LEGAL REGULATIONS OF PRODUCTION PLANS: ARE THEY UNPRODUCTIVE?

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Abstract

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Legal system forces every economic agent operating on the market to fulfil some amount of duties and it alternates their decision making. This regulation moves the equilibria of each individual subject including firms, which have to adjust their production plans in a way prescribed by the law. We develop a theoretical background of production under the legal regulation and compare alternate equilibria with different degrees of legal regulation, which is described as unproductive in economic literature. The model shows that regulated production plans and all used inputs are still productive but the level of satisfaction within the society is decreased.

Keywords: unproductive activities, utility, regulation, law, production plans

INTRODUCTION

As it is more and more difficult for developed countries to grow from several reasons such as institutional or political framework or capital-intensive research the attention of economists is focused to specific aspects that can or do slow the product and growth. One of these areas can be labelled as unproductive activities which itself covers variation of real economy aspects.

Economics always considered something as unproductive whether it was a whole industry, specific products or behaviour such as rent-seeking. This short paper aims at examination of one of these so called unproductive activities – legal regulation of production plans. The intersection between law and economics became very popular in modern economic research (from economic titans as Aaron Director and Ronald Coase dealing with the intersection of two fields or (Baumol, 1990) and (Murphy *et al.*, 1991) through more recent research (Kreiner and Tranæs, 2005)). However, as we show in this paper, the legal regulations can hardly be viewed as unproductive. They seem to be rather de-productive and de-utilizing. Our paper examines the role of legal regulation of production plans and its general economic consequences.

The paper is divided into three parts. First part introduces the concept of unproductiveness. Second one presents theoretical model on legal regulation of production plans with consequences to overall level of utility. The last part of the paper foreshadows an empirical analysis with data obtained from World Bank.

Unproductiveness of economic activities

From early times of economic science, philosophers and economists defined unproductive activities that in their point of view did not allow the society to grow and develop. For example, François Quesnay presented an idea in his famous Economic Table (Tableau oeconomique) that only agriculture, forestry, fishing or mining are activities done by a productive class. Only this class produced surplus which can be used in the next period. Hence, it alone is productive. (Quesnay, 1766)

Adam Smith in his opus magnum An Inquiry into the Nature and Causes of the Wealth of Nations divided labour into productive and unproductive. As he wrote: "There is one sort of labour which adds to the value of the subject upon which it is bestowed; there is another which has no such effect. The former, as it produces a value, may be called

productive; the latter, unproductive labour. Thus the labour of a manufacturer adds, generally, to the value of the materials which he works upon, that of his own maintenance, and of his master's profit. The labour of a menial servant, on the contrary, adds to the value of nothing."(Smith, 1799) Later in his book, Smith adds more examples of unproductive labour such as army, justice, churchmen, lawyers, physicians, men of letters of all kinds; players, buffoons, musicians, opera-singers, opera-dancers, etc. It was Adam Smith who tight the use of the term unproductive with factors of production and their use. Hence, the productiveness became independent on industries and was linked to the way how society employs the scarce resources.

Carl Marx examined theories of productive and unproductive labour in his Theories of Surplus-Value, where the whole fourth chapter is devoted to discussion with other authors on this topic. Marx himself states that labour is unproductive from the view of capitalist if it does not provide any surplus value. (Tarbuck, 1983)

Since the origin of economics as a science there has been the term "unproductive." Modern economics detailed the area and mapped specifics of unproductiveness. Unproductive activities are either used as a tool to research a further goal or they are object of inquiry.

The guns and arms production is related with unproductiveness and used to explain other goals within the economic framework such as the role of religion (Dixit and Grossman, 1984) or the behaviour in the absence of property rights (Skaperdas, 1992).

The latter use of unproductiveness is naturally much more fruitful and totally dominated by rent-seeking.

