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INSTITUTIONAL TRANSMISSION IN ECONOMIC DEVELOPMENT[4]

The main objective of this study is to provide a theoretical and empirical framework for analyzing the relationship between economic growth and the property rights institute in different countries. The key idea is that property rights are multifarious and can be classified according to their role in economic development. These days it is the intellectual property rights that impact the economic development through propensity to innovate. However, the protection of intellectual property rights does matter for economic growth only in a well-developed political and legal environment. We find that economic performance in highly developed countries is to a greater extent contingent upon a quality of the protection of intellectual property rights than in less developed economies. This finding raises an important question about the credibility of the preponderant approach based on a simple unification of countries with a different institutional framework under one umbrella when their effects on growth. Such an approach may provide inconsistent and misleading results and lead to false conclusions and wrong policies.
JEL: B52; E02; K11

Introduction

The thesis that effective institutions accelerate economic growth finds theoretical and empirical evidence in Western literature (Helliwell, 1994; Chousa, Khan, Melikyan, Tamazian, 2005; Redek, Susjan, 2005; North, 2005; Acemoglu, Robinson, 2012; Labunska, Petrova, Prokopishyna, 2017; Odinokova, Bozhinova, Petrova, 2018; Gryshova et al., 2019; Adamišin, Vavrek, Pukala, 2015; Pukala, 2014; Mussapirov et al., 2019). The institutional

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argument states that clearly defined and well-protected property rights contribute to economic development, directly or indirectly affecting the dynamics of the main determinants of growth (de Soto, 2001). However, there are some studies where the relationship between them does not seem linear and homogeneous (Chang, 2011). The high sensitivity of the results to the composition of the sample is mentioned, up to a sceptical assessment of the importance of this institute (Angeles, 2010). This polarity of the results leads to a search for reasons that explain the nature of these discrepancies.

The main purpose of this research is to provide a theoretical and empirical basis for analyzing the relationship between economic growth and property rights in different countries. The emphasis is on the fact that property rights are diverse and can be classified according to their role in economic development.

1. Literature Review

1.1. The institutions and economic growth

Studies in growth theory confirm the idea that the quality of institutions predetermines the pace of economic development of the country. It is believed that developed democracy, effective property rights and a fair judicial system are prerequisites for high growth rates of the economy (North, 1990; Siddiqui, Masood, 2009; Assane, Grammy, 2003; Knack, Keefer, 1995; Mulligan, Sala-i-Martin, 2003). Such conclusions, however, are based on the empirics of economically developed or developing countries. In the transitive and reformed economies, the dependence of the rates of economic growth on the quality of institutions receives a different interpretation.

Thus, democracy is seen as a threat to the economic development, since it allows lobby groups to extract significant private rent in the face of an unsettled political sphere (Radygin, Entov, 2008). Therefore, attempts to weaken the administrative levers are criticized. For the accelerated development of the economy, the first priority is to ensure political stability.

The legislative base, property rights, judicial system and other institutions are also pessimistic. It is noted that their availability alone does not ensure the prosperity of the economy (Mau, 2007). Not less important is how exactly these institutions are used. Some studies reveal the possibility of their misuse for the purpose of extracting personal benefits (Polishchuk, 2008).

The institutional reforms are evaluated as inconclusive because there is no coherence between them and industrial policy (Polterovich, Popov, 2006), national peculiarities of the economy are ignored when copying Western institutions (Lenchuk, 2000), mental inertia is ignored (Kantsurov, 2011), there are no efforts to change informal institutions, in particular, business culture (Yeshchenko, Koval, Tsvirko, 2019). Institutional transformations are considered as a way of redistributing economic benefits without improving the quality of products and increasing its volumes (Polterovich, 2007). The goal of reforms is to obtain economic power used to lower costs in an artificial way, to overstate prices, and to abandon the burden of social payments. This kind of rent is in most cases preferable compared to

innovative rent, which suppresses the demand for innovative strategies and, as a result, contributes to the destruction of the educational and scientific infrastructure (Dementiev, Vishnevsky, 2011).

In general, the institutional framework in transitional countries is recognized as a deformed set of institutional traps (Polterovich, 1999). The reason for its poor quality is the revolutionary way of creating institutions, which caused a discrepancy between implanted formal and prevailing informal norms. As a result, there was a filtration of perception and interpretation of institutions imposed by the state through an established prism of values. The implemented institutions mutated, became ineffective and lost their public functions. Their improvement entails significant transformation costs, both economic and social, so governments prefer to remain within the established institutional system, changing it de jure, but not de facto (Tamilina, Baklanova, 2012). The way out of this situation is seen in economic development, which can become a prerequisite for institutional improvement (Polterovich, 2008).

There are also Western works that deny the homogeneity of the connection between the quality indicators of formal institutions and economic growth (Przeworski, Fernando, 1993; Sirowy, Inkeles, 1991). The explanation of this phenomenon is usually reduced to the dependence of this relationship on the level of maturity of institutions (Barro, 1997; Butkiewicz, Yanikkaya, 2004). It is argued that the state of institutions and the effectiveness of public policy are determined by the trajectory of the country's previous development (Acemoglu, Robinson, 2012). It is said that feedback is ignored: the impact of economic development on institutions (Chang, 2011).

Thus, there is a kind of discrepancy in understanding the role of formal institutions in economic development. In our opinion, the revealed heterogeneity has a more complex nature and depends to some extent not only on the level of maturity of institutions but also on the mechanisms for their implementation. In addition, these phenomena are closely interrelated, since the potential for the development of institutions is largely predetermined by the effectiveness of the institutional transmission. The resolution of this contradiction becomes possible when establishing a logical chain of the mechanism of the influence of institutions on long-term economic growth.

1.2. The property rights institute as a long-term factor of economic development

The most important institutional framework of the economic system is the system of property rights, that it determines the type of social organization. A study made by Waters (1987) showed that the most effective is the regime of private property. Chang (2008) points to the high efficiency of government-owned property. Besley and Gatek (2009) argue that different types of property are effective, most importantly the clear certainty of rights. At the same time, history also shows negative examples of the influence of this institution on economic development. Thus, Allen (2009) calls the excessive protection of the rights of private property one of the reasons for France's lagging behind England in the 17^{th}-18^{th} centuries. Chang (2011) believes that in our days excessive protection of shareholders' rights in corporate ownership allows them to exert pressure on managers.

