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GROWTH OF FIXED ASSETS IN THE ECONOMY VS. LABOUR PRODUCTIVITY

Summary: Modern views define capital as the ability to perform labour. These two terms: capital and labour, are intertwined. Capital is an abstract and potential category, while work, however, represents the transfer of capital to the objects of labour that create its value. In an economy saturated with assets, labour is highly productive, which increase the level of welfare. This article analyses the growth of fixed assets in the economy against labour productivity and welfare level. Moreover, it presents the quandaries of economic growth acceleration, analysing the historical position of Poland.

Keywords: capital, work, fixed assets, increase in labour productivity, economic growth.

Introduction

The purpose of this study is to examine the influence of increases in fixed assets on building economic potential and improving economic competitiveness. The study demonstrates the role of fixed assets in influencing the increase in labour productivity. The research process uses the econometric function of economic activity, which describes the value of GDP taking into consideration important variables, in particular: labour productivity, costs of labour and value of assets. This function creates the possibility of the natural economic balance stipulating the influence of assets on labour productivity, GDP, employment and welfare level.

By attempting to explain the antinomy that equipment in modern assets results in the loss of jobs, it can be observed that the increase in the mass and value of assets requires constant contributions for their maintenance (highways,

bridges, overpasses, and railways). The measurement of GDP using the cost method indicates the influence of the amortisation amount; that is, an increase in fixed assets directly influences, other than labour, the increase in GDP. Moreover, maintenance of the value of assets requires a constant inflow of capital in the form of the processes of labour, which stimulates an increase in employment. Additionally, high labour productivity in prosperous states is connected with an achieved welfare level, which in turn results in the extension of life expectancy and increase in life standard. This phenomenon also creates a demand for labour and creates new jobs.

1. Dilemmas in economic growth acceleration

Lost time cannot be recovered, and the same widespread statement also pertains to economic growth. Poland, from the time of the industrial revolution until 1989, underwent many difficult transformations, over which the state had very little control. The period of partitions, the First and the Second World War and finally being a member of the Eastern Bloc had to and does influence the present state of the economy, as well as the social and economic attitudes of people living in Poland. During that time highly developed countries worked on obtaining their present success, and it would be unreasonable to expect that 25 years of slow market economic change has allowed Poland to match that level. For example, after the reunification of Germany, despite spending great sums of money and introducing many reforms, the state is still divided into the rich and well-developed west and the poor and less developed east.

There is a saying that: "A chance not taken hurts more than a mistake made". Opening up to the "west", sometimes blindly, conceals the opportunities for economic growth that are offered by the "east". A good example is the construction of the second pipeline: a lack of economic thinking, a dislike of Russia and its power, together with a general distrust in Poland have excluded Poland from that and other investments. This attitude is still nourished, which can be seen by comparing the politics of Poland and Europe, and especially Germany, towards Russia. Excluding such an important business partner has negative effect for the one who gives up such an opportunity.

The last transformation which Poland underwent, this time a conscious one, conducted under the majesty of law and in line with the will of the people, has led to imprudent privatisation, triggering the bankruptcy of profitable and strategic enterprises, and the selling of property, frequently to foreign investors. Nu-

merous examples of pathological economic choices and wasting of resources are described by W. Kieżun, defining that period as the “capitalistic neo-colonisation of Poland” [2012, pp. 133-141]. This is the recent history of Poland and we should take lessons from the past. Caring for capital, and thus the potential for the economic growth of the country and technical devices of labour are the driving wheel for development of the entire economy. This was observed by A. Smith, who wrote: “A great stock though with small profits, generally increases faster than a small stock with great profits” [1954, pp. 121]. The loss and dissipation of capital cannot compensate for the inflow of foreign capital. The assumption that foreign investments contributes to economic growth is illusory because the foreign inflow of capital is connected with even more outflow thereof [Śliwiński, 2004, p. 25]. This phenomenon also corresponds with using a low-paid and well-qualified workforce. To confirm that fact many examples can be given, including the location of corporations and clearing centres in Poland. What is more, the condition to set up new foreign industrial investments is meeting many requests made by foreign investors (for example, a request for a long period of tax exemptions, or obtaining preferential terms and conditions in agreements). At the same time, domestic entrepreneurs are burdened with even greater amounts of taxes and obstacles with a concurrent increase in employee wages.