Rent-seeking is socially unproductive (Bhagwati, 1982) and as a consequence harming the product and growth (Hall *et al.*, 2010). Rent-seeking is generally viewed as "diverting resources into unproductive activities" (Grossman, 1988) or as "conductive to resource waste" (Davidson and Ekelund, 1994). The government aid for private foreign investment also opens up a room for rent-seeking as an unproductive activity (Harms and Lutz, 2006; Mourmouras and Rangazas, 2009).

Workfare activities are viewed as well as unproductive but not so strictly. As Kreiner and Tranaes highlight "it is, of course, an extreme assumption that workfare activities are totally unproductive." (Kreiner and Tranæs, 2005) Nevertheless, they perceive these activities as "completely unproductive" in their model. The government itself is as well viewed as unproductive. It is not in the interest of agents to reduce the amount of tasks of public organization because it can be in contradiction to agents' own maximizing behaviour (Gersbach and Keil, 2005).

The economic literature about unproductiveness is quite wide but little it focuses to legal dimension of the problem. This changed quite recently. A deeper and detailed examination was well-cited by Willam Baumol (1990) In his important paper published in 1990 he picked several historical examples of declined civilisations, such as ancient Rome, China or Middle Ages in Europe. From his point of view, all the civilisations mentioned in the paper failed after too many unproductive activities were allowed. Baumol himself does not provide a definition of unproductive activities. There are only some examples given: "innovations in rent-seeking procedures, for example, discovery of a previously unused legal gambit that is effective in diverting rents to those who are first in exploiting it" (Baumol, 1990).

(Baumol, 1990) identifies excessive rent-seeking activities which he calls unproductive as the origin for economic slowdown. Supported by (Rosen, 1981) who states that the most talented individual can choose future occupation according to gains which come from particular profession. Thus, if gains from rent-seeking activities exceed gains from activities in other segments of economy, most talented people prefer to study in fields that give them the best opportunities to work in most lucrative occupation. According to (Murphy *et al.*, 1991), this is the mechanism how "productive" areas loses the best workers in favour of "unproductive" ones – such as legal industry.

Following research (Murphy *et al.*, 1991) emphasized the idea that the distribution of workers among different occupations may have some impact on economic growth. In their approach, authors compared university enrolment in specific areas with long run GDP growth. They concluded that countries with higher ratio of law to engineering students suffer from lower economic growth, which leaves them less developed than the others with mode favourable ratio. This idea was further developed in (Litzman and Kouba, 2015) where the authors tried to find some institutional indicators to explain this phenomenon. They apply this explanation of "de-productive" activities on worldwide competition. Using data from World Bank, we demonstrate how poor legal environment is connected to low GDP per capita levels. This is in perfect compliance with classical literature as (Acemoglu *et al.*, 2005; Hall and Jones, 1999) and many others.

Unlike (Baumol, 1990), who described unproductive activities as an extension of a theory of entrepreneurship, where legal gambits sometimes allow entrepreneurs to find profitable opportunities in unproductive areas, we expect that some "unproductive" activities happen in every firm. Real economies are regulated by legal system quite heavily. As the law forces every economic agent to fulfil some amount of duties, every agent has to reserve some time or an employee to deal with some amount of duties proposed by the law. Firms have to hire professionals in these areas.

The lack of attention paid to legal regulation of production processes calls for an analysis. How

do legal regulations alternate the production and change the equilibria? Can the unproductiveness be applied to them as well? It is clear that a deeper theoretical and empirical attention should be paid to the intersection of unproductiveness, law and economics.

In our approach, we assume that modern legal environment forces firms to use specialised workers as an additive input in their production plans. For every firm, hiring these specialists is the only way to survive on the market under certain legal conditions. This is because law is enforceable by the state that controls its fulfilling and uses sanctions in case of breaking the law. That means that adding this specific factor is fully obligatory for every firm in every sector, even though the quantity of this factor vary among sectors. From this point of view we follow the direction stated by (Baumol, 1990; Djankov *et al.*, 2000) or Smith and Marx much earlier.

