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INVESTMENT AND GROWTH INTERRELATIONS TRANSFORMATION (BY THE EXAMPLE OF SLOVAKIA)

Abstract. Investments in general are that part of the gross domestic product of a country, which is consumed during its creation, but is saved to be invested in the economy effectively and deliver a reasonable profit. It is undeniable that through investment economic growth could be affected. In the past, our economic theory and practice closely understood the investment only as cash for reproduction of fixed capital. Although investments in fixed capital remain the most important form of investment, but their understanding of the new conditions extended to other forms.
The new concept includes investment funds inserted into the current capital stock to inputs and semi-finished products. Large area is invested in securities, such equities, and bonds. The new concept of investment are also important areas of production, circulation and consumption, i.e. investment process is understood and the development of material and technical base of education, health and other sectors so tertiary sector, but also a reproduction of the material-technical base of social (government) consumption. Finally, the investment process applies in the state budget. In recent decades, the policy applies deficits in the state budget, in which spending is covered by state government bonds, which the state must pay interest and after some time they redeem, which means that the budget deficit is covered investments. The aim of science is the issue of state investment, the theoretical results. Attention focuses on the analysis of the investment process in the Slovak economy through indicator of gross fixed capital formation and examines the dependencies between its creation and economic growth.
Keywords: gross fixed capital; investments; economy growth; development of gross fixed capital formation; net rate of investments; gross rate of investments.
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ТРАНСФОРМАЦИЯ ВЗАИМОСВЯЗИ ИНВЕСТИЦИОННЫХ ПРОЦЕССОВ И ЭКОНОМИЧЕСКОГО РОСТА (НА ПРИМЕРЕ СЛОВАКИИ)

Аннотация. Инвестиции являются частью валового национального продукта страны, которые используются в процессе его создания, но накапливаются для эффективного вложения в экономику и получения приемлемой прибыли. Очевидно, что благодаря инвестициям можно обеспечить экономический рост страны. Вместе с тем в настоящее время роль инвестиционного процесса изменилась. Новая концепция инвестирования распространяется на такие важные сферы, как производство, обращение и потребление, в том числе государственное. Автор сосредотачивает внимание на анализе особенностей инвестиционного процесса в словацкой экономике через показатель валового накопления основного капитала и исследует корреляционную связь между инвестициями, ВВП и экономическим ростом.
Ключевые слова: валовое накопление основного капитала, инвестиции, экономический рост, нетто-ставка инвестиций, брутто-ставка инвестиций.

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ТРАНСФОРМАЦІЯ ВЗАЄМОЗВ'ЯЗКУ ІНВЕСТИЦІЙНИХ ПРОЦЕСІВ ТА ЕКОНОМІЧНОГО РОСТУ (НА ПРИКЛАДІ СЛОВАЧЧИНИ)

Анотація. Інвестиції є складовою валового національного продукту країни, що використовуються у процесі його створення, але нагромаджуються для ефективного вкладення в економіку й одержання прийнятного прибутку. Очевидно, що завдяки інвестиціям можна забезпечити економічний ріст країни. Водночас, нині роль інвестиційного процесу змінилася. Нова концепція інвестування поширюється на такі важливі сфери, як виробництво, обіг і споживання, у тому числі державне. Автор зосереджує увагу на аналізі особливостей інвестиційного процесу в словацькій економіці через показник валового нагромадження основного капіталу та досліджує кореляційний зв'язок між інвестиціями, ВВП і економічним ростом.
Ключові слова: валове нагромадження основного капіталу, інвестиції, економічний ріст, нетто-ставка інвестицій, брутто-ставка інвестицій.

Introduction. Investments in general, are that part of the gross domestic product of a country, which is consumed during its creation, but is saved to be invested in the economy effectively and deliver a reasonable profit. It is undeniable that through investment can affect economic growth. In the past, our economic theory and practice closely understand the investment, just like cash for reproduction of fixed capital. Although investment in fixed capital remain the most important form of investment, but their understanding of the new conditions extended to other forms.