On the other hand, the practice of fast-growing countries (China, India) demonstrates that high rates of economic growth can be achieved with poor protection of rights. So, the Chinese settlement enterprises (TVE) are able to expand to the scale of the world market, despite the indistinct and intricate property rights. Studies by Angeles (2011) showed that strong property rights have been in developed countries for a long time, and in modern underdeveloped countries they are not present until now. Thus, the progressive role of the institution of property rights is questioned.

There is also an opinion that the rapid development of the West is due to the high rate of savings (Popov, 2014). This makes possible to work out the recommendations for transition economies to hold the balance between the scale of restructuring and investment potential. However, this model links economic growth exclusively with the accumulation, ignoring technological efficiency. In neoclassical models, this factor is taken into account, but the mechanism of its occurrence is not explained. Endogenous growth models (Romer, 1990; Grossman, Helpman, 1991; Aghion, Howitt, 1992) have shown that knowledge has increasing returns, but was unable to solve the riddle Jones (Jones, 1995). The connection between the increase in the number of resources directed to R & D and the rate of growth in per capita output has not been confirmed.

The proposal to include in the growth model a hypothesis that new technologies are created by entrepreneurs, using the knowledge accumulated in the R & D sector, allows us to explain the riddle of Jones (Arefiev & Arefieva, 2010). Thus, there are two stages in the innovation process – scientific discovery and its use in the economy. An even longer chain is known: "invention" – "innovation" – "diffusion" – "copying" (Mokyr, 1994). This distinction allows us to consider innovative investment in the time and sectoral context. If the first stage involves the scientific sphere, the next one – the production, market, environmental, even political spheres. This translates the consideration of the problem in the field of institutional research.

An unfavourable institutional environment can block the innovative entrepreneurship; as a result, non-functioning assets will remain "dead capital" (De Soto, 2001). Studies have shown that institutions that stimulate innovation are property rights and contract freedom (Pejović, 1984, 1989). In our opinion, it is important to see in what cases a well-developed system of property rights becomes a stimulus for technological progress, and in which ones it is just a brake.

The institution of property rights, as well as any other institution, varies according to the nature of the production activity. Until the production resource isn't so widely used to change production relations, there is no motivation to regulate its use by certain norms. Therefore, even the most developed system of slaveholding law – Roman law – viewed property as an object of personal use. Even servitudes with the right usufruct did not become an impetus to the development of legal relations, since they did not establish the full right to the object and did not allow changing its economic purpose. In the period of feudalism, the norms of private law did not practically change. The turning point in property relations was the abolition of the prohibitions on the fencing of lands in England (1593), which actually legalized the ownership of land as a means of production. Marx called the period of the late fifteenth and early sixteenth centuries "the prologue to the coup that created the basis of the capitalist way of production." A certain interest in studying the

development of market relations is the influence of the traditions of Roman-German civil law and the Anglo-Saxon common law on the evolution of the institution of property. The Anglo-Saxon legal system proposed a more flexible approach to the establishment of property rights and contributed to the accelerated concentration of capital, and then to the rapid development of the industry. Conversely, a well-developed system of property rights within the framework of Roman-German law steadily defended the interests of French landowners and slowly adapted to the interests of the industrial bourgeoisie, which resulted in a backlog of France from England. In 1776, when Turgot's attempts to enforce liberal laws that undermined the foundations of absolutism failed, an industrial revolution was already taking place in England. The shift of common law from the concept of a single, unrestricted and indivisible ownership in favour of a complex bundle of rights allowed each subject to receive a certain income. This approach later became the basis for the conclusion of complex transactions, such as trust management of property, leasing, franchising, etc. The need to regulate relations in the new field – inventions, contributed to the development of patent law, which has been modernizing with the growth of scientific and technical progress. Integration processes, formalize the Treaty of Rome (1957), became the impetus for the convergence of the Anglo-Saxon and Romano-Germanic patent and legal systems. The unification of the national patent laws facilitated foreign patenting and thereby encouraging the diffusion of knowledge and technology. The accumulation of knowledge means also the accumulation of capital (Yankovyi, Goncharov, Koval, Lositska, 2019). Protection of intellectual property rights – namely the establishment of a legitimate monopoly on the commercial exploitation of the technical implementation of the idea through the system of patents and licenses – allowing its owners to earn revenue from the asset is unique and creates thus the incentives for innovative investments. However, there are objections to over-protect it. So, Angeles (2011) sees the danger in the predisposition inventors to rent-seeking at the expense of old patents, as well as in the reduction of the positive effect on society as a result of monopolistically high prices on innovation, as well as in the high cost of maintenance of protection of intellectual property rights in time and monetary terms. According to Chang (2007a), excessive protection of IPRs may hinder innovation itself, preventing cross-fertilization of ideas and increasing the likelihood of the process deadlock caused by disputes between the owners of related patents.

Indeed, such conclusions are supported by many examples. So, there are critical reviews of patent practice in the field of IT[5]. The high cost of enforcement of intellectual property protection encourages piracy. A malicious infringer of patent rights is China – the country with the highest growth rates. This is evidence that economic growth (but not welfare!) is completely possible, and in the absence of well-protected intellectual property rights as well. The retrospective analysis of Angeles (2011) shows the difficulties of implementing the system of intellectual property rights protection in developing countries, and in fact proves that strong property rights have been in developed countries for a long time, and in

[5] So, Google announced in 2011 that the IT-patents designed to promote innovation, "Now, on the contrary, serve as a weapon against them." According to the tactics of Microsoft, Apple and Oracle are to convict Google of patent infringement and force Android device makers to pay royalties to patent holders, available at: https://delo.ua/business/google-i-facebook-vystupili-protiv-patentov-na-abstraktnye-idei-192039/.

modern underdeveloped countries they do not exist until now. This suggests that effective implementation of property rights may depend on the quality of other institutions.

Thus, it is obvious that there is some scepticism about the role of the institution of property rights in economic development. However, the indisputability of innovations as a factor of long-term growth and their dependence on the investment climate in the country allows us to consider the indirect influence of the institution of property rights on economic development, through the propensity to innovative entrepreneurship.

2. Starting Hypothesis

2.1. The theoretical model: institutional transmission

Two aspects of the influence of property rights on economic growth can be identified. Firstly, the institution of the property creates the preconditions for the interaction of economic agents (public rules). Secondly, it provides incentives for efficient asset management. Ownership defines the rights and obligations of the owner of the assets, protects property de jure and de facto. They establish control over the execution of the contract and the possibility of expropriation (including through taxation).In turn, the protection of property rights motivates the economic agents to maximize their efficiency and stimulates innovation.

