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Investments and their efficiency as a precondition for sustainable development in Macedonian's economy

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Abstract

The paper presents the dynamics of investments and their efficiency in the Macedonian economy in the transitional period. As in any other country in Macedonia, the volume and efficiency of investments has changed depending on developed macroeconomic policies. Although Macedonia has relatively high investment rates (part of GDP), because of their low efficiency, there are no achievable developmental rates. It can be observed by dividing the rates of GDP growth and the rates of investment. The interdependence regression equation between investment and GDP is applied in the paper. Determination coefficients are applied to show the intensity of the relationship between the two macroeconomic variables mentioned above, while the coefficient of the alliance shows how much the impact of investments on economic development and other factors

Keywords: investments, investment efficiency, regression equation, determination coefficient, alliance coefficient

1. Introduction

It is well known in macroeconomic theory that capital investment contributes to the growth of aggregate demand (AD). Expanding the latter increases the productive capacity of a national economy (aggregate supply in the long run). The increase in investment results in the expansion of the national economy (GDP growth) over long periods of time as in the chart below.

Assuming that the average prices of goods and services in a national economy are \$ 100, an increase in aggregate demand (shift the curve to the right of the starting position) results in an increase in production capacity from \$ 10 to \$ 12 billion.

Capital investments for a national economy, though being the driving force of development, carry opportunity costs. In other words, their growth shrinks the level of investment for consumer goods. Such an action has effects only for short periods of time, in the long run capital investments increase and investments for consumption.

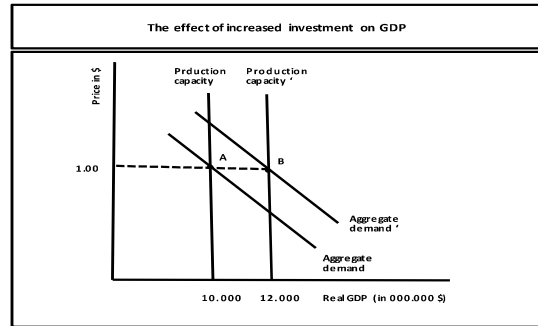


Figure 1. The effects of increased investment on GDP

Source: Pollozhani, P. (2015), Makroekonomia, Arbëria Design, Tetovë

From the graph below we can see that the increase of capital goods from \$ 200 million to \$ 300 million respectively \$ 380 million shrink's consumer goods from 380 million to 200 million respectively \$ 100 million. Such action has its effect only in the short term and in the long run both capital and consumption benefits (shift the curve to the right of the starting position) increase, as shown in the graph below.

