AN ATTEMPT TO ANALYZE THE RELATIONSHIP BETWEEN THE PERFORMANCE OF THE ECONOMY AND CERTAIN RESULTS OF INSOLVENCY PROCEEDINGS IN SELECTED COUNTRIES

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Abstract

The study stems from the hypothesis according to which there is a relationship between the performance of the economy and the efficiency of insolvency proceedings in a given economy. There is the assumption according to which economic performance in the sense of the amount of gross domestic product per head of population is understood as the result of numerous aspects, whilst one of these is also the quality of the entrepreneurial environment and the enforceability of an agreement in this environment. If this is truly the case, there should be a relationship between gross domestic product per head of population (i.e. living standard) and the outcomes of insolvency proceedings as a means of verifying the enforceability of agreements. This relationship should exist especially if we understand the enforceability of agreements as one of the aspects that determine general entrepreneurial risks in a given environment. The authors therefore devote considerable attention to a structured selection of surveyed countries, analysis of individually used time and thematic series, which subsequently undergo regression analysis and interpretation of results, especially with regard to the specific significance of creditor yields from insolvency proceedings.

Key words: insolvency, regression analysis, GDP per inhabitant,

JEL Code: G30, G33, K29

Formulation of the hypothesis

The quality of a given country's economic system is measurable with the aid of indicators of gross domestic product per inhabitant. This indicator defines the performance of the economic system, although achievement of high performance requires that the institutions in a given country work well and efficiently.

Insolvency proceedings, i.e. the mechanism of collective enforcement which is prescribed by law and which is controlled and organized by judiciary, is among the significant expressions of the institutional quality of a given country's economic system (Smrčka, 2012, Smrčka, Arltová & Schönfeld, 2013, Kislingerová, & Arltová, 2013, Smrčka & Malý, 2013). It should then, however, apply that in countries with a high gross domestic product per inhabitant, a larger part of the receivable for the debtor in default will be enforced than in countries in which the GDP per inhabitant is lower. Furthermore, it can be assumed that insolvency proceedings in developed countries will be faster than in less developed countries. And finally, the assumption should apply that costs for proceedings in countries with a higher yield from and a shorter duration of insolvency proceedings will be lower than in states where less is enforced during long insolvency proceedings. Therefore, the main hypothesis can be expressed as follows: A high gross domestic product per inhabitant is enabled, among others, by an efficient and high-quality insolvency process. (Richter 2011)

1 The significance of surveying the quality of insolvency processes

Insolvency processes are not among the more markedly researched economic events. The conviction often predominates that, in view of the amount of procedural acts and in view of the complexity of relationships that appear in insolvency processes, the significance of legislative solutions predominates over economic significance. Understandably, these are highly erroneous notions. Insolvency processes are sovereign economic events, during which transfer of significant property from the original owners to new owners takes place. Moreover, insolvency proceedings are a consequence and continuation of the debtor's default, which is why they have an unusually fundamental influence on the behaviour of market subjects in many ways.[1] Most importantly, however, it applies that insolvency proceedings are one of the ways of an economic subject's exit from economic life – of course, it is not the only one[2], but it is one of the most significant[3]. A decisive element which determines the significance of insolvency proceedings is the fact that the enforceability of receivables is one of the main parameters according to which risks are assessed. It basically applies that if the

[1] This applies in the case of default and the subsequent bankruptcy of natural persons, although in these very numerous cases law does indeed dominate to some degree over the economic side of matters. This is given by the social and societal overlap of personal bankruptcies, and in this sense, personal bankruptcy is more an institution of humanization of economic relationships than a purely financial solution of the situation.

[2] For instance, mergers, takeover, liquidation and so forth are also exits of an economic subject from economic life.

[3] The significance of insolvency proceedings is not given even so much by amount, as approaches that are far more frequent exist in this sense, but is given by the fact that it is precisely insolvency proceedings (whether a debtor's bankruptcy is settled in them by the rehabilitation or liquidation method) that are used in cases of medium and large enterprises.

enforceability of an agreement, rights and enforceability of a receivable is at a low level in a given economy, this low level is noticed by entrepreneurial subjects and is immediately calculated into prices or other mechanisms. It essentially always applies that the final costs of these risks are then borne by the end consumer, and this can be seen equally well both in the price of a product or service, as it can, for instance, in the inaccessibility thereof. It thus applies that the more profitable enforcement is (in the course of insolvency proceedings), and the lower its costs and the faster it runs, the lower the risk felt by entrepreneurs and the less they transfer these risks to prices or into restrictions on providing services.

Knowledge of insolvency processes and their amendment in the direction of higher yields, lower costs and shorter proceedings are therefore a fundamental step towards increasing the competitiveness of basically every economy. (Richter 2008, Mucciarelli, 2013)

2 The relationship of GDP and insolvency proceedings

The GDP per inhabitant is a suitable parameter for comparing the efficiency of individual economies. Thanks to the ratio of the economic volume to the number of inhabitants, the question of the general size of a given country's economy is sufficiently eliminated. Because the gross domestic product measures added value, it also solves at least partially an otherwise confusing inequality in the area of mineral wealth of individual states – albeit not perfectly in this direction. The GDP per capita indicator as such is calculated regularly, and although various institutions utilize various methodologies, differences occur more in the actual amount of calculated sums[4]. The determined order of countries and the differences between them remains the same or at least relatively similar when using various approaches.