If the institution does not create incentives for efficient investment, it is evidenced by its inadequate productive activities (Koval, Kovshun, Plekhanova, Kvitka, Haran, 2019). Therefore, countries with a more developed institution of property rights have a higher level of economic development in the long run. Today, innovation is a key element in the institutional hypothesis: institutions create incentives to invest in human and physical capital, higher productivity; resulting in increased returns on all the factors (Scheme 1).

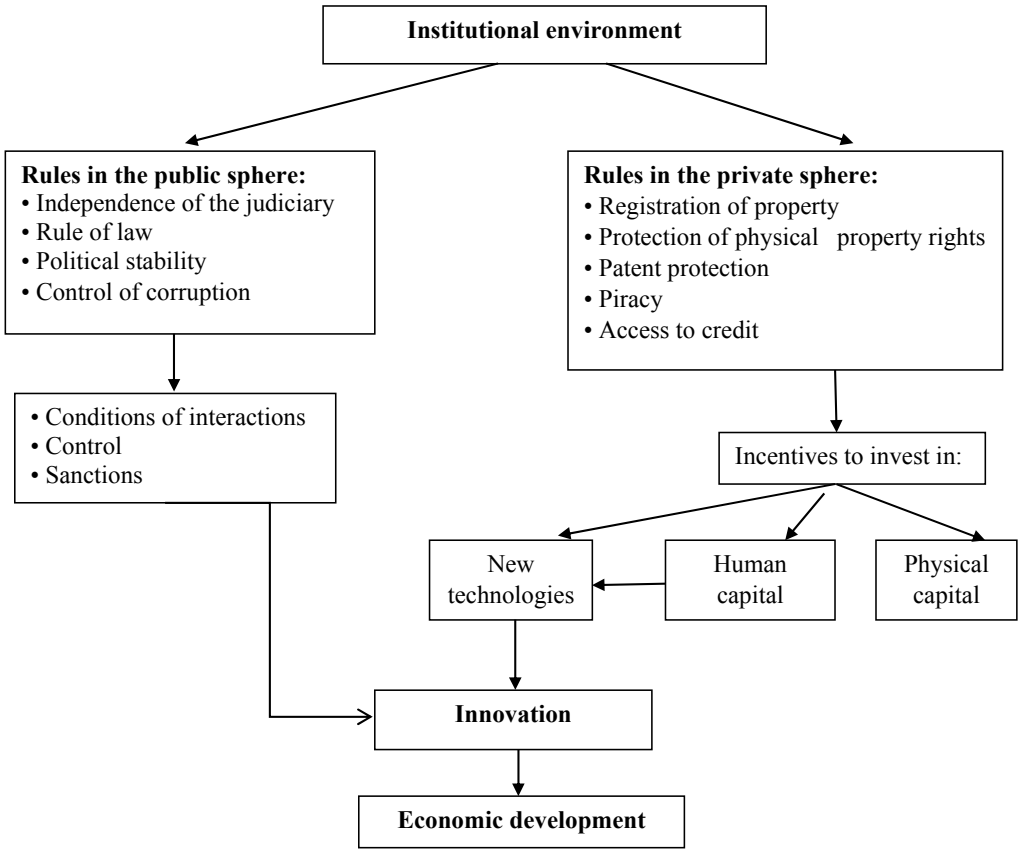
The increasing role of the innovation component in the modern world, the large differences between countries in terms of growth rates, welfare (GDP per capita), and institutional development allowed us to formulate the following hypotheses for further analysis.

- First, today innovations are the main factor of economic development, influencing it as an investment component.
- Secondly, the influence of this component depends on the level of maturity of the institution of property rights.
- Thirdly, the institution of property rights is a complex system of economic and legal relations in which the instability of one component can influence the efficiency of the other.

There is assumed the indirect influence of the institution of property rights to economic development – by the ability to innovate. Property Rights create an environment and incentives, so they should be a significant determinant of the level of innovation.

Scheme 1

The institutional transmission



Source: adapted from Property Right Alliance methodology: www.propertyrightsalliance.org/

2.2. Methodology

2.2.1. Data and analysis methods

To test the hypotheses, we conducted an empirical study based on the generated database of 111 countries from all regions of the world and at all levels of their development. In the sample, several groups were singled out: 35 countries of the OECD with a high level of development; 14 high-level countries not included in the OECD; 17 countries that receive a significant part of the national income from the sale of natural resources. The first two categories were selected according to the World Bank classification. The last group includes: Algeria, Azerbaijan, Bahrain, Bolivia, Burundi, Chad, Ecuador, Kazakhstan,

Kuwait, Mauritania, Nigeria, Qatar, Russia, Trinidad and Tobago, United Arab Emirates, Venezuela, Zambia.

The database covers the period from 2008 to 2015. The indicators of 2016 were also included in institutional indexes. Statistical analysis showed that institutional data have no significant effect of time series due to the duration of institutional changes. Therefore, for econometric analysis, the primary panel database was transformed into a cross-sectional database. The values of economic and institutional indicators were averaged; this allowed us to determine the overall trends in the development of national economies. To assess the development of the institution of property rights, the integral index of the International Property Rights Index (IPRI) was chosen with sub-indexes included into it: LP (Legal and Political Environment), PPR (Physical Property Rights), IPR (Intellectual Property Rights). In 2016, the maximum values of the IPRI index were observed in Finland (8.38), New Zealand (8.27), Norway (8.25). The worst values are in underdeveloped countries such as Bangladesh (2.78), Venezuela (2.73), Zimbabwe (3.4). In the context of subgroups, the average value of IPRI in the OECD countries is 7.3; in non-OECD high-income countries – 6.2; in resource countries – 4.7. The analysis of sub-indexes showed that the most developed political and legal environment (LP) is in New Zealand (8.8), Switzerland (8.67), Denmark (8.6), the least in Venezuela (1.75), the Republic of Chad (2.38), Ukraine (2.43). The average value in the OECD countries is 7.4, in non-OECD countries with high income – 6.3, in resource countries – 4.1. The index of physical property rights (PPR) is on average 6.1. Highest values are in Qatar (8.21) and Singapore (8.16), the lowest in Venezuela (3.81) and Zimbabwe (4.12). The average value in the OECD countries is 7.2, in non-OECD countries with high income – 6.7, in resource countries – 5.6. Interestingly, the index of physical property rights in the world is higher than the other two sub-indexes, while in the OECD countries its average score is lower than the average LP and IPR. The maximum value of the intellectual property rights index (IPR) is in the US and Japan (8.63), the minimum value in Bangladesh (2.39), Armenia (2.8) and Azerbaijan (2.85). The average value in the OECD countries is 7.4, in non-OECD countries with high income – 5.7, in resource countries – 4.3. To evaluate the economic growth and well-being, the real GDP has been taken, including per capita and per unit of labour (US dollars, in prices of 2005). Its average values, as well as institutional indexes by groups, are shown in Table 1.