It can be said that carefree or intentional introduction of foreign capital and irretrievable loss of property puts Poland in the second row, with no opportunity to improve its position in the game of the best economy. Polish entrepreneurship and diligence is known all over the world, but it needs freedom to act not be limited by the law and excessive fiscalisation. J.B. Say, a French representative of classical economy, warns against “inaccurate administration” which strikes a blow to the people by depriving them of the means to survive. By imposing new taxes, it forces one to reduce one’s capital, at the same time destroying the sources of production. J.B. Say says that the faulty state is the bane of humanity and compares it to the plagues which in this case are only torment [1960].

By researching dilemmas of economic growth, the role of fixed assets was juxtaposed with the share of total labour costs. Profit-oriented foreign entities clearly show the benefits of investing in the technical devices of labour and the reduction of workforce costs. These factors simply translate into an increase in the productivity and competitiveness of an enterprise. The calculations in Table 1 confirm the thesis that in countries with a high economic growth level, therefore high productivity of labour, the share of fixed assets increases and amounts to about 70% while the share of labour costs reduces to the level of 30%.

Table 1. Percentage share of labour costs and fixed assets in GDP for 2013 in selected countries

Country	GDP, million USD for 2013	Productivity of labour Q	Share of labour income (W) in GDP/Q	Percentage share of labour (W)	Share of fixed assets (AT) GDP – W	Percentage share of fixed assets (AT)
Switzerland	685	3,830	179	0,26	506	0,74
USA	16768	3,530	4750	0,28	12018	0,72
Germany	3730	3,376	1105	0,30	2625	0,70
Japan	4920	3,307	1488	0,30	3432	0,70
UK	2678	3,254	823	0,31	1855	0,69
Czechia	280	2,287	122	0,44	158	0,56
Chiny	9491	1,967	4825	0,51	4666	0,49
Poland	526	1,953	269	0,51	257	0,49
Ukraine	183	1,610	114	0,62	69	0,38

Source: On the basis of [World Bank data, 2015].

States and business entities that do not apply nor understand the rule are, therefore, at a disadvantage.

2. Labour productivity index Q

It is known that gross domestic product is a sum of all the goods and end services produced in a given country in a given year. An increase in that unit gives evidence of the economic growth of a given country. Economic growth is directly and indirectly stimulated by various units, including the general productivity of factors of production, as was emphasized by E. Soszyńska [2013, p. 15]. The traditional category of labour productivity is measured by a quotient of real GDP and the number of people working. A slightly different labour productivity index was set by M. Dobija [2008b], who defined Q as a quotient of real GDP and the full costs of remuneration. At the same time, it is also the production value per one zloty of labour costs. Q is a function of several variables, namely the technical devices of labour, turnover of assets, profitability of assets and the level of remuneration, which is indicated by the formula used in the analytical

production function [Dobija, 2008a, 2008b]. The author presents a theoretical analysis and calculation of the Q index, hence showing the high stability of that index (Table 2). The labour productivity index level provides a real image of the micro and macroeconomic situation.

Table 2. Q index value panel for a group of selected countries in 2006-2013

Country/Year	2006	2007	2008	2009	2010	2011	2012	2013
Switzerland	3,534	3,645	3,748	3,650	3,509	3,498	3,850	3,830
USA	3,458	3,470	3,560	3,500	3,452	3,648	3,620	3,530
Germany	3,305	3,380	3,389	3,276	3,169	3,158	3,350	3,376
Japan	3,069	3,093	3,186	3,433	3,279	3,448	3,329	3,307
UK	3,204	3,517	3,444	3,082	3,095	3,216	3,279	3,254
Czechia	1,873	2,204	2,355	2,210	2,134	2,356	2,252	2,287
Chiny	1,415	1,512	1,685	1,762	1,768	1,777	1,886	1,967
Poland	1,881	1,992	1,854	1,869	1,903	1,935	1,958	1,953
Ukraine	1,800	1,820	1,790	1,700	1,710	1,760	1,64	1,610

Source: [Dobija, 2013; Renkas, 2014].