Moreover, we assume that this type of inserted labour in the production process needs some specialised skills, for example in law, accounting, taxes etc. Those skills can be represented by human capital as defined by (Mincer, 1974) or (Becker, 1975), to be used as an input into production. We relate legal regulation of economic environment with specific factor of production imposed upon firms.

Even though unproductiveness is a very popular topic in economics the variations in definitions complicate comparison across the research areas. Nevertheless, most of definitions can be represented by (Bauer, 1991) definition of unproductive as something that "forces people to divert attention, energy, and resources from productive economic activities to concern with the outcome of political and administrative processes and decisions" (p. 45). Hence, it is the visible hand of the government that reallocates resources into the unproductiveness. This definition can be attacked by many welfare economists and/or socialists.

Literature differs in what is productive and what is unproductive but the common denominator is improper use of resources. For our purposes we will base our analysis on the definition of productiveness used by old economic masters such as Smith and Marx. Very nice discussion about unproductivity in the context of these two and modern economic approach was provided by Cockshott and Zachariah (2006) with a strong conclusion that "any sector that directly or indirectly sustains the workers' consumption bundle is productive." (Cockshott and Zachariah, 2006)

This undoubtedly relates the unproductiveness with utility dimension in consumption. Suddenly the conflict between the common economic perception of unproductiveness and law is clear. If activities done in order to satisfy consumers are productive then the legal work done in this given production process is productive as well. However, it does not increase a value added nor productivity of factors of production. To examine this conflict

the next section of this paper will theoretically approach such legal regulation using general tools of microeconomics.

Legal regulation of production plans – theoretical approach

As the definition of un/productiveness relates activities to utility we start the theory with utility as well.

Suppose there is a need α in the economy that can be satisfied by two goods x_1 and x_2. Hence, we can assume that

$$x_1 \sim x_2 \text{ if } x_1 = x_2. \tag{1}$$

Both goods are, thus, perfect substitutes. This assumption will make further analysis easier because they can be substituted in consumption without creating any change in the overall level of utility.

Suppose the economy with net outputs $L = n$. Then the production plan of the economy is $x = (x_1, x_2, \ldots , x_n)$. Where the first two goods are the perfect substitutes and can be produced not used. Hence, x_1 and x_2 are non-negative real numbers.

Further suppose that $x_a = (x_1, 0, \ldots , x_n) \neq$ $\neq (0, x_2, \ldots , x_n) = x_b$ if (1) holds.

As a consequence of these assumptions there are two goods satisfying the same need and they are produced by two different production plans. Both production plans are technologically feasible. So they must fulfil $x_a \in X$ and $x_b \in X$ where $X \subset R^L$.

The transformation function is then given by $X = \{x \in R^L : F(x) \leq 0\}$. Suppose the production plans x_a and x_b are the elements of the boundary of X. Hence,

$$F(x) = 0. \tag{2}$$

Economy is producing at maximum capacity. Further suppose that,

$$MRT_{x_1 x_2}(x) = \frac{\partial F(x)/\partial x_1}{\partial F(x)/\partial x_2} < 1. \tag{3}$$

The marginal rate of transformation of a good x_2 for a marginal unit of a good x_1 is less than one. This only means that producing more units of a good x_2 we need to sacrifice proportionally more units of the good x_1. As a consequence of (1) and under the condition of perfectly competitive firms these will produce only the good x_1.

From (2) and (3) it is obvious that in the production plan x_b more resources have been used to produce one unit of a good x_2.