Table 1

Average values by sample

	World average	OECD countries	Non-OECD countries with high income	Resource countries
GDP / population, USD	13319	32321	20791	10464
GDP / labor force, USD	25970	63216	36404	18016
IPRI, score 1-10	5.6	7.3	6.2	4.7
LP	5.3	7.4	6.3	4.1
PPR	6.1	7.2	6.6	5.6
IPR	5.3	7.4	5.7	4.4

Source: World Bank (World Development Indicators); Property Rights Alliance (International Property Rights Index).

To determine the linear relationship between institutional indexes and macroeconomic indicators, a correlation matrix has been constructed (Table 2).

Table 2

Correlation matrix (the coefficients are significant for 1% confidence interval)

	IPRI	LP	PPR	IPR	GDP/labor force, USD	GDP/population USD	GDP, USD
IPRI	1						
LP	0.97	1					
PPR	0.92	0.87	1				
IPR	0.94	0.86	0.79	1			
GDP/labor force, USD	0.87	0.85	0.77	0.84	1		
GDP/population, USD	0.86	0.85	0.78	0.82	0.99	1	
GDP, USD	0.29	-	-	0.35	0.34	0.32	1

Source: World Bank (World Development Indicators); Property Rights Alliance (International Property Rights Index).

The analysis revealed an interesting connection between the estimates of property rights and economic growth and welfare. The correlation coefficient between GDP per worker and GDP per capita of 0.99; these figures are almost completely interchangeable. The relationship between IPRI and GDP per unit of labour is direct and very dense with a correlation coefficient of 0.87, per capita 0.86. This means that a high economic welfare in countries with a developed system of property rights, and vice versa. The sub-indexes of property rights also strongly correlate with welfare indicators. The lowest correlation coefficient with PPR: GDP per capita. – 0.78; GDP per workforce – 0.77. However, the relationship between the volume of real GDP and the effectiveness of property rights is weak – 0.29, and the correlation of GDP with LP and PPR is not significant. This confirms the idea that quantitative economic growth is entirely possible with a poorly functioning system of property rights.

As a variable representing the level of development of human capital, the Human Development Index (HDI) is taken. HDI includes the projected life expectancy and level of education in a country. The index is measured from 0.0 to 1.0 (the unit corresponds to the maximum development of human capital). The average HDI for the sample is 0.76. Since 2015 year the highest index value (0.95) is in Norway, the least (0.35) in Niger. In the OECD countries, the average value is 0.92 (min – 0.84, max – 0.98). In non-OECD high-income countries, the average value is 0.82 (min – 0.73, max – 0.91). In resource-oriented countries – 0.67 (min – 0.32, max – 0.82), that is, human development here is worse than the world average and significantly worse than in developed countries.

Innovation indicators are the proportion of expenditures on research and development in GDP and per unit of labour. OECD high-income countries spend for R&D in average 2.2% of GDP. The highest values for this indicator are in Israel (4.5%), Finland (3.83%), South Korea (3.55%), Sweden (3.51%), Japan (3.36%). The United States ($2,471), Denmark ($2,685), Switzerland ($2,716), Sweden ($2,827) and Finland ($2,920) lead the way in

R&D expenditure per unit of labor. In non-OECD high-income countries, the average R&D expenditure per unit of labour is $265, in resource countries $45.

The correlation between technology development (R&D expenditure), GDP per unit of the labour force and values of property rights indexes were determined (Table 3).

Table 3

Correlation matrix (the coefficients are significant for 1% confidence interval)

	R&D expenditure in GDP,%	R&D expenditure/ labor force, USD	GDP/ labor force, USD	IPRI	LP	PPR	IPR
R&D expenditure in GDP,%	1						
R&D expenditure/ labor force, USD	0.92	1					
GDP/ labor force, USD	0.76	0.89	1				
IPRI	0.75	0.80	0.87	1			
LP	0.72	0.77	0.85	0.97	1		
PPR	0.63	0.70	0.77	0.92	0.87	1	
IPR	0.77	0.79	0.84	0.94	0.86	0.79	1

Source: World Bank (World Development Indicators); Property Rights Alliance (International Property Rights Index).

It can be seen that the share of R&D expenditure in GDP is strongly correlated with R&D expenditure per unit of labour (coefficient 0.92). A high correlation is seen between the expenditure of innovation per unit of labour and the realization of property rights (0.8). An even closer connection (0.89) shows the expenditure of R&D and GDP per unit labour. This connection is entirely expected, since innovations are a key factor in economic development and welfare.

For further research, an econometric study was conducted. Its purpose was to confirm the connection between the effective realization of property rights and economic development. An indirect influence of property rights was expected through a propensity to innovate. Therefore, two equations were constructed: of economic growth and innovation.

The GDP growth per unit of labour is taken as a dependent variable in equation 1, because this macroeconomic indicator is more accurate for assessing change of productivity and welfare population. The regression of data on the model of endogenous growth with four independent variables was constructed: 1) assessment of human capital; 2) propensity to innovation; 3) the saving rate; 4) the rate of population growth, technology improvements and capital depreciation. The Human Development Index had been used to assess a human capital. The propensity to innovation is described by the R&D expenditure per employee. An attempt to include an assessment of property rights showed the problem of multicollinearity, this confirmed the hypothesis that there is no direct impact on economic development.

Then a regression analysis of innovation was conducted. It was expected that the development of the institution of property rights is to explain the propensity to innovate.

Therefore, an evaluation of property rights (index IPRI) is added in equation 2. It should be noted that the standardized coefficients obtained after reducing all independent variables to the same scale are indicative.