Brief Literature Overview. Investment determines the dynamics of the economy, long-term economic growth and overall economic performance. They are therefore considered as the most important factor for the development of society. Experience shows that a vibrant economy generally invests a greater portion of its gross domestic product as a slowly growing economy (Moravcik, 2000). Investing in the broadest sense several authors (Sharpe, 1990; Jorgenson, 1967) understood as a sacrifice today in order to obtain values for some (possibly indefinite) future value. Investment theory and macroeconomics understood term investments such as the purchase of new capital in the economy, rather than trading with existing capital between two individuals (Capo, 1990). In the past, our economic theory and practice closely understand the investment, just like cash for reproduction of fixed capital. Although investment in fixed capital remain the most important form of

investment, but their understanding of the new conditions extended to other forms (Tuharska, 1996). A new concept of investments includes cash inserted into the current capital stock to inputs, semi-finished and finished products. Large area is invested in securities like such equities and the bonds. The new concept of investment is also important areas of production, circulation and consumption.

In connection with the investment, it is necessary to monitor the savings. Savings and investments perceived as classical economics identical phenomena. Saving is a key macroeconomic variable that affects the range of investments and long-term economic growth.

In Keynes «Treatise on money» (1930) there are several theses on savings and investments. One of them is the thesis of the independence of savings and investments as savings and investments shape the others whose motivation may not be the same, and it does not happen, which leads to the equality of savings and investment. Separate decision on the savings to investment decisions led Keynes to the conclusion that the interest rate cannot be used as a self-mechanism that strikes a balance savings and investment. Keynes crucial role attributed the marginal efficiency of capital. Even very low interest rates lead to investment in the absence of the prospect of profit. He argued that the scope of the investment is entrepreneurs to invest; the stimuli are dependent on interest rates and border capital efficiency. Rate of interest considered as the main cause of problems. The volume of investment depends on the relationship between the interest rate and the marginal efficiency of capital. While the high accumulation of capital is shrinking space for the implementation of investment, low capital accumulation may be a small change of investment lead to a significant change in the product, employment and pensions. J. M. Keynes (1936) defines savings as excess income over expenditure on consumption, the total amount of savings is the result of cumulative action of all individual savers and the amount of investment is the result of the activities of all businesses. Both values must be equal, because they are surplus income over consumption. In his view, the implementation of investment requires either reduce consumption or increase income. Keynes (1936) assumed that the total income and total savings in the economy are the result of a free decision of individuals whether they consume or invest.

F. A. von Hayek (1939), an important representative neo-Austrian school of thought not only voluntary, but also of forced savings. Post-Keynesians accept the view of the internal instability of the economy, the source of instability is private investment, particularly in terms of continuously changing expectations in conditions of uncertainty. Developed economic theory of the golden rule of accumulation, the theory of income distribution and its link to capital accumulation and economic growth. The best known in economic theory is in this context the idea of A. Smith (1958) which documented the concept of saving and investment as the identity, and the idea that savings are spending because they are invested, and thus constitute a capital expenditure. Saving is possible only if part of household income, respectively trader consumed and the one who could save the one who is rich. Like A. Smith (1958) and D. Riccardo (1956) argued that it may only invest its profits capitalists. The essence of capitalism in his work criticized K. Marx as a supporter of socialism, who in his work deals with the fact that their activity causes capitalists, increasing production, reducing consumption. According to him, the capitalist economic crises are always crises of over-production of goods and the crisis will increase the degree of overproduction and reduce the amount of capital, so that the average profit rate increases, which stimulates investment, increasing employment, value of production and national income, and the economy is entering a new cycle of recovery, prosperity, overheating and further crisis.

Boosting static theory J. M. Keynes, it marked a significant contribution to the theory of investment. Dynamic expression of the equation $S = I$ is known in English economist R. F. Harrod (1948) $GC = s$. R. F. Harrod described the pace of growth, which implies equality of savings and investment, as guaran-teed growth. Investments are strategic variable for U.S. economist E. Domar (1966) dealing with the issue of determining the steady growth of investment, to ensure capacity utilization at full employment. According to J. R. Hicks (1967) as a function of retirement savings, that change does not affect the interest rate. In contrast, investments are subject to interest rate, the terms of indirect dependency.

An interesting view on the formation and transformation of savings into investments found in the administration of the French economist P. Salina (1993). According to P. Salina savings and investment are a function of interest rates, but are influenced by the time preferences of microeconomic entities and their capabilities. Significant benefits for authors, who developed the neoclassical model of economic growth (Solow, 1964), based on the production function expressing the dependence of the volume of production of each of the factors can be identified that reflect the impact of technological progress, as embodied and non-embodies, the volume of production and the fact that both forms of technical progress, understood as a result of the accumulation of capital.