With respect to the aim of our paper this additional resource is typically x_l such as $x = (x_1, x_2, \ldots , x_l, \ldots , x_n)$ which can represent labour with a specific human capital from the area of legal regulation of production plans and also

producing the specific good in quality given by the legal regulation such as x_2 for example. Hence, producing a good x_1 is technologically feasible but not legally. Hence,

$$x_a \notin X_l \text{ and } x_b \in X_l \qquad (4)$$

Where X_l represents all production plans that are legally feasible. For our purposes it means that

$$X_l = \{x_l \in \mathbb{R}^{L-1} : F(x_l) = 0\} \qquad (5)$$

Once again the economy is efficient and the production plan is an element of the boundary of x_l. Furthermore, combining (2), (4) and (5) we conclude that the x_l is a subset of x.

To proceed we need to solve two profit maximization problems. One for the situation without the legal regulation of the production plan and the second one with legal restriction applied to production process. Hence, the two alternative profit maximization problems are

$$\left. \begin{array}{c} Max_x \ p \cdot x \ s.t. \ x \in X \\ p = \lambda \nabla F\left(x^*\right) \\ \pi\left(p\right) = Max\left(p \cdot x : x \in X\right) = p \cdot x^* \end{array} \right|$$

$$\left. \begin{array}{c} Max_{x_l} \ p_l \cdot x_l \ s.t. \ x_l \in X_l \\ p_l = \lambda \nabla F\left(x_l^*\right) \\ \pi\left(p_l\right) = Max\left(p_l \cdot x_l : x_l \in X_l\right) = p_l \cdot x_l^* \end{array} \right|$$

$$\text{for } \lambda \geq 0$$

Where p and p_1 are the vectors of prices of net outputs that differ only in the price of the used output x_1. When the output x_1 is not used in any production plan from X its price is equal to 0. The x^* and x^*_1 are profit maximizing production plans from the supply correspondence at the given price vectors p and p_1. Hence,

$$x* = (x_1, 0, \ldots, x_l = 0, \ldots, x_n)$$
$$\text{and } x_l* = (0, x_2, \ldots, x_l < 0, \ldots, x_n). \qquad (6)$$

From (3), (5) and (6) we get that

$$x_1 > x_2 \qquad (7)$$

When the legal regulation takes place and alternative production plan is forced to the economy then even fulfilling the assumption (2) the economy will produce lower quantity of the good x_2. Having the assumption (1) in mind it directly implies that less needs have been satisfied in the economy as a consequence of (7).

Thus, it cannot be said that legal regulation of production plans is unproductive. The net output x_1 is of course productive because it was used for producing the good x_2 that still satisfies the need α. However, as a direct consequence

$$A = \Sigma \ \alpha_i > \Sigma \ \alpha_l = A_l$$

Thus, legal regulation of production plans is rather dissatisfying or de-productive than unproductive. As such the legal regulation is definitely not unproductive – it is productive because it adds to the production of goods consumed by households – but it is rather de-utilizing – as less needs have been satisfied in the society.

Our theoretical approach removes legal regulation from general understanding of unproductiveness and it suggests that while it is still productive in a way it participates in the production of consumers' goods it is de-utilizing in the same time. Following section will foreshadow consequences for economic processes.

Further consequences

Amount of specific input (x_l) varies according to the quality of legal system. Differences in legal restrictions can take various forms such as different time required to fulfil all the duties imposed by the government. For example, (Djankov *et al.*, 2000) examined regulation of entry on the market in 85 countries around the world. In this inspiring article, authors found that regulation (represented by time and costs necessary to set up a business or number of procedures) is present in countries with less democratic governments. Furthermore, larger shadow economies and higher corruption can be found in these economies.

In more recent research, (Djankov *et al.*, 2010) tested influence of administrative and bureaucratic barriers in foreign trade on imports and exports. They found that each day of administrative delay reduces international trade by a per cent. (Geginat and Ramalho, 2015) studied procedures, time and costs that are needed to obtain a new electricity connection. Although they found some correlation with level of income (which is straightforward as less developed countries usually have less dense net of electric lines as more developed ones), large correlation was found with bureaucracy and administrative obstacles.