Specified models were estimated by linear regression ordinary least squares (OLS). To calculate the regression, the software Stata 10.1 was used. All regressions were tested for multicollinearity, heteroscedasticity and correct specification. Multicollinearity determined by the correlation between independent variables. Heteroscedasticity – using test Broysha-Pagan and Cook-Weisberg. The correctness of the specification was assessed by the Ramsey RESET test.

2.2.2. Model specification

Variables included in the model adequately explain the economic development in the long run. Endogenous growth equation is represented as follows:

$$\ln(Y/L) = \beta 1 \ln(H) + \beta 2 \ln(I) + \beta 3 \ln(s) + \beta 4 \ln(n + g + \delta) + e$$

where Y / L – GDP per unit of the workforce; H – assessment of human capital; I – propensity to innovate; s – saving rate; n – rate of population growth; g – pace of technology improvement; δ – depreciation rate of capital.

The regression equation to test the effect of the institution of property rights on the propensity to innovate is as follows:

$$\ln(I) = \gamma_1 \ln(LP) + \gamma_2 \ln(PPR) + \gamma_3 \ln(IPR) + e$$

where LP (Legal Power) – assessment of the political and legal environment; PPR (Physical Property Rights) – assessment of the specification and protection of physical property rights; IPR Intellectual Property Rights) – assessment of the effectiveness of the intellectual property rights protection system.

3. The Results of Econometric Analysis

Evaluation of the first regression yielded the following results (Table 4).

The index of human development is used as a variable showing the level of development of human capital. The propensity to innovation is described by the amount of investment per employee. In model 2, an evaluation of property rights (index IPRI) is added. It should be noted that the standardized coefficients obtained after reducing all independent variables to the same scale are indicative.

Model 1 generally is representative. F-test rejects the hypothesis of the insignificance of the variables. Determination coefficient is high (95%), the Ramsey RESET test revealed no problems with the model specification, the constant-significant. All independent coefficients turned out to be significant at the confidence interval of 1%.Their comparison shows that the most significant for economic development is the propensity to innovate

(0.69), the development of human capital (0.33), the minimal effect of the traditional variables for the Solow model: savings rate (0.13) and population growth rate, technologies and depreciation (0.08). So, it is obvious that the main engine of economic development in the long term is innovation.

Table 4

Estimation of the model of endogenous growth

Dependent variable: ln(Y/L) Sampling: the whole world Number of observations: 80				
Model	(1)		(2)	
	Coefficients	Standardized coefficients	Coefficients	Standardized coefficients
ln(H)	2.039*** (0.000)	0.325	2.147*** (0.000)	0.342
ln(I)	0.420*** (0.000)	0.692	0.284*** (0.000)	0.468
ln(s)	1.155*** (0.000)	0.128	1.081*** (0.000)	0.119
ln(n + g + δ)	0.543*** (0.009)	0.076	0.282 (0.172)	0.039
ln(IPRI)	–	–	1.328*** (0.000)	0.228
Constant	1.129 (0.210)	.	0.819 (0.349)	.
F-test: p-value	0.000		0.000	
R^2	0.948		0.958	
RESET test: p-value	0.252		0.004	

Notation:
1. three stars *** – variables significant by 1%
2. In parentheses (p-value) –the probability of error in rejection of the null hypothesis
3. dashes–variables not used in the model

Source: The study was performed on the base of source World Bank (World Development Indicators); UN Development Programme (Human Development Reports).

Model 2 attempts to assess whether the institution of ownership has a direct impact on economic growth. We see that R2 has grown by 1% and the coefficient for IPRI is significant. However, the variable (n + g + δ) lost its value, which contradicts the growth theory. In addition, the p-value of the RESET test indicates the problem with the specification. Thus, the direct impact of the realization of property rights on economic development is questionable.

So, testing the first equation allowed us to obtain the coefficients for compiling the model of endogenous economic growth:

$$\ln Y/L = 0.33 * \ln H + 0.69 * \ln I + 0.13 * \ln s + 0.08 * \ln(n + g + \delta) + e$$

All coefficients are significant. The model shows that the most important factor of economic growth is a propensity to innovate (0.69)

To analyze the influence of property rights on the propensity for innovation, a model with three sub-indexes IPRI (model 1) was evaluated, but it turned out that one of the variables is superfluous (Table 5). Therefore, model (2) was evaluated, in which only LP and IPR are independent variables.

Table 5

Evaluation of the innovation model

Dependent variable: ln(I) Sampling: the whole world Numberofobservations:84				
Model	(1)		(2)	
	Coefficients	Standardized coefficients	Coefficients	Standardized coefficients
ln (LP)	3.946*** (0.000)	0.542	4.330*** (0.000)	0.594
ln (PPR)	1.001 (0.507)	0.071	–	–
ln (IPR)	2.267*** (0.004)	0.319	2.324*** (0.003)	0.328
Constant	-3.111 (0.096)	.	-2.019 (0.004)	.
F-test: p-value	0.000		0.000	
R^2	0.786		0.784	
RESET test: p-value	0.334		0.239	

Notation:
1. three stars *** – variables significant by 1%
2. In parentheses (p-value) –the probability of error in rejection of the null hypothesis
3. dashes–variables not used in the model

Source: The study was performed on the base of source World Bank (World Development Indicators); Property Rights Alliance (International Property Rights Index).

Model 1 is generally well describing the factors of propensity of entrepreneurs to innovate. We see that the political and legal environment has the highest standardized coefficient (0.54). Slightly less is the influence of the realization of intellectual property rights (0.32). Physical property rights proved to be insignificant for innovation. Remembering that in countries with a high level of legal protection as well-protected property rights of individuals, it is possible to remove this variable from the model.

The model 2 estimated the impact of LP and IPR on the propensity to innovate. The coefficient of determination is rather high (78%), F-Test and RESET allow to reject hypotheses about the problem with the specification of the model. It can be seen that the propensity of entrepreneurs to innovate is mostly influenced by the political and legal

environment (0.59) and almost twice as weak by the protection of intellectual property rights (0.32).

So, testing the second equation made it possible to create a model of propensity for innovation:

$$\ln I = 0.59 * \ln LP + 0.33 * \ln IPR + e$$

PPR revealed insignificant, LP and IPR – significant. In general, this model confirms the theoretical assumption that property rights have a direct impact on the propensity to innovate. The political and legal environment has the strongest influence, the influence of intellectual property rights protection is half as weak, and protection of physical property rights has no effect at all.