When analysing the labour productivity index, its stability needs to be shown. Labour productivity (Q) for Poland is 1.953 and for highly developed countries Q exceeds 3.000 (Switzerland 3.830, USA 3.530, and Germany 3.376). At the turn of the said period (Table 2) slight fluctuations of the index for particular countries were observed, which confirms its importance in the assessment of economic growth.

Productivity index (Q) is:

$$P = W \cdot Q \quad (1)$$

where:

P – GDP – total product manufactured,

W – total labour costs,

Q – labour productivity index.

On the basis of the above formula we can establish the identity of Q, which clearly stipulates the share of labour in GDP [Dobija, 2013]:

$$GDP = GDP \frac{1}{Q} + GDP \frac{Q-1}{Q} = W + GDP_a \quad (2)$$

$$1 = \frac{1}{Q} + \frac{Q-1}{Q} = \frac{W}{GDP} + \frac{GDP_a}{GDP} = U_w + U_a, \quad (3)$$

where:

W – defines remuneration,

GDP_a – the remaining part that falls on assets (formula 2),

U_w – the fraction of GDP which falls on labour,

U_a – the fraction of GDP which falls on assets.

Using the above identity we obtain a division of GDP into two parts:

- that part of GDP related to labour, as remuneration – share of labour,
- that part of GDP related to assets – share of assets.

The GDP of Poland in 2013 amounts to PLN 1729.0 billion [www 1], with labour productivity index, $Q = 1.953$; therefore, the share of income (costs) of labour is PLN 885.3 million. The Q index may be shown as the following formula:

$$Q = \frac{GDP}{W} = \frac{GDP}{W_1 + W_2}, \quad (4)$$

where:

W_1 – the sum of all costs of remuneration without the public sector,

W_2 – costs of remuneration for the public sector.

It is estimated that the share of remuneration for the public sector amounts to approximately 23% of the total remuneration costs, W [Dobija, 2015]. This gives W_1 of PLN 681.7 billion and W_2 of PLN 203.6 billion. In accordance with the labour theory of value, discussed later in the study, labour finances itself, including in the public sector [Dobija, 2015], so there is no need to finance it from taxes. By theoretic limiting or rather winding up the public sector, the newly calculated labour productivity index Q shall be 2.536. However, this still does not allow it to exceed the level of 3.000. The present calculations corroborate the thesis that lowering the remuneration level shall have an insignificant effect on labour productivity level and economic growth. What actually influences the increase in labour productivity level is the use of technical devices of labour, a form of fixed assets, which is also confirmed by Table 1.

A good example of introducing changes exclusively to the area of costs and expenditures is Slovakia. Slovakia, by accessing the Eurozone, had to introduce many unpopular changes, so the state decreased the expenditures on remuneration for the state budget sector and limited budget expenditures on consumption and investments. Labour productivity for Slovakia, calculated on the basis of the Q index was 1.87 in 2006 and by 2013 it had risen to 2.35, which is an impressive result. However, it also resulted in considerable dissatisfaction and worsening of living conditions. The introduced changes stopped investments, increased

the unemployment rate, and in turn, resulted in an increase in indirect taxation and an economic downturn [Jonkisz-Zacny, 2015].

3. Function of business activity vs. production function

The size of GDP and Q may be presented analytically as the function of several variables. The arguments for the function are economic indexes characterising economic processes. The econometric production function deals with properties of the production process, and takes place without a clearly set economic actor and without reference to real sources of data resulting from financial reporting. Therefore, there is a need for a more adequate, mathematical description of the process of creating the end product constituting GDP. These issues related to the analytical production function, developed by many authors (M. Dobija, J. Barburski, W. Koziół et al.) for at least the past decade, are applicable in microeconomic and macroeconomic description. In connection with the wide application of the analytical production function the term “production function” is too narrow because considerations concerning the entire economy encompass all sectors, including the public sector. Therefore, the concept of “economic activity function” is introduced, which presents GDP as a function of a set of identified variables. This formula allows one to apply calculus to examine any increase and thus to estimate the influence of particular variables on GDP. The Table 3 shows the impact of increases in wages and labour productivity on GDP in Poland.