Every year, the "Ease of Doing Business" index partially derived from papers mentioned above is released. Although this ranking measures several indices signalling how it is easy to do business in a particular country, it can indicate quantity of specific production factor required. Among others, the Doing Business ranking measures time necessary to comply taxes. In 2016, it took 261 hours in average to comply it. There were quite huge differences among regions. For example, it took 615 hours in average for South-American countries and 313 hours in Africa. On the other hand, it took 173 hours on average to comply taxes in Europe and 160 hours in Middle East.

To further illustrate our theoretical approach, we picked several indicators from (Doing Business, 2014) database related to the time necessary to comply with different legal problems.
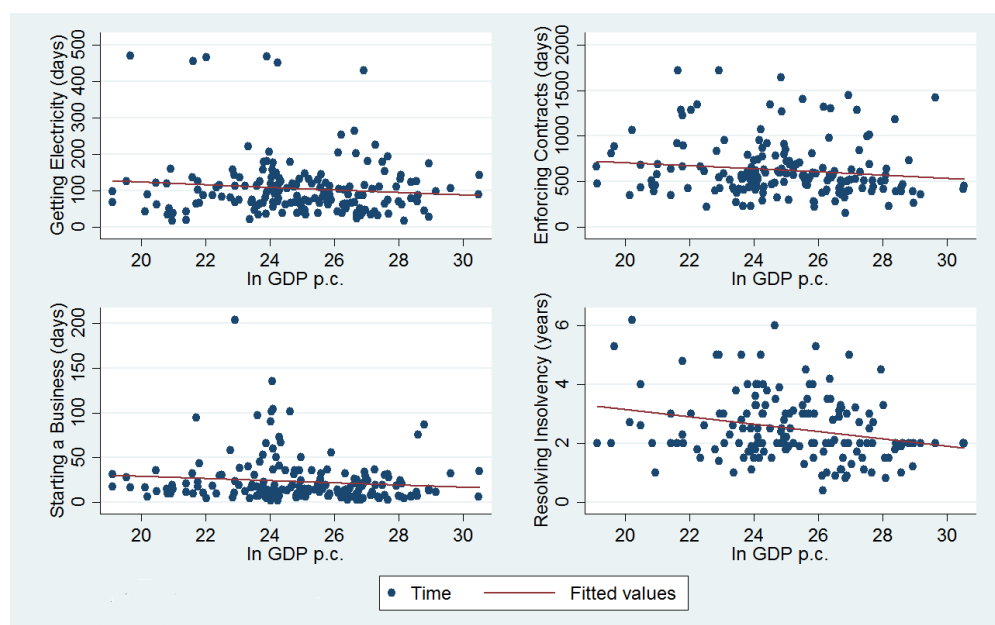
1: *Correlations between logs of GDP per capita (2014) and selected indicators capturing quality of law.*
Data source: Data were obtained from World Bank's Doing Business database. (a) Days to go through procedure of getting electricity (rho = –0.0966, p = 0.2036, n = 175); (b) Days necessary to enforce representative contract (rho = –0.1301, p = 0.0860, n = 175); (c) Days to comply with administrative procedures when starting a new business (rho = -0.2499, p = 0.0017, n = 156); (d) Years to resolve insolvency (rho = -0.1082, p = 0.1542, n = 175).(Source: Own models using Doing Business, 2014 and World Bank, 2016 data)

I: *Descriptive statistics for regression estimates*

Variable	N	Mean	Std.Dev.	Min	Max
ln(gdp)	2,069	9.06	1.23	2.26	11.8
Enforcing Contracts	2,069	56.3	14.5	2.08	93.4
Construction Permits	1,763	63.9	16.5	4	94.5
Trading Across Borders	1,766	63.6	22.1	.453	96.8
Registering Property	1,887	63.2	17.3	14.1	99.9
Protecting Minority Investors	1,607	49.7	16.2	10	96.7

According to our model it seems that a relatively lower quality of legal environment reduces the amount of needs that can be satisfied by economic activity. Thus, a country with lower quality of law is ceteris paribus less productive. As illustrated in Fig. 1, countries with lower GDP per capita often tend to have a legal system that is time consuming and, thus, requires more labour to comply. This limits their ability to produce.