A representative of the neoclassical economics Marshall, assumed equal aggregate savings and aggregate investment. Similarly, according to a representative of the school of Lausanne L. Walras, which saw the savings and investment as a real value and equality of savings and investment, according to him, was identical (Walras, 1977). Investments are therefore always equal savings, since they are just another expression of savings. Investment represents the demand for capital goods. If investments are higher than the total cost of production of capital goods, the prices of capital goods increases the costs, which in turn leads to an increase in production of capital goods, until equity investment and total cost. L. Walras stressed that every possible interest rate, the amount that individuals arranged, as well as the amount to be invested in new capital values. The interest rate is variable. High interest rates stimulate growth of savings and investment decreases and vice versa, a low interest rate stimulates investment but discourages the formation of savings. As increasing demand for investment leads to growth rate and the growth rate then in turn leads to an increase in savings, long term savings can be higher or lower than the investment. It is the interest rate, which provides an automatic balance of savings and investments (Rozborilova, 2005).

The Chicago School officials in this regard are noted F. Knight (1935), who is dealing with issues of risk and uncertainty in relation to business profits. Critics stimulating investment demand through low interest rate is M. Friedman (1997), which does not encourage such a long time possible. Low interest rates stimulate investment, but the growing demand for loans in turn leads to an increase in interest rates.

The issue of savings and investments, as well as the transformation of savings into investments is of interest to many economists. They pay particular attention to facilitate identifying the determinants that determine the size and structure associated with the process of transformation of savings into investments and consequently the process of gross capital formation. In the following part of the paper approaching the issue of investment, savings, and their interdependence for example, gross fixed capital formation in the Slovak economy.

Purpose. The aim of science article is the issue of state investment, the theoretical results. Attention focuses on the analysis of the investment process in the Slovak economy through indicator gross fixed capital formation and examines the dependencies between its creation and economic growth.

Results. The result of the interdependence of investment and savings in the economy is the gross capital formation. In the system of national accounts is one of the components of gross domestic product (GDP), gross capital formation, consisting of gross fixed capital formation (GFCF) and inventories. Gross fixed capital formation is the acquisition of fixed capital assets, that is, goods which are expected to be used in production for several years. It is possible to acquire a purchase of assets, the construction of these assets by producers for their own use. The share of investment in fixed assets to gross

domestic product is an important indicator for future economic development, although not all species contribute to their future economic growth in the same way. The theory of national accounts that investment rate is the share of expenditure on gross fixed capital formation in the volume of gross disposable income in the economy. However, the customary ratio of investment to gross domestic product, used by the OECD is working with the concept of «investment» as identical with the concept of «gross fixed capital formation», divided into two basic components of fixed assets – homes and machinery. The ratio of expenditure on gross fixed capital formation to gross domestic product refers to the degree of investment. The Slovak economy during the transition processes investment rate at 40%. Such a high level of investment that the Slovak economy reached is unusual in international comparison. At present, the Slovak economy annually spend an average of nearly one-third of the formed product investments, but economic growth as measured by gross domestic product to such a volume of investments does not. The very fact high levels of investments can be evaluated positively, as economies in transition requires a large amount of investment given the need for renovation and modernization of outdated machinery, technology, neglected infrastructure, not least in view of the need to restructure and increase its competitiveness in the national and international level. If, however, a high rate of investment should produce only positive results for economic development must be accompanied by a corresponding rate of domestic savings and efficient investment allocation mechanism. In violation of the conditions to maintain internal equilibrium in the economy, the high level of investments undermines the macroeconomic balance of the economy. The nature of economic growth in Slovakia's economy is particularly sensitive to the structure of aggregate demand. This is primarily due to the size, performance and openness of the national economy. Economic growth in Slovakia has been influenced by the demand widely. Data on economic development, we can say that every year there are other situations in the forces affecting the national economy demand. An analysis of gross fixed capital formation by sector, based on the data in Figure 1, has the highest fixed capital for-
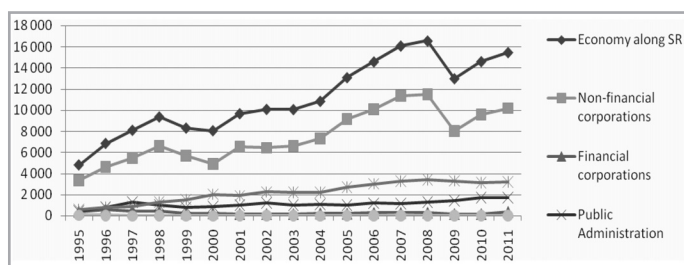
Note: Method ESNU 95, till 2005 according year lunation accounts
Fig. 1: **GFCF by sector** (in EUR million current prices)
Source: Own graph