The results allow us to establish the indirect influence of the institution of property rights to long-term growth through the propensity to innovate. Econometric analysis confirms expectations about the non-identical effects of different property rights on economic indicators. The protection of physical property rights does not actually affect the propensity for innovation. Conversely, the protection of intellectual property rights is influenced by a well-developed political and legal environment. It was also found that the economic indicators in the developed countries are more dependent on the protection of intellectual property rights quality than in less developed countries.

4. Transitive Countries and "Selling Resources" Countries as an Object of Applying an Innovative Development Model

The obtained results challenge politicians in countries with transition economies and in "selling of natural resources" countries that are looking for the most adequate legal basis for their economic reforms. However, it should be understood that the development of national legal frameworks cannot be effective without taking into account the economic and institutional features of these countries.

"Resource-selling" countries have a common disease called "the resource curse". The raw material model of development is characterized by a deformed structure of the economy, where the primary industries are dominant. Hence the dominance of resources in the structure of exports and a large dependence from the world market. Resources are moving from the manufacturing sector to the raw material and service sectors, which create a lower value-added. The long-term dependence of the economy on the export of natural resources weakens incentives for the development of manufacturing industries and the creation of new technologies. The competitiveness of other sectors is declining. Outdated industrial capital requires restoration, but a low share of accumulation cannot even ensure the simple reproduction of fixed capital in the manufacturing sector.

The influx of money into the country increases the demand for consumer goods, but their production does not keep pace with rising incomes. This causes inflation, increases in bank interest on loans. The number of employed is reduced in a negative demographic situation, increasing labor emigration and low labor productivity. State spending to support education

and science is declining. The fall in profitability due to the growth of the national currency leads to a reduction in investment and a technological lag. In the long run, the most dynamic high-tech industries are degrading and losing ground.

The problem is compounded when the industry is completely monopolized by the state. The sad experience of Venezuela shows what the state's orientation towards obtaining monopoly rents and redistribution of oil revenues leads to. Instead of wisely disposing of unique opportunities and using oil super profits to modernize the economy, develop high-tech industries, and invest in social projects, a corrupt government prefers to spend raw resources recklessly. Today Venezuela is one of the poorest countries in the world; with a GCI of 41.8 in 2019 it ranks 133rd among 141 countries in the world. Almost all indicators are below average even in their region. The Institution sub-index is 25.7 (with an average of 47.1 in Latin America); Macroeconomic stability – 0 (73.7); Business dynamism – 28.6 (53.8) Innovation capacity – 30.9 (34.3) (World Bank, 2019).

Historical experience shows that countries with developed political and civil institutions, such as Norway and Canada, have chances to overcome "resource problems". A well-developed system of property rights, an independent judiciary, free media and viable political parties counterbalance corruption and abuse.

A different situation is characteristic of transformational countries. A complete change in the social, political and economic structure required the choice of own model of economic development. The post-Soviet countries faced a particularly difficult task, since they had previously been part of the single national economic complex of the USSR. However, they are also moving along different paths of economic reform.

The system of property rights in transformational countries has still not been completed. The ambiguity of the results in Central Eastern Europe and the countries of the former USSR is due to different starting conditions, the degree of integration into the world economic space, and the influence of sociopolitical stereotypes.

In the countries of Eastern Europe, even before the reforms began, there was a sector of small private and cooperative production, which created the basis for the growth of market infrastructure institutions. In the USSR, these institutes at the turn of the 80–90s were created artificially. The founders of most commercial banks and exchanges were large state enterprises and industry associations. In fact, their creation was the beginning of the process of spontaneous privatization of state property, already then called "nomenclature".

Various "voucher" privatization schemes have been applied in the Czech Republic, Romania, Poland and Bulgaria. Almost everywhere, nominal privatization coupons (vouchers) were used, which significantly reduced the possibility of financial fraud with them. The state kept under strict control the process of creating and operating investment (privatization) funds.

In Romania, commercial companies were subject to privatization, whose property accounted for 50% of all national wealth; 30% of the cost of their capital was transferred free to all adult citizens in the form of a certificate of ownership. The remaining 70% came at the disposal of the State Property Fund and were sold out to Romanian and foreign legal entities and individuals within seven years.

The concept of privatization in Hungary evolved gradually. Its formation began within the framework of the previous system, when the development of a social market economy based on a mixed form of ownership was envisaged. The high degree of readiness of the economy and society for radical transformations, laid down by the reformist traditions of the 60-70s of the XX century, has become a prerequisite for a quick and successful start of privatization. In the 80s, almost 75% of the adult population of Hungary was employed in various forms of the "second" economy. The private sector was providing more than 50% of the services to the population, giving 1/3 of the retail turnover.

Unlike other post-socialist countries, privatization in Hungary was based on a fee. The meaning of privatization was seen not simply in a change of ownership, but in the formation of a layer of new owners, capable of responsible and interested actions in order to increase capital. A feature of Hungarian privatization was also the opening of access to foreign capital. He got the opportunity to acquire individual enterprises with one hundred per cent ownership. The circle of enterprises was expanded in the property of which the share of foreign capital can reach 51% or more. As a result, the flow of foreign direct investment (for 1990-2000, $ 24.2 billion) flowed into the Hungarian economy, of which 60% were directed to production.

An important component of the privatization model in the Czech Republic and Slovakia was privatization coupons (vouchers), which were exchanged for shares at an auction. If the demand exceeding the supply, the submitted applications were cancelling, and a new round of sale was carrying out according to the same scheme, but at a higher rate. Thus, the process of concentration of shares of privatized enterprises was completely left to the will of the market. By the end of 1994, about 90% of state property was sold in the Czech Republic. A quarter of the cash proceeds from the sale of shares amounted to a money of foreign investors.

The real content of the changes in the property relations system in the Czech Republic is difficult to determine unambiguously. Investment funds have become the main holders of shares of large privatized enterprises (about 2/3 of the shares). Most funds were controlled by five major Czech banks. The main holder of the capital of these banks was the state. Although after the financial crisis of 1999–2000 the state has reduced its share in the capital of commercial banks, the system of interweaving property rights remains complex and multi-stage.

In Poland, as soon as possible, a small privatization was carried out in trade and consumer services. It covered 60 thousand enterprises; several hundred thousand new private enterprises were also created. Large privatization in the industry was carried out gradually and was limited in scope. The main method of privatizing medium-sized enterprises (with the number of employees up to 500) was a preferential sale to their labour collective. Voucher privatization was also carried out, similar in its model to Czech. About 600 enterprises took part in mass privatization. The shares of privatized enterprises were distributed among 20 national investment funds (60% of the shares), the Ministry of Privatization (25-30%), and employees of the enterprise (10-15%). The share of private enterprises has grown over the years of reform from 28.6% in 1989 to 64.1% in 1997. In the hands of the public sector, less than 30% of the economy remained.