For our further analysis, we use a full dataset covering a 10-year period 2005–2015[1] for 212 countries around the world. This is explained using GDP measure where we use logs of GDP per capita in PPP obtained from the World Bank. We used panel regression in Stata 14.2 to follow fixed effect of specific types of coutries. Descriptive statistics is shown in Tab. I. Differences in numbers of observations are caused by the fact that Doing Business' authors are gradually enlarging the database with new legal cases. Thus, most of the variables are not available through the analysed period.

For this analysis, we used Distance to Frontiers method which measures how close the examined country is to the best one in a given variable. Higher value of DTF means that the legal environment is closer to the best one in the area. On the other hand, the lower DTF value the worse the legal environment. Measures presented in the models are not just time measures (days, years) as in previous Fig. 1, but overall scores counting for more indices – for example related costs or number of procedures required.

1   Dataset is always published in advance with data describing legal situation for the next year.

Four income groups were obsedved. Low income country is defined as having GNI per capita of 1,025 USD or less, lower-middle income as having GNI between 1,026 USD and 4,035 USD, upper-middle income country ranges between 4,036 USD and 12,475 USD and the rest with GNI per capita higher than 12,475 USD were classified as high income countries.

In addition, to observe the effect of GDP within four groups, we used interaction variables counstructed as value of log of GDP multiplied by dummy of certain income group. Varialbes Income1, Income2 and Income3 are dummy variables representing fixed effect of three groups with lower GDP per capita.

We estimated the following model:

$$DOBUS_{i,t} = \beta_0 + \beta_1 \ln (GDP_{i,t}) + \beta_2 \ln (GDP_{i,t}) * D_{i,t} + + \beta_3 D_{i,t} + \varepsilon \quad (8)$$

Where DOBUS is one of Doing Susiness indicators for country i and year t, β_0 is regression constant, β_1 is a patamerer of regression, $\ln (GDP)$ is a natural logarithm of GDP per capita in country i and year t, β_2 and β_3 **D** is a vector of dummies for income situation in centrain country i in year t.

Ass seen in Tab. II, within the groups, things tend to be better as most of interactions between GDP and dummies are positive. Thus in almost every group, even in the one with lowest income, countries with higher GDP tend to have better legal environment. On the other hand, strong negative fixed effect is shown on dummies representing three income groups. This effect is strongest for low income group in most estimations, nevertheless all the groups usually remain negative compared to the basic group whigh is a group of high income countries.

According to our interpretation, low income countries require higher amount of specific input (x_l) to produce the same quantity of production as those with better legal environment. This makes their production costlier than necessary.

One may theorize that countries with low GDP per capita are often able to compete using low prices of labour, which exist even in poor quality of institutional environment. Furthermore, their specific factor is cheaper than in countries with high GDP per capita, and that means that fulfilling legislative duties is relatively cheap. But this still makes them less productive than they would be with better legal system. We can speak about two-side causality. Poor quality of legal environment leaves the country less productive to those with better legal constellation and less productive countries tend not to focus on improving the legal environment as they face more pressing issues. It is an interdependent circle of legal misery.