mation since 1995 in the sector non-financial corporations, where the indicator value of GFCF in 1995 as EUR 3 311.62 million. The reason for high fixed capital formation in this sector is participation of foreign capital. Comparison of the amount of fixed capital formation is interesting to compare this to the household sector, which surpassed his work in the financial institutions and the public sector. Gross fixed capital formation in the household was in 1995, although an upward trend in 1996 and 1997, despite the positive developments, the higher fixed capital formation in the public administration, in 1998, ahead of fixed capital formation in the domestic fixed capital formation in the public sector administration. Later, however, fixed capital formation in the public administration lags far as fixed capital formation in the household sector. Gross fixed capital formation in the financial corporations in 1995 is the lowest value in 2003, the value of the indicator develops erratically and in 2009 the value of the indicator reached the value of EUR 157.60 million, with a 1.27% share of total fixed capital formation in 2009. In 2010, we recorded an increase in

gross fixed capital formation by sector at EUR 14 616 million and a maximum of 2011 capital expenditures were directed to non-financial corporations, and 62%. Investments accounted for 20.2% of households, government 13.6%, 3.9% financial corporations and non-profit institutions serving households 0.3% means. In terms of individual sectors show an increase in investment activity in all sectors. The financial corporations increased volume of investment of 166.1% in the non-financial corporations by 8.4%, non-profit institutions serving households by 1.9% in the public sector by 1.6% and 1.4% of households.

At the beginning of the scientific article we reported that there is a correlation between investment and gross domestic product. Based on the observed data, we calculated the proportions of the various parameters affecting the level of the share of investment in GDP. In Figure 2, we see trends share of gross investment and fixed investment to total product of the country.

Compared to 2008, this was a decrease of 9%. A similar trend has been noticed in relation to the rate of fixed investment. The rate of fixed investment has reached its limit in 1998 and to 36%, that is, gross fixed capital formation accounted for more than one-third of GDP. The average investment rate in OECD countries ranges from 20.6% at up to 22% (the lowest level reached in 1995 and 2003 (20.6%), the highest value achieved in 2000's (22.0%). It is very difficult clearly confirm that the high rate of investment for the economy is good or inappropriate.

From one perspective, it is clear that the high rate of investment is a positive phenomenon. It's true, but suitable for the economy at a time when it is necessary to carry out the restructuring, hence the need invest, because the assumption of economic growth in the Slovak economy period of transition. In Figure 3 shows the comparison of gross fixed capital formation in the European Union and the Slovak Republic for the period 2000-2011. Figure 4 shows the comparison of net investment rates in the European Union and the Slovak Republic. Using statistical modelling are based on the data made available estimate of the development path of the net investment and the degree of gross investments in Slovakia, while we calculated the trend curve pointed net investment by the equation $y = 0.0017 x^4 - 0.086 x^3 + x^2 1.3026 - 7.4074 x + 39.997$. The rate of net investment are falling slightly, polynomial curves oscillate around Grade 2.

The suggested development for the next two years is practically in line with expectations of the National Bank of the Slovak Republic as well as other renowned economists, and do not reflect the impact of legislative changes adopted by the Government at the end of 2012. These changes can affect the evolution of the gross and net rates of investment, and these may be decreasing.

To the same extent the increased investment is necessary to encourage potential investors at lower interest rates. To maintain a balance must therefore income and interest rates move in reverse. To confirm the dependence of the calculation, we used several models and accurately on the basis of a linear model appears to be the result of the equation $y = 2892.2 + 0.1971$, $R^2 = 0.7527$ and a polynomial model with the equation $y = 8E - 06x^2 - 0,4403x + 15089$, $R^2 = 0.7851$. Based on the two equations confirmed the strong relationship between the evolution of GDP and fixed capital formation.
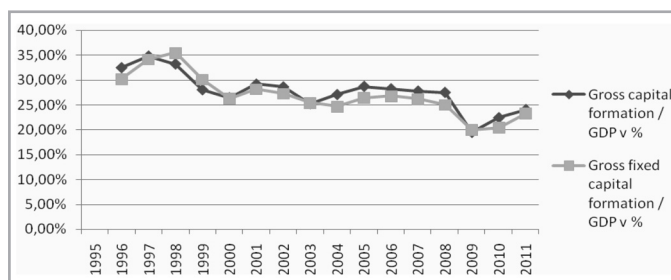