In Bulgaria in 1996-1997 mass privatization of shares of state enterprises was carried out using investment vouchers. 1050 objects were put up for sale; as a result, 14.58% of the assets of state enterprises were privatized (Council of Ministers of the Republic of Bulgaria, 2009). The voucher privatization revealed a number of shortcomings, so in 2002 a new Law on privatization and post-privatization control was adopted. Clear and transparent rules and procedures were regulated for all participants, equality of investors, as well as the profitability of privatization as a prerequisite for sustainable economic development and competitiveness of privatized companies. A public competition and an open auction have become the main ways to sell blocks of stocks and shares of enterprises. 1966 companies with state participation of less 50% were realized in this way, which amounted to almost half of the total number of minority stake sales since the start of privatization.

By the end of 2018, the total amount of privatized fixed assets in Bulgaria amounted to 66.31% of all state assets. Shares of 5,282 state-owned enterprises were sold, including in industry (1,647), trade (1,177), agriculture (622), construction (536), tourism (526) and others. The foreign investors from the Czech Republic, Austria, Belgium, Germany, Spain and other European countries were attracted. Currently, Bulgaria has significantly limited the sale of shares of companies with state participation in capital. Most majority packages are prohibited from being privatized (Council of Ministers of the Republic of Bulgaria, 2009).

The unification of Germany in 1990 led to some fundamental differences in the transformation of the economy of the former GDR. The features of the East German version were: certain political choice in the direction of reforms, decisiveness in privatization, the opportunity to rely on the established legal framework and institutional structures of West Germany. The radical reforms were paid for by the structural crisis of East German industry, which suddenly faced global and fierce competition. The ruin of enterprises, the increase in unemployment, the socio-psychological tension in connection with the emergence of a complex of "second-class Germans" became concomitant phenomena of the initial stage of reform.

Privatization took place in line with three market strategies. The first is the speedy sale of the most efficient, competitive enterprises. The second is the reorganization of “problem” enterprises and their preparation for privatization in the absence of potential investors. And the third is the liquidation of uncompetitive enterprises while maintaining the possibility of their reorientation to new activities. In the GDR, issues of employment rather than social justice in the distribution of public property came to the fore. The main participants in privatization in the eastern lands were West German firms and entrepreneurs.

Thus, in the post-socialist countries, a wide range of forms and methods of privatization were used. The reasons for this were: lack of national capital and limited inflow of foreign capital; a large number of privatized enterprises; underdeveloped institutional environment; the need to eliminate monopoly. Market methods of privatization have been implemented only in the eastern lands of Germany. Hungary, which attempted to carry out privatization on the basis of sale, was forced in practice to introduce “compensation bonds” for citizens who suffered material and moral damage during the years of socialism. In other countries of Eastern Europe, the leadership was forced to use various modifications of the free distribution of property to citizens.

The preferential sale of shares to labour collectives in the countries of Eastern Europe (with the exception of Slovenia) was insignificant. For example, the Czech Republic proclaimed the principle of prohibition of privileges, advantages of some groups of the population over others. Only in the small privatization, labour collectives did be granted to the "first-hand right" at the auction. In Hungary, benefits to labour collectives were reduced to obtaining preferential loans for the purchase of shares. Only in East Germany labour groups had preference if they offered equal conditions with other buyers (a promising development concept, an appropriate price offer, guaranteeing level of employment, etc.).

The active attraction of foreign capital has become a significant financial injection during the years of reform. So, foreign direct investment in 1996-2000 reached $ 15.4 billion in the Czech Republic, $ 2.1 billion in Slovakia, and about 12 billion dollars in Poland. However, foreign capital did not become a locomotive of progress in Eastern Europe. The exception is Hungary, where today every fourth enterprise in the industry is a joint venture. According to analysts, attracting foreign capital to the high-tech industries of engineering and pharmaceuticals was the only way to save them in those conditions (Kolganov, 2005).

Transnational corporations also have a significant impact on the Hungarian industry. With their help a dynamic change in the structure of Hungarian production began and a number of fundamentally new industries were created.

There is an opinion that foreign capital contributed to the formation in transitive countries an industry structure that specializes in relatively simple production that complements the technological chains of more developed countries. The desire of Western investors to monopolize entire industries and eliminate potential competitors was also noted. There is a tendency to export capital through the channels of transnational monopolies (Kolganov, 2005). However, studies show that foreign investments usually bring with them modern technologies, techniques and scientifically established management (Naama. 2011). Cooperation with more progressive foreign partners opens up new opportunities, encourages the search for new ideas and solutions, which in the future helps to bridge the innovation gap.

Unlike the countries of Eastern Europe, where structural reorganization of the economy has become a reality, market reforms in the countries of the former USSR have had heavy consequences. Mass privatization not only did not stop, but also exacerbated the processes of decapitalization of enterprises, the transfer of capital from the real sector to the financial sector, and the flight of capital abroad. The most radical privatization processes went in Moldova, Kyrgyzstan, Kazakhstan, they went slower in Russia and Ukraine (due to a number of large and super-large enterprises), and the slowest in Belarus, Turkmenistan, and Azerbaijan.

Russia has chosen a strategy of mass, rapid privatization. The arguments put forward were: lack of time, political confrontation that could block market reforms, as well as the fear of spontaneous privatization. Her danger was seen in the fact that it was carried out exclusively in favour of the former Soviet nomenclature. (Chubais, 1999).

The privatization process was reduced to formal corporatization, as a result of which the ownership of the enterprises was seized by precisely the nomenclature, against which the

Privatization Program was originally directed. In parallel, there was a process of creating new firms, which quickly formed a layer of small and medium-sized entrepreneurs.

However, the general state of the economy was determined by insider privatization of the bulk of the former state enterprises (about 75%). The redemption by the enterprise staff of a controlling block of shares eliminated the participation of outsiders. Most of the shares were blocked for a long time inside the enterprise – by its staff, who was not ready for control over the management. Corporate governance system as the basis for the successful functioning of modern large industry did not arise.