II: *Results of regression estimates*

	(1)	(2)	(3)	(4)	(5)
	Protecting Minority Investors	**Registering Property**	**Construction Permits**	**Trading Across Borders**	**Enforcing Contracts**
ln(gdp)	–0.499 (0.852)	9.916*** (0.001)	8.407** (0.008)	3.925 (0.159)	0.821 (0.494)
GDP_1	12.68*** (0.001)	18.37*** (0.000)	17.57*** (0.000)	26.44*** (0.000)	7.349*** (0.000)
GDP_2	11.63*** (0.000)	7.446* (0.035)	4.650 (0.240)	23.59*** (0.000)	2.071 (0.148)
GDP_3	22.29*** (0.000)	13.80*** (0.000)	14.90*** (0.000)	20.34*** (0.000)	2.849* (0.047)
Income1	–114.5*** (0.001)	–121.2*** (0.001)	–116.2** (0.005)	–220.5*** (0.000)	–68.34*** (0.000)
Income2	–112.4*** (0.000)	–50.83 (0.144)	–32.57 (0.401)	–215.3*** (0.000)	–29.84* (0.038)
Income3	–218.1*** (0.000)	–125.4*** (0.001)	–139.0** (0.001)	–205.9*** (0.000)	–33.79* (0.022)
constant	64.16* (0.022)	–33.32 (0.268)	–16.18 (0.628)	41.29 (0.159)	56.41*** (0.000)
N	1607	1887	1763	1766	2069
R²	0.130	0.161	0.0336	0.341	0.279

Group 1 is a group of low income countries, group 2 are lower-middle income countries and 3 are high-middle income countries. High income countries are used as a base.
(Source: Own estimations using Doing Business and World Bank data)

CONCLUSIONS

In this paper, we illustrated on a microeconomic model based on two different production plans that differ in production of two perfectly substitutable goods satisfying the same need. The first production plan is constructed without legal regulation forcing the firms to fulfil some duties. The second one is an alternative production plan that requires to employ a specific factor of production.

According to our model, firms are forced to use an alternative production plan by the legal system. In this plan, firms produce, as a consequence, lower quantity of the good. This does not allow to satisfy as many needs in the economy with the unimposed production plan. This is consistent with previous findings (Litzman and Kouba, 2013), where a similar model in aggregated view was examined. One of its main findings was that outflow of workers from "productive" to "de-productive" industry decreases the output equilibrium on AS-AD model.

This short paper constituted a microeconomic foundation of the given model. Our theoretical model describes how factors of production can be moved as specific production plans are imposed on the economy. We show what is going on on the microeconomic level. While the legal input can hardly be labelled as unproductive the encroachment on production plans decreases the general level of satisfaction through restricted production of goods. In the empirical part we just foreshadowed the empirical analysis of the problem. It seems there is a link between the legal regulation of production plans and the overall output of the economy as was confirmed by others (Litzman and Kouba, 2013).

Further research and deeper inquiry is needed to build up proper microeconomic foundations of law and economics in the area of unproductiveness or rather de-utilisation. It seems that the empirical macro-level research states facts but without proper microeconomic explanation of what is going on with economic agents. We spur further attention on the problem and hope that following detailed analyses will help us to better understand the legal limitations of growth.

REFERENCES

ACEMOGLU, A., JOHNSON, S. and ROBINSON, J. A. 2005. Institutions as a Fundamental Cause of Long-run Growth. in: AGHION, P., DURLAUF, S. N. (Eds.), *Handbook of Economic Growth*, 1: 385-472.

BAUER, P. T. 1991. *The Development Frontier*. Harvard University Press.

BAUMOL, W. J. 1990. Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98: 893–921.

BECKER, G., 1975. Human Capital. 2ND. ed. National Bureau of Economic Research.

BHAGWATI, J. N. 1982. Directly Unproductive, Profit-Seeking (DUP) Activities. *Journal of Political Economy*, 90: 988–1002.

COCKSHOTT, P. and ZACHARIAH, D., 2006. Hunting Productive Work. *Science & Society*, 70: 509–527.

DAVIDSON, A. B. and EKLEUND, R. B., 1994. Can Entrepreneurship Be "Unproductive?" Towards An Evolutionary Interpretation. *Review of Social Economy*, 52:266–279.