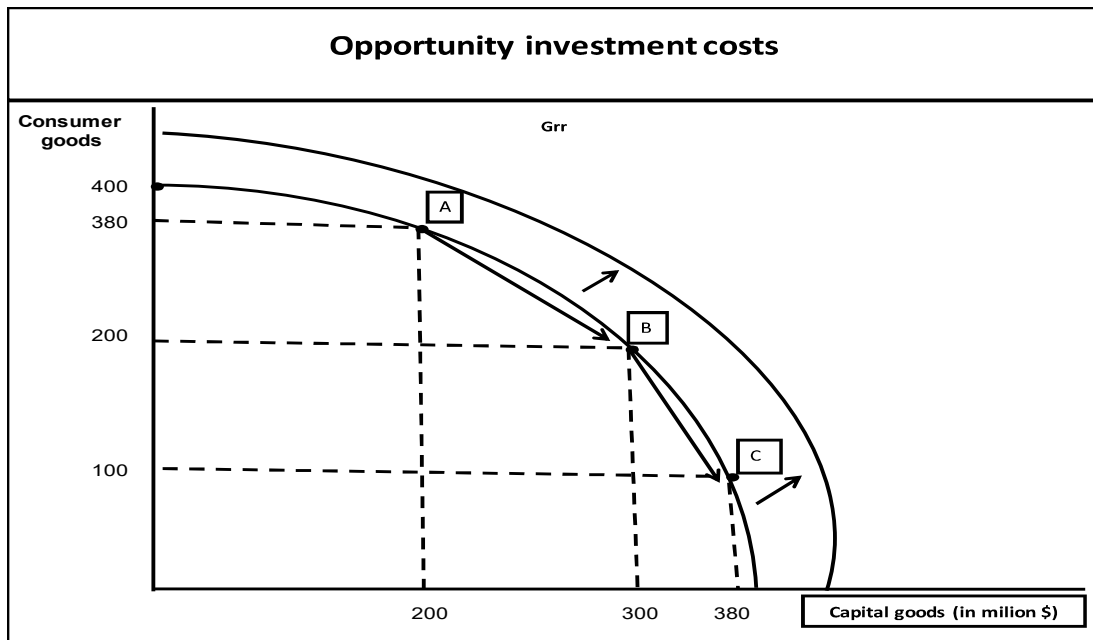


Figure 2. Opportunity investment costs

Source: Pollozhani, P. (2015), Makroekonomia, Arbëria Design, Tetovë

For an economy it is not important only the level of investment but also their efficiency. Many economies are known to realize high amounts of investment but do not achieve sustainable economic development. North Macedonia was a republic within the Yugoslav federation which invested on average 1/3 of GDP per year during the 1963/1990 period and remained one of the most underdeveloped areas, on the contrary Slovenia and Croatia invested 1/4 of GDP per year

(Pollozhani (2008), pg. 111) in the same period and were divided from Yugoslavia as the most economically developed areas. This shows that investments in Macedonia were less efficient compared to Slovenia and Croatia. Political decisions dominated upon economic criteria and consequently the implemented investments not only didn't provide a positive effect but generated continuous losses. Firms like Feni in Kavadarac and Iron works in Skopje are built in areas populated by Macedonians areas instead of being built in Kicevo where the cost would be much lower. Inefficient investments in Macedonia during the socialist period were also realized in the textile industry, in all the villages of Struga and other cities inhabited by Macedonians in, textile departments were built and almost none in Albanian-inhabited villages. Not only in Macedonia but elsewhere in Yugoslavia, these investments slacked in Albanian-inhabited areas or capital investments were (Pollozhani, 2008, pg. 111) symbolic.

The first 15 years of transition (1990/05), North Macedonia was a low-investment economy. It has invested just over 1/6 of GDP for this period while Slovenia and Croatia have invested 1/5 of GDP (Pollozhani 2008, pg. 112). Such performances of capital investments resulted in a symbolic average annual growth of only 1.3% while Slovenia and Croatia grew at steady growth rates and are included as equal members of the EU.

2. Number and efficiency of investments in the economy of North Macedonia

Investments are the motive forces of economic development. Their volume and efficiency determine the dynamics of the level of growth in a national economy. When the means of production are used at full capacity, further growth of material goods and services is possible only with new capital investments. In order to have sustainable development rates an economy must invest according to the proper economic criteria. In other words, investments must be efficient, which will not only return the invested funds but also regenerate profits over long periods of time.

Investment performance and their efficiency in the economy of North Macedonia have been presented in the last decade. Since Albania is a neighboring country with a majority Albanian population and it is a state that expects to start EU, their capital investments and efficiency are also presented in this economy.

From the following table, we can see that in the last decade in the North Macedonian economy, on average every year in 100 denars only 23.6 are invested. If we look at the investments for each year in the last decade, their participation in GDP does not show significant oscillations. The lowest participation of fixed assets investment in GDP was marked in 2017 (22.0%) and the highest is in 2009 (24.9%).

Table 1. Investments in fixed assets and spending dynamics in the national economy of North Macedonia and Albania in the last decade

	North Macedonia			Albania		
	% Investment in fixed assets in GDP	Real GDP growth	Costs of the nation economy	% Investment in fixed assets in GDP	Real GDP growth	Costs of the nation economy
2008	24.5	5.5	4.4	33.9	3.4	10.0
2009	24.9	-0.4	-	32.7	3.7	8.8
2010	23.7	3.4	7.0	28.1	2.5	11.2
2011	23.6	2.3	10.0	29.7	1.4	21.2
2012	23.0	-0.5	-	26.5	1.0	28.5
2013	23.5	2.9	8.1	26.1	1.8	14.5
2014	23.5	3.6	6.5	24.2	2.6	8.5
2015	23.1	3.8	5.9	24.4	3.4	7.2
2016	23.4	2.0	11.7	24.4	3.7	6.6
2017	22.0	3.5	6.3	24.5	4.1	6.0
2018	23.2	3.7	6.3	24.2	4.4	5.5
2008/18	23.6	2.7	8.7	27.2	2.9	9.4

Source: <https://coema.com> GDP list by country, World Bank Group (US), indicators

In the Albanian economy, in the last decade, in 100 leks 27.2 are invested, which is a higher level compared to the economy of North Macedonia. In 2008, the Albanian economy invested more (33.9 in every 100 leks) and less in 2018 about 1/5 of GDP (24.2 &).

