to 2017, recessions occurred on three occasions, in 2009, 2012 and 2014. These were years in which the real GDP growth rate was negative, and in those years investments did not produce the expected results, and even regressed. In other years, when some such growth was recorded, the percentage of real growth did not even come close to the level that was until 2008. It should also be noted that investments were not even close to the 25% they were before the crisis. The situation was worse all over the world than before. In the last few years, there are indications that the situation in the world, including in the Republic of Serbia, has stabilized and that faster economic growth will finally begin. The following table shows the size of the marginal capital ratio and also presents a graphical representation for easier analysis.

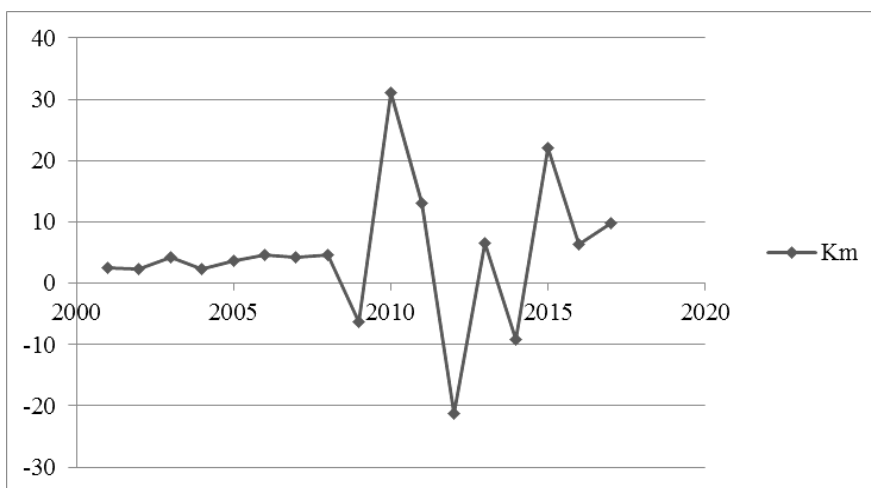


Figure 1. Movement of the marginal capital ratio in the period 2001 – 2017

Source: Public Finance Bulletin for January 2018, <http://www.mfin.gov.rs>

Judging by what has already been said, the goal of every country is to have a positive and as low a marginal capital ratio (km). In other words, the goal of the Republic of Serbia is to achieve 1% real GDP growth, with as little investment as possible, so that the economic effectiveness of investments would be greater. The following formula was used to analyze the size of the marginal capital ratio (Subić, 2010):

$$k_m = i / r_y \quad (7)$$

If we know that Serbia had a marginal capital ratio of 2.28 in 2002 and 2004, this indicates that for 1% of economic growth it was necessary to allocate 2.28% for investments from GDP, which is an excellent indicator. Looking at the marginal capital ratio from 2001 to 2008, it was within satisfactory limits. After those years, for already known reasons, negative years followed for the economy in the Republic of Serbia. The marginal capital ratio in those years was either negative, which was not good at all, or it was in too much of a plus, which again means large allocations for investments from GDP with minimal results. As brighter points in the period from 2008 to the present, 2013 and 2016 can be singled out, when k_m was slightly over 6, which is close to an optimum. When talking about the optimum, the expected economic growth determined by world and European financial organizations is taken into account, and it amounts to around 4 to 5%. So, with a normal percentage share of investments in GDP of around 20%, the marginal capital ratio would have values of around 4 or 5. We can also look at 2017, in which for economic growth of 1.9% it was necessary to allocate as much as 18.5% of the gross domestic product for investments. Which would mean that with the same investment effectiveness, it would be necessary to allocate around 40% of GDP for investments in order to ensure economic growth of 4%. This is an extremely high percentage of allocation and it is unrealistic to expect it, which shows that achieving sustainable high GDP growth rates does not depend only on the amount of investments, but also on their effectiveness. The problem that is present in Serbia is that most of the investments are directed to capital-intensive sectors, such as infrastructure, energy, and this results in lower economic effectiveness of investments at the level of the overall economy. It can be concluded that the solution to the problem should be sought in the economic and technical structure of investments, which will be discussed.

7. CONCLUSION

Some of this data may not inspire public confidence in the way Serbia conducts its economic policy, but it is certain that Serbia is moving towards the better. Progress is probably not going as fast as it is in the most developed countries in Europe, but great efforts are being made to at least be one of the leading economic powers in the region. Namely, our country must not allow itself to lose track of the world, because the gap is already very large. Many countries possess technology that Serbia cannot develop on its own, and therefore it is forced to import foreign capital and the knowledge of people from abroad. The price of this capital is expensive, because many less developed countries are fighting for that same foreign capital. Thus, Serbia is also facing fierce

competition in implementing its policy of attracting foreign investment. Because of all this, it is clear that the state must make huge concessions to foreign investors in order to attract them. The bottom line is that there is a real danger that foreign investment will go to a neighboring country, and we are surrounded by countries that can offer better conditions. These better conditions are better only for the investor, while the state, and with it the citizens, bear a huge burden, because it is often a question of low wages that can significantly save costs for any investor. Therefore, Serbia should direct its public funds mostly to the construction of infrastructure, construction facilities, and everything else that goes with it, all with one goal, which is to facilitate the arrival of foreign investment. It is necessary to attract investors in this way, and avoid attracting them by offering cheap labor or raw materials, or making major concessions by the state. In all of this, Serbia is still looking for an adequate solution, and this is precisely what is difficult for countries that are dependent on foreign capital for imports, because their own accumulation is not enough for the results they have set for themselves. A great advantage of the Serbian market is that there are quality human resources here that are the result of quality education, and our country should use this in the best possible way.

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