DIXIT, A. and GROSSMAN, G., 1984. Directly Unproductive Prophet-Seeking Activities. *The American Economic Review*, 74: 1087–1088.

DJANKOV, S., FREUND, C. and PHAM, C. S., 2010. Trading on Time. *Review of Economics and Statistics*, 92: 166–173.

DJANKOV, S., PORTA, R. L., LOPEZ DE SILANES, F. and SHLEIFER, A., 2000. The Regulation of Entry. *The Quarterly Journal of Economics*, 117: 1–37.

WORLD BANK GROUP. 2014. *Doing Business 2015: Going Beyiond Efficiency*. [Online]. Washington, DC: World Bank. Available at: https://openknowledge. worldbank.org/handle/10986/20483. [Accessed: 2016, November 2].

WORLD BANK GROUP. 2016. Distance to Frontier. Data Set. [Online]. Available at: http://www. doingbusiness.org/data/distance-to-frontier (accessed 2.11.16). [Accessed: 2016, November 2].

GEGINAT, C. and RAMALHO, R. 2015. *Electricity Connections and Firm Performance in 183 Countries (SSRN Scholarly Paper No. ID 2680472)*. Rochester, NY: Social Science Research Network.

GERSBACH, H. and KEIL, M. 2005. Productivity Improvements in Public Organisations. *The Economic Journal*, 115: 671–688.

GROSSMAN, P. J., 1988. Government and Economic Growth: A Non-Linear Relationship. *Public Choice*, 56: 193–200.

HALL, J. C., SOBEL, R. S. AND CROWLEY, G. R. 2010. Institutions, Capital, and Growth. *Southern Economic Journal*, 77: 385–405.

HALL, R. E. and JONES, C. I. 1999. Why do Some Countries Produce So Much More Output Per Worker than Others? *The Quarterly Journal of Economics*, 114: 83–116.

HARMS, P. and LUTZ, M. 2006. Aid, Governance and Private Foreign Investment: Some Puzzling Findings for the 1990s. *The Economic Journal*, 116: 773–790.

KREINER, C. T. and TRANÆS, T. 2005. Optimal Workfare with Voluntary and Involuntary

Unemployment. *The Scandinavian Journal of Economics*, 107: 459–474.

LITZMAN, M. and KOUBA, L. 2015. How the Legal Environment Affects the Structure of Employment. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis,* 63: 2005–2009.

LITZMAN, M. and KOUBA, L. 2013. Extending Legislation: Effect on the Structure of Employment. IN: *Proceedings of the International Scientific Conference for Doctoral Students and Young Researchers.* 920–927.

MINCER, J. A. 1974. *Schooling, Experience, and Earnings.* NBER.

MOURMOURAS, A. and RANGAZAS, P. 2009. Foreign Aid with Voracious Politics. *IMF Staff Papers*, 56: 787–810.

MURPHY, K. M., SHLEIFER, A., and VISHNY, R. W. 1991. The Allocation of Talent: Implications for Growth. *The Quarterly Journal of Economics*, 106: 503–530.

QUESNAY, F. 1766. Analyse de la formule mathematique du tableau economique de la distribution des depenses annuelles d'une nation agricole. *Journal de l'agriculture, du commerce & des finances*, 2: 11–41.

ROSEN, S. 1981. The Economics of Superstars. *The American Economic Review*, 71: 845–858.

SKAPERDAS, S. 1992. Cooperation, Conflict, and Power in the Absence of Property Rights. *The American Economic Review*, 82: 720–739.

SMITH, A. 1799. *An Inquiry Into the Nature and Causes of the Wealth of Nations*. A. Strahan, T. Cadell, Jun., and W. Davies.

TARBUCK, K. J. 1983. Marx: Productive and Unproductive Labour. *Studies in Political Economy,* 12: 81–102.

WORLD BANK. 2016. *GDP, PPP (current international $)*. [Online]. Available at: http://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD. [Accessed: 2016, November 2].

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