From the presentation of the average annual rates of GDP growth and the relative participation of fixed assets investments in GDP, we can also see the level of spending in a national economy, in this case in North Macedonia and Albania. The economy of North Macedonia in the last decade to achieve a growth rate of 1% had to invest 8.7% of GDP (23.6 :2.7). In the last decade, the highest national expenditures were those of 20018 and 2011 respectively, in which the Macedonian economy had to invest 11.7 and 10.0% of GDP, respectively, in order to achieve economic growth of 1%. 2011 was the year of the global crisis due to the recession of food shortages, while 2017 was the year of political and economic instability in the country due to the corrupt affairs of the prime minister and other state officials, which was confirmed by the leader of the opposition.

The Albanian economy in the same period had had higher national expenditures (9.4%) compared to the economy of North Macedonia. Albania had to invest 9.4% of GDP to achieve an average annual growth of 1%. In the Albanian economy, as can be seen from Table 1, there were

significant oscillations in national expenditures, Higher spending was recorded in 2012 and lower in 2018. In 2012, in order to achieve 1% economic growth Albania had to invest 28.5% of GDP and in 2018 to increase the economy by 1% had to invest 5.5% of GDP. 2012 was the year of global recession when the Albanian economy marked a symbolic growth rate of only 1.0%, whereas in 2018 the Albanian economy recorded the highest growth rate in the last decade of 4.4%

Recall that in addition to the size of the investments, their efficiency is also important. Investments in capital equipments should convert financial assets into increased assets, otherwise they generate losses. For example, the unreasonable investments of various statues of the Project Skopje 2014 in which around \$ 1 billion were invested have serious consequences for Macedonia's fragile economy, where every fifth resident lives in poverty, and there are high unemployment rates, hospitals and schools in miserable condition. It is absurd to invest so much money in an economy with so many economic and social problems. With the new developments, some of them (statues) collapsed and others were left without value.

The efficiency of fixed assets investments over the last decade in North Macedonia and Albania can be seen from the data presented in the table below.

Table 2. Investment efficiency in fixed assets in the national economy of North Macedonia and Albania in the last decade

	North Macedonia			Albania		
	Real GDP growth	% Investment in fixed assets in GDP	Investment efficiency	Real GDP growth	% Investment in fixed assets in GDP	Investment efficiency
2008	5.5	24.5	0.22	3.4	33.9	0.10
2009	-0.4	24.9	--0.02	3.7	32.7	0.11
2010	3.4	23.7	0.14	2.5	28.1	0.89
2011	2.3	23.6	0.89	1.4	29.7	0.05
2012	-0.5	23.0	-0.02	1.0	26.5	0.04
2013	2.9	23.5	0.12	1.8	26.1	0.07
2014	3.6	23.5	0.16	2.6	24.2	0.08
2015	3.8	23.1	0.09	3.4	24.4	0.14
2016	2.0	23.4	0.16	3.7	24.4	0.15
2017	3.5	22.0	0.16	4.1	24.5	0.17
2018	3.7	23.2	0.16	4.4	24.2	0.19
2008/18	2.7	23.6	0.11	2.9	27.2	0.11

Source: <https://coema.com> GDP by country, World Bank Group (US)

As we can see in the table above, are presented the efficiency coefficients in the economy of North Macedonia and Albania. The table data shows that both economies in the last decade (2008/2018) are characterized by extremely low investment efficiency in fixed assets (coefficient 0.11).

Such a low efficiency coefficient signals that in the two economies analyzed, investment projects did not provide the desired effects. North Macedonia's economy is burdened by failed investments of Skopje 2014 Project, (Pollozhani, 2015, pg.196) low level of realization of planned capital investments, low professional capacity for project preparation, high level of corruption etc. Macedonia needs genuine structural reforms. Albania's economy suffers from almost the same disadvantages regarding the efficiency of investment in fixed assets.

Both countries must fight corruption to begin negotiations with the EU. The international community is still unconvinced that Macedonia and Albania are fighting corruption at high levels.

2.1 Regression equation between investment and GDP

Parabolic regression represents the most representative way of correlation between two economic variables in the concrete case of investment in fixed assets and GDP, this form is determined based on the frequency distribution diagram.