In Ukraine, during the privatization period, priorities have changed. In 1992-1994 the main goal was to create a market environment and a fair division of property, in 1995 – 1997. Search for an effective owner and the formation of the middle class, since 1998 – attracting investment (State Property Fund of Ukraine, 2019).

Carrying out small privatization in Ukraine is considered the most successful. For 10 years (1992 – 2002), it covered over 68 thousand objects, mostly in the sectors serving the consumer market. At the same time, the process of open corporatization was proceeding rapidly. Privileges and political support allowed many labour collectives to obtain controlling stakes on the basis of a free scheme. The lack of cash injection into production did not contribute to maintaining a competitive position in the market. The further public sale of shares was supposed to change the situation. However, the stock market is still one of the weakest elements of the market infrastructure in Ukraine.

Since 1998, the mass sale of stakes of large enterprises has begun at auctions and competitions. Auctions opened access to participation in privatization of many intermediary organizations – investment companies, funds, trusts, banks, etc. Manipulation of huge amounts of money for speculative purposes, illegal conspiracy about the outcome of the transaction even before it began, and such frauds led to a significant criminalization of the process.

During the years of reform in Ukraine, more than 128 thousand objects were sold, the share of non-state enterprises in the production of industrial products amounted to more than 70% (State Property Fund of Ukraine, 2019).

The year 2018 was a breakthrough for small privatization, which was launched on electronic platforms through the ProZorro system.

In countries such as China and Vietnam, unlike other countries with transition economy, the task of large-scale privatization of the public sector was not posed at all. The change in the ownership structure in these countries was not based on privatization, but on the rapid growth of cooperative and private production on its own basis. The public sector has indirectly served as a source of growth for these sectors. State control over the prices of energy, raw materials and industrial equipment produced in the public sector allowed non-state entrepreneurship, mainly engaged in the production of consumer goods, to obtain a favourable price ratio. At the same time, in these countries, there was a long process of commercialization of state enterprises, decentralization of management with the transfer of management functions to the level of enterprises. Only a few state-owned properties in China were privatized.

As practice has shown, large-scale free privatization has not become a mechanism for "launching" the economy. For a long time, the countries of the post-Soviet space could not get out of the grave crisis. At the same time, the Czech Republic, Slovakia, Poland, Bulgaria, Slovenia, which have limited the possibility of financial fraud with free assets, demonstrate relatively stable economic growth. China and Vietnam, which did not pursue an active privatization policy for a long time, have achieved significant success in economic growth, especially in the growth of the private sector.

Privatization, even if successfully implemented, is only a prerequisite for creating a competitive economy. Privatization did not give impetus to structural adjustment in the countries of the former USSR, since the difference between the restructuring within the framework of a well-functioning market system and the restructuring of the entire system during the transition was not understood. It is very important to realize that privatization is not just a transfer of ownership, but a transition to quality enterprise management (Naama,2012). To reformat the economy in accordance with modern requirements, it is necessary not only the presence of the private sector, but also the conditions for its successful functioning. Competitiveness in the world market is provided by high-tech and high-tech industries, therefore, special attention should be paid to them.

Studies show that "the innovation systems of most low- and middle-income economies have a set of common characteristics: low education levels, low levels of science and technology investments, reduced exposure to foreign technologies, limited inward knowledge flows, weaker science and industry linkages, challenging business environments with inadequate access to financial resources and underdeveloped venture capital markets, low absorptive and innovative capacity within domestic firms, and limited use of intellectual property". To launch an innovative development model, an active state policy is needed. It can be carried out according to various scenarios:

1) by significantly strengthening the role of the state in the economy through state lending, the provision of tax benefits to priority sectors, protectionist policies. However, in the conditions of high corruption and low competence of officials, the opposite effect occurs: theft of funds, support for inefficient enterprises and, as a result, a decrease in the living standard of the population.

2) by improving the institutional environment: reliable protection of property rights including intellectual; favourable legal environment (patent law, standardization and certification system); ensuring equal conditions for competition; tough antitrust policy; active fight against corruption.

At the same time, formation of communicative competence and effective education system should be supported (Luchaninova et al., 2019), and information and innovation infrastructure (business incubators, technology parks, venture funds etc.) should be developed.

Conclusion

Theoretical and empirical analysis has shown that the institution of property rights can have a different impact on economic development. If it does not correspond to the nature of productive activity, it becomes an obstacle to technological progress. When the productive forces reach a higher level of development and a new production factor becomes widespread, there is a need to regulate its use, and this requires the introduction of adequate legal norms. Moreover, it is necessary to understand that it is impossible to establish a unified system of property rights for all countries. The system that is optimal for a developed country may be too expensive to a developing country, and vice versa. Similar conclusions regarding the degree of protection, in particular intellectual property rights, take place in scientific discussions.

In our opinion, the problems of IPR protection, as well as rent-seeking, are resolved by improving the legislative framework and the executive mechanisms. In addition to improving general formal rules, such as the independence of the judiciary, the rule of law, political stability and the control of corruption, this may target changes in legislation[6].

An indicator of the relevant institutions of property rights to economic development is the innovative activity in the country. Between institutions and innovation, there must be a rigid complementarity, similar to that described by Greif and Mokyr (2015), characterizing the industrial revolution in England. At the present stage, clear specification and protection of intellectual property rights are important conditions for economic development. The conclusion that effective implementation of this institution depends on the quality of the political sphere poses an important question about the reliability of the prevailing approach based on a simple unification of countries with different institutional frameworks under one umbrella in analyzing their impact on economic development. This approach may give inconsistent and misleading results and lead to false conclusions and improper policy. The inclusion of intellectual property rights protection in the equation of economic growth will allow to take into account the important institutional determinant of innovation development.

Objections to its excessive protection will disappear if the political and regulatory environment promotes competition in the spirit of "creative destruction. "The growing scientific and technological progress continually offers new intelligent products that quickly eliminate the monopoly profits. Government's main objective should be in the formation of a political and legal environment that will create optimal conditions for the development of intellectual entrepreneurship. This will allow each country to build its own model of an intellectual-oriented economy.

[6] For example, reducing the term of the patent or the prohibition of patenting individual intelligent products. Such precedents already exist. So, in 2012, Google, Facebook and other IT companies called for the prohibition of patents on "abstract ideas", and from 2013 in New Zealand is legally prohibited from patenting software, available at: http://www.panarmenian.net/eng/news/136695/; https://en.wikipedia.org/wiki/Software_patent

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