Table 3. Impact of increase in wages and labour productivity on GDP in Poland

Period	GDP = (P)	Labour (W)	Labour Productivity (Q)
Period 0 – 2013	1641,7 mld zł	840,6 mld zł	1,953
Period 1 – 2014	1729,0 mld zł	864,5 mld zł	2,0
Δ	$\Delta P = 87,3$	$\Delta W = 23,9$ mld zł	$\Delta Q = 0,047$

Źródło: On the basis of: [www 1; Dobija, 2014].

The impact of an increase in wages on GDP is defined by the following differential:

$$\frac{\partial P}{\partial W} \cdot (W_1 - W_0) = Q_0 \cdot (W_1 - W_0).$$

This amounts to PLN 46.7 billion. The impact of the increase in productivity on the increase in GDP is shown by the formula:

$$\frac{\partial P}{\partial Q} \cdot (Q_1 - Q_0) = W_0 \cdot (Q_1 - Q_0).$$

This amounts to PLN 39.5 billion. A causation study showed that the impact of changes in wages on GDP is 53.49% (PLN 46.70 billion / PLN 87.3 billion) while the impact of changes on the Q index is 45.25% (PLN 39.5 billion / PLN 87.3 billion). This is not an advantageous situation because an increase in the share of wages in the GDP precedes an increase caused by labour productivity. Therefore, the reverse situation is beneficial.

4. Impact of assets on labour productivity

It cannot be denied that highly developed countries (Germany, France, the UK and others) are characterised by a large number of job opportunities. Therefore, they become the destination places for many economic immigrants and refugees to start a life there; more often than in less developed countries, such as those of Central Europe. This is most certainly an interesting issue for economists because it is commonly believed that modern fixed assets cause a decrease in the number of jobs. By making an attempt to explain this antinomy it can be observed that an increase in the mass and value of assets according to natural laws (spontaneous dissipation of capital, which is the ability to perform work) causes the depreciation of fixed assets, which hence requires the constant supplementation of the capital lost by transfers from the labour processes. Additionally, high labour productivity in prosperous countries is connected with an achieved level of prosperity, which in turn results in an extension of life expectancy. This phenomenon also creates a demand for labour and offers numerous job opportunities. Labour productivity measured by the Q index shows a function of dependence on assets and management level. These circumstances create the possibility of the natural economic balance to settle the impact of assets.

Technological advances refer both to business activities and public investments. In reference to industry these are machines and other devices whose main purpose is to minimise workload and reduce the labour intensity of production. In such a case technological progress firstly limits the number of jobs and then,

upon exceeding some level of investment contributions, it can create them. By contrast, public spending especially in the technical and social infrastructure require continuous involvement of employees and funds for their maintenance. Therefore, we arrive at the following conclusions: technical devices of labour are increasing in industry, and correspond to increases in labour productivity, under the condition of justified investment. However, contributions to public investments improve the quality of life and influence the increase in welfare. In both cases these assets are being used up, which is seen in the depreciation charge. Moreover, these assets require contributions for their maintenance and repair, although they also create jobs.

5. Self-financing of labour – the concept of intelligent economic growth

The theory of labour is based on the correct understanding of three notions: labour, capital and value:

- Labour is the transfer of capital to the object of labour; it creates money as a result of the work performed.
- Capital is an abstract category; it has the ability to exercise work; capital is measurable and resources are only countable; capital is not created out of nothing and is subject to spontaneous dissipation.
- Value depends on the concentration of the capital embodied in assets [Dobija, 2008a, 2008b].