The mathematical form of the parabolic regression equation (Ramil and Ahmet, 1995, pg. 200) can be expressed:

$$y = a + bx + cx^2$$

On the basis of the parabola equation we obtain three normal parabola regression equations, which are mathematically expressed:

$$\begin{aligned}\sum y &= na + b\sum x + C\sum x^2 \\ \sum xy &= a\sum x + b\sum x^2 + C\sum x^3 \\ \sum x^2y &= a\sum x^2 + b\sum x^3 + C\sum x^4\end{aligned}$$

By using the small square method, we obtain the parameters a, b and c which represent the form, intensity and direction of the investment in fixed assets and GDP. The parabolic equation of regression is established based on the concrete economic data of Macedonia for investments and GDP in the last decade 2008/2018. GDP is taken as the independent variable (X) and investment in fixed assets as the dependent variable (Y)

Table 3. Interdependence between GDP and fixed assets investment in North Macedonia
For the last decade, (at (000.0000 \$))

Year	GDP	Fixed assets investment
2008	9.910	2.428
2009	9.400	2.341
2010	9.400	2.228
2011	10.490	2.476
2012	9.749	2.248
2013	10.810	2.540

2014	11.310	2.659
2015	10.080	2.310
2016	10.490	2.455
2017	10.878	2.393
2018	11.280	2.594

Source: <https://coema.com> GDP list by country, World Bank Group (US),

Graphic presentation of the preliminary table nr. 3.

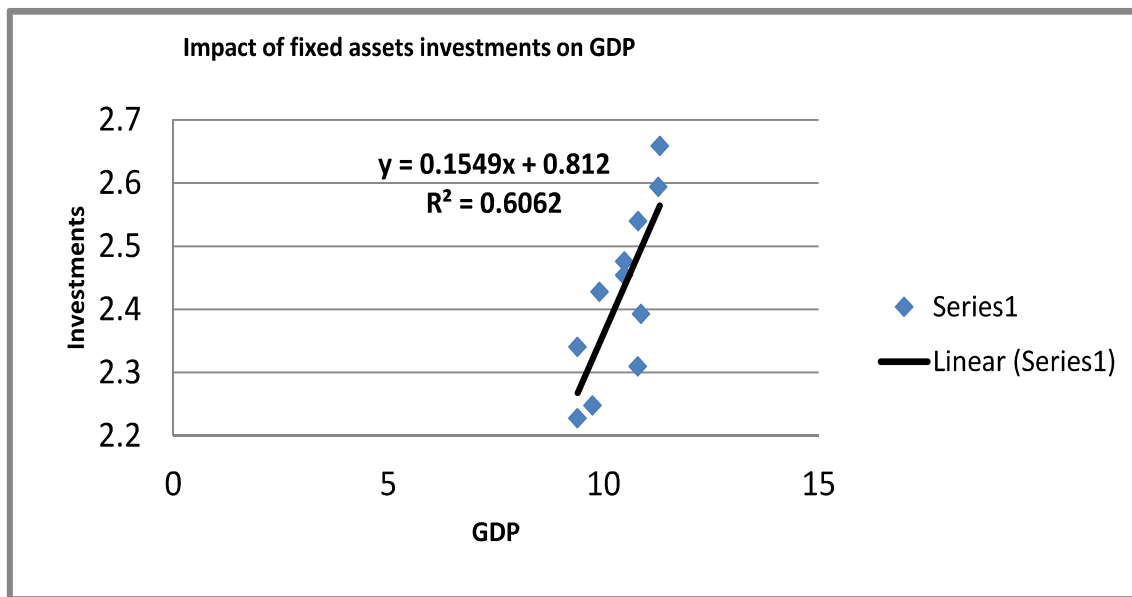


Figure 3. <https://coema.com> GDP list by country, World Bank Group (US), production of data by the author

As we can see the linear regression equation between the investment of fixed assets and GDP in the economy of North Macedonia in the last decade, shows that each unit of investment growth is also associated with GDP growth of 0.812 (ratio 1: 0.812), which means that investment in fixed assets is higher than GDP.