Fig. 2: **Development of gross fixed investment rate in the economy of the Slovak Republic between 1995 and 2011** (in %)
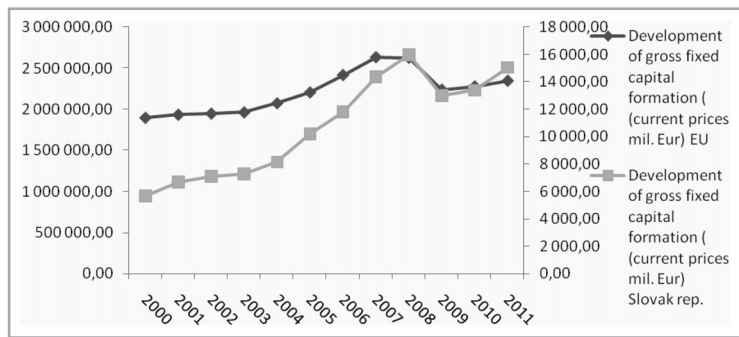*Source:* Own calculation

Fig. 3: **Comparison of GFCF in the EU-27 and Slovak Republic 2000-2011**
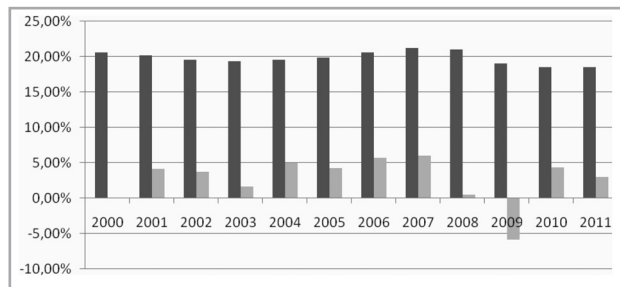(in EUR million)
Source: Own calculation

Fig. 4: **Comparison of net investment rates
in the EU-27 and Slovak Republic 2000-2011**
Source: Own calculation

Figure 5 shows the progress curves of gross fixed capital formation and GDP growth curves. Replicate each other, which also confirmed the relationship between gross fixed capital formation and gross domestic product.
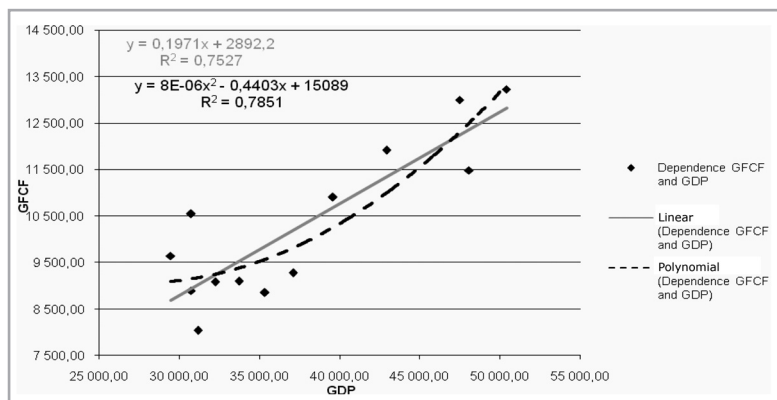

Fig. 5: **Dependence of GDP and GFCF**
Source: Own calculations

Conclusions

1. In conclusion we can say that economic growth is conditioned by gross capital formation height level of investment depends on the level of economic development, and also from the fact that in industry investment flow. The high percentages, however, does not mean, that the economy is in good shape. Rather, it speaks of inefficient spending of funds, respectively

financing investment projects with long-term return. The problem is also finance investment projects in sectors whose output is low added value.

2. The basic objective of economic policy every developed market economy is the economic growth generate investment and non-investment processes. Based on the correlation analysis, with which we have analysed the dependence of gross fixed capital formation as a component of gross domestic product, we found a strong correlation between GDP and GFCF.

3. The high economic growth achieved by the Slovak economy in the years 1995-1996 started early hint at the obstacles and to maintain its momentum were required considerable investment, which surge in combination with other factors, resulted in the overheating of the economy in 1996. Dynamic component of domestic demand gives 34% of the gross fixed capital formation.

4. Gross fixed capital formation is dependent, especially in economies with lower growth, respectively lower economic level and the inflow of foreign direct investment, but what we do not want to say that these investments are also beneficial for the advanced economies, because the highest volume flow of these investments, particularly among advanced economies.

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