In accordance with labour theory, labour creates money by engaging particular, competent human resources. Dues are created for performed work, which can then be exchanged for money. Money is a very specific form of goods, and by exchanging it one can acquire other goods. We need to reject here the principles of monetarism stating that the central bank creates monetary policy and that firstly funding need to be provided in order for the state to be able to provide jobs. M. Dobija, the author of the theory labourism, stresses that the role of the central bank will limit itself to the role of payer of salaries in the public sector [2015]. Payment for work in the public sector does not need any financing from taxes. The work of a teacher or police officer is transferred to objects of labour; thus it educates and provides safety. In return for work there are dues for performed work, which are then recorded on the employees' accounts [Barburski & Dobija, 2011].

Polarisation of income in the remuneration structure, that is differences in the remuneration level, is a dangerous phenomenon. The range between those who earn the least, the so-called below-average wage pay, and the remuneration paid to managers is huge. Very low incomes do not allow for maintaining the level of education in the lowest social groups, and therefore poverty and social pathologies occur, which in turn reduces economic growth [Kozioł, 2009]. The theory of labour uses the notion of conformity of remuneration with the value of human capital and the effects of a given piece of labour. The theory of human capital, regarding the value and evaluation of decent labour, presents M. Dobija [2007], J. Barbarski and M. Dobija [2011], M. Jędrzejczyk [2012], J. Renkas [2014].

As a result of the automation of production, computerisation and implementation of self-service in many areas of life there is a limitation in job opportunities, increase in unemployment rate and greater numbers of people collecting various benefits and allowances, which in turn burdens the state and those who work. A solution for that problem may be the transfer of these people to the service sector. Some of them could provide services, such as taking care of the elderly, the sick or children. However, the role of the state is to create social aid projects that lead to the creation of new jobs. A successful policy of intervention and public works, as discussed by T. Kowalik [2000, pp. 94-103], has been applied by Sweden for many years now. An important positive aspect of this solution is the employment support program for people of working age and blocking the pathology of inheriting the “profession of being unemployed”. The latter phenomenon creates economic inequalities and hampers economic growth. At the same time it needs to be emphasised that the development of human capital takes place at every stage of life, from infancy to the autumn years, which also provides opportunities at every stage to improve as well as to create new jobs.

Conclusions

This study presents the impact of increases in the value of assets on improvement of labour productivity. On the basis of the presented materials the following conclusions can be drawn:

- Labour in an economy saturated with fixed assets is highly productive.
- In highly developed countries, that are those with high labour productivity, the share of fixed assets is increasing and amounts to about 70% while the share of labour costs is decreasing to about 30%.

- Human capital is an element of labour productivity. Taking care of both physical and intellectual capital is a sign of social and technological progress.
- By accumulating human capital, a developing country has the ability to absorb modern technologies from developed countries [Cypher, Dietz, 2004].
- The consequence of demographic and structural changes in the economy is to reduce the share of remuneration in the GDP, and therefore the manner in which it is determined needs to be verified. The new system of determining the size of the GDP takes into consideration fixed assets and would supply the GDP with an amortisation charge. Creating especially public goods like roads, bridges, and the technical infrastructure is a contribution made by previous generations into the current GDP.
- Economic growth is a long-term process that requires consistent, wise and conscientious managing of the state, taking care both of the economic and the social spheres.

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WPLYW WZROSTU WARTOŚCI RZECZOWYCH AKTYWÓW NA POPRAWĘ PRODUKTYWNOŚCI PRACY

Streszczenie: Współczesne poglądy określają kapitał, jako zdolność do wykonywania pracy. Te dwa pojęcia kapitał i praca stanowią tandem. Kapitał to kategoria abstrakcyjna i potencjalna, natomiast praca przedstawia transfery kapitału do obiektów pracy, co kreuje ich wartość. W gospodarce nasyconej aktywami, praca jest wysoce produktywna, co przyczynia się do wzrostu poziomu dobrobytu. W opracowaniu analizuje się wpływ wzrostu wartości aktywów na produktywność pracy. Ponadto przedstawia się dylematy przyspieszenia rozwoju gospodarczego, analizując sytuację historyczną Polski.

Słowa kluczowe: kapitał, praca, rzeczowe aktywa trwałe, wzrost produktywności pracy, wzrost gospodarczy.