Table 4. The econometric results of the interdependence between investments in fixed assets and GDP in the economy of North Macedonia in the last decade 2008/2018

Model	r	R ²	R ² modified	Standard error	-
1	0.7786	0.6062	0.5624	0.0915	-
Test Anova					
Model	the sum of squares	Df	the mean square	F	significance
Regression	0.1160	1	0.11605	13.8552	0.004754

Residual	0.0753	9	0.0084	-	-
Total	0.1914	10	-	-	-
Coefficients					
Model	standard coefficient B	Standard error	non-standard. coefficient	t	Significance coefficient
GDP	0.812	0.434		1.8704	0.000
Investment	0.1549	0.0416		3.7720.	0.000

Source: <https://coema.com> GDP list by country, World Bank Group (US), production of data by the author

The correlation coefficient $R = 0.7786$ indicates that there has been a real correlation between the investment of fixed assets and GDP in the North Macedonian economy in the last decade, which is also confirmed by the coefficient of determination $R^2 = 0.6062$ which shows that Investing in Macedonia in the analyzed decade is 60.6% of GDP and about 40% by other factors. From the presentations of the detailed values we can see that the sigma value is 0.000 with the independent variable and being less than the allowed value of 0.05 we can verify the considered relation between Fixed Capital Investments and GDP in the North Macedonian economy. (high reliability coefficient of 95%).

3. International economic growth

Recent years have been characterized by accelerated economic growth of developed countries as a result of investment activities and expansion of private consumption. The EU economy grew at a rate of over 2% while Germany's strongest economy in the last two years averaged about 2%. The EU economies grew under conditions of price stability, with a low inflation rate. It is expected that the EU will register steady growth in the coming years. Sustainable growth will rely on private investment, increased exports, increased labor productivity and expanded productive capacity. The stable financial market is also another important support of EU countries' economic growth. The EU is expected to grow by 1.8% by 2020 and Germany will grow by 1.4% this year (Government of the Republic of Macedonia, 2018/20, pg. 5). Such expected advances in the EU economy can be inhibited by the presence of a strong influential economy. For example, forecasts of the recession of the German economy in the second quarter of 2019 may hold back economic growth in other countries.

3.1 Capital investments and economic performance in Macedonia in the medium run

The first quarter 2017 year due to unstable political stability GDP fell by 0.9% compared to the same quarter of the previous year. Gross investment contracted by 9.9% compared to the previous quarter. Although public sector consumption increased by 1.3% negative GDP growth was inevitable because the sector that intensified growth was the construction sector which fell by 11.3% compared to the previous year. In 2018 stable policy restored investor confidence and expanded private investment. Increase in workers' earnings accompanied with low inflation rates boosted private consumption. The improvement of the domestic political and economic

environment as well as the growth of EU economies influenced export growth, productive capacity expansion. Such development trends will enable the Macedonian economy to increase to 4% in 2020. Job creation, minimum wage increases, social security measures, consumer credit facilities will boost private consumption. In the next two years (2019 and 2020) Gross Investment is expected to grow at an annual growth rate of 4.4%. The public sector, as well as investments from domestic and foreign firms, will contribute to the growth of investments. The political stability and improvement of the business climate are expected to give positive signals to existing investors. The export of material goods and services is expected to grow by 8% (Government of the Republic of Macedonia, 2018/20, pg. 10). Positive effects on exports are expected to have the prices of unprocessed metals. Growth will intensify job creation, driven by government programs to help domestic and foreign firms. Economic growth will increase aggregate demand which will require more labor. This will result in the reduction of unemployment rates (in 2020 the unemployment rate in Macedonia is expected to be 19.5%). The balance of payments deficit is expected to decrease as a result of the reduction of the trade deficit and the stable level of private transfers. The deficit will also be financed by foreign direct investment income which keeps foreign exchange reserves at stable levels. Mandatory reserves amid a balance of payments deficit run the risk of being unstable, but remittances (around \$ 2 billion) a year keeps their levels stable. The stable exchange rate will remain in the future because remittances from migrants are the most loyal guarantee.

In the medium-term macroeconomic objectives, fiscal policy will play an important role. It must maintain macroeconomic stability by opening new jobs and increasing competition in the international market. Priority is to improve the business climate, support local entities, in particular small and medium-sized firms, and support the investment consumption of infrastructure projects. Fiscal discipline and transparency regarding public spending should be improved. Fiscal policy predicts that by 2020 the budget deficit will reach 2.3% of GDP. Infrastructure investments in the medium term will play an important role in development trends. The Krivogashtani - Obrshani - Vogjani, Kocani - Delcevo roads will be financed by the World Bank. Then there are the KrivoPalanka - Rankovce and Miladinovci - Shtip road construction projects. It is currently being worked on the Kicevo-Ohrid highway financed by the China Export-Import Bank. In the near future, the Skopje - Blace road (Government of the Republic of Macedonia, 2019/21, pg. 15). is planned, which will bring positive economic, social and ecological effects as well as trade facilities between the entities of Kosovo and North Macedonia. As can be seen from the infrastructure projects mentioned above, public investment is mainly oriented to Eastern Macedonia where the Macedonian population is overwhelmingly absolute. Favoritism has gone so far that the Kichevo - Ohrid highway was supposed to be Kichevo - Struga due to the connection of North Macedonia with Albania. Such discrimination has been imposed by the ruling VMRO nationalist party in the last ten years. Not a small part of the blame lies with the government partner, the Albanian political entity who did not insist on genuine investment in areas where the Albanian population is majority or has a significant participation of the general population. If you look at the parts of Skopje where the Albanian population is majority resembles the backward regions of Africa, whereas in the areas where the Macedonian population is concentrated it resembles to western European countries. Even investments in rail transport are orientated only in the eastern parts of North Macedonia, in particular with Bulgaria.

The railway network in western Macedonia was built as far as Kicevo. Although Durres is the closest port to North Macedonia so far, there has been no project to link Albania with North Macedonia by rail.

The project for harmonized economic and social development should be implemented with the strengthened investments of the Albanian municipalities. The sports halls that are foreseen to continue to be built should be more concentrated in the secondary and primary schools in the municipalities where the Albanian population is majority, because they were previously discriminated against.

Construction of the national gasification system Stip - Negotin - Bitola and Skopje - Tetovo - Gostivar financed by Deutsche Bank and Erste Group will provide cheaper heat and cleaner ecological environment.

Investments will also be made in local-level governance in utilities projects financially supported by the World Bank. Municipalities are allowed under the legal framework to borrow investments to finance investments such as water supply, solid waste management and other investments that can generate income. Additional support for these projects comes from IPA funds, which municipalities can use in the form of grants in 2019.

4. Final Reviews

The results of the research based on the analysis of the investment of fixed assets and GDP in the Macedonian economy enable us to present in brief points of the final reviews. We present them as follows:

The economy of North Macedonia has had low investment efficiency in both the pre-transition and transition periods. In the first period it invested 1/3 of GDP and was separated from Yugoslavia as one of the most underdeveloped areas of the federation, while in the second period (last decade) it invested much less (over 1/6 of GDP), and is one of the most underdeveloped states in the Balkans. In other words, investment in fixed assets did not produce the expected effects of intensifying the economy. Albania also has low investment efficiency in the transition period (the efficiency coefficient in the two economies investigated is 0.11).

National spending in the last decade in North Macedonia is 8.7% while in the Albanian economy is 9.4%. In other words, in order to achieve a growth rate of 1% in the last decade, the Macedonian economy had to invest 8.7% of GDP and 9.4% of GDP in the Albanian economy.

Investments and GDP in the last decade in North Macedonia have had a significant correlation ($R = 0.7786$). It also confirms the coefficient of determination $R^2 = 0.6062$ which at the same time shows that investment in Macedonia in the analyzed decade 60.6% is determined by GDP and about 40% by other factors. From the presentations of the detailed values, we can see that the sigma value is 0.000 that considered relation between Fixed Capital Investments and GDP in the North Macedonian economy (high reliability coefficient of 95%).

The economic development of Macedonia and other European countries is expected to be stable because this is supported by the growth expectations of European countries with an average annual growth rate of over 2% and the German economy with an average annual growth rate of approximately 2%.

Macedonia's economic development in the north is expected to intensify and by 2020 it will reach an average annual growth rate of 4%. Such development is expected to be supported by investment in fixed assets and increased private consumption, supported by new employment, revenue growth, foreign direct investment, strengthening the competitiveness of local entities in the international arena, productivity growth, war against corruption etc.

The construction sector is expected to play a very important role in economic development, as they are working on many roads mainly in Eastern Macedonia and in the western part of Ohrid.

Investments at the local level for drinking water and other investments that will generate WB financed revenues, which under the legal rules municipalities can lend, will further intensify economic development.

Continuing to build sports halls in high schools and later in primary schools will also stimulate economic development.

Investments in fixed assets to alleviate long-term discrimination of Albanians should be directed to North Macedonia in the western part.

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