Data provided by the IMF and made public for 2013 were used for the following calculations (these are estimates on the basis of information known towards the end of the third quarterly 2013). IMF calculations are the most frequently cited in this area.

There are no international statistics in the issue of insolvency proceedings in the sense of their real results in individual states. Nevertheless, surveys conducted regularly in the scope of the joint project of The World Bank and IFC and made public in scope of the publication Doing Business are available. Besides other parameters, selected experts from numerous states repeatedly receive for assessment a model insolvency case and they are to estimate (if

[4] For instance, various sources give these amounts of gross domestic product per inhabitant for the United States: 48,112 dollars (2011, The World Bank, eighth place in the world), 48,328 dollars (2011, International Monetary Fund, sixth place in the world), 48,300 dollars (2011, The World Factbook – CIA, eighth place in the world) 46,569 dollars (2010, University of Pennsylvania, ninth place in the world).

such a case would take place in their country in a given year) what sum investors would recover, what the costs of insolvency proceedings would be, and finally, how long the insolvency proceedings would last. The data from Doing Business thus do not bear witness as to the real amount the average creditor, for instance, would gain in average insolvency proceedings, but they are suitable in order to be able to assess respectively the institutional quality in individual countries where the survey is conducted.

As we can see, both sets of data can be contested from the statistical perspective: In the GDP, from the very principle of the aggregate indicator, which is difficult to compare internationally (for instance, also due to various practices of accepting grey economy into these figures). A further source of puzzlement is the recalculation of products from domestic currencies to the dollar comparative base, which is carried out purely by the exchange rate, i.e. it can distort the relationship of the standard of living or the efficiency of the system. Similarly, the data provided by Doing Business on insolvency proceedings are not real either; they are the result of a public opinion survey, albeit a highly professional one. (Dewaelheyns, N. & Van Hulle 2010, Cumming, Johan & Zhang, 2014)

Nevertheless, it can be asserted without a doubt that both the GDP per capita indicator of the IMF and the indicators from Doing Business are of high quality, they have a precise methodology of emergence and it applies that although we do not have to take them literally in their absolute levels, they quite certainly show the mutual relationships between situations in individual countries, which means that they are usable for use in regression analysis.

3 The logic of the used sample of countries

The aim of the regression analyses which we will carry out in due course is to ascertain to what extent the parameters of insolvency proceedings are in a relationship to the indicator of gross domestic product per inhabitant. In certain previous works, we researched the dependence of these indicators in a sample of OECD countries, and it transpired that the relationships indicated above in the hypotheses truly apply among developed countries.

As a further stage of the survey, we selected a group of countries with a highly divergent status in the scales generated according to the level of GDP per inhabitant. The sample of countries arose in this manner: Ten of the most developed countries (as these countries are indicated in the data of the IMF for 2013[5]) according to GDP per inhabitant

[5] The following countries are at issue, 10 in total: Luxembourg, Norway, Qatar, Switzerland, Australia, Denmark, Sweden, San Marino, Singapore, and the USA.

were taken. States placed from the thirtieth to the place[6] in the same comparison were then assigned to these states. The last group comprises of 22 states which were came between the 120th and 149th place in the scales[7], while the remaining states were eliminated from the survey due to unavailability of comparative data from Doing Business. A total of 53 samples (53 states out of 183 countries) of various data were thus surveyed.

The lowest number of states from the group of the wealthiest countries is logical – we know from previous surveys that the situation is generally homogenous in OECD countries and in the most developed states. The first country in the scale is Luxembourg, with more than 110 thousand dollars GDP per inhabitant; the tenth, the United States, states more than 53 thousand dollars. Countries between thirtieth and fiftieth place represent the developed mean of the entire order, whereas there is a difference of more than ten thousand dollars per inhabitant between the wealthiest of these states and contrariwise the last, the fiftieth; even this group, therefore, captures a considerable range. Oman, with 23 thousand, takes thirtieth place; the Seychelles, with roughly fifteen thousand American dollars of Gross Domestic Product per inhabitant is at fiftieth place.

In the last group we find Congo (almost 3,300 dollars per inhabitant) at 120th place; Kirgizstan (1,263 dollars per inhabitant) is at 149th place. There is no representative in the survey from the group of the absolutely poorest states (150th to 186th place) – these are mostly states in which it is not possible to even speak of real insolvency proceedings or collective enforcement of receivables[8].

4 The results of the analyses and the interpretation thereof

Outputs for 53 countries were utilized for regression analysis; from the one side, this was data on the Gross Domestic Product per inhabitant; then, from the other side, data on the yields of insolvency proceedings, costs for proceedings and duration of proceedings.

The dozen states in the right section of the graph, which is relatively dispersed, are distinct; one can also not overlook the middle group gathered around the axis of 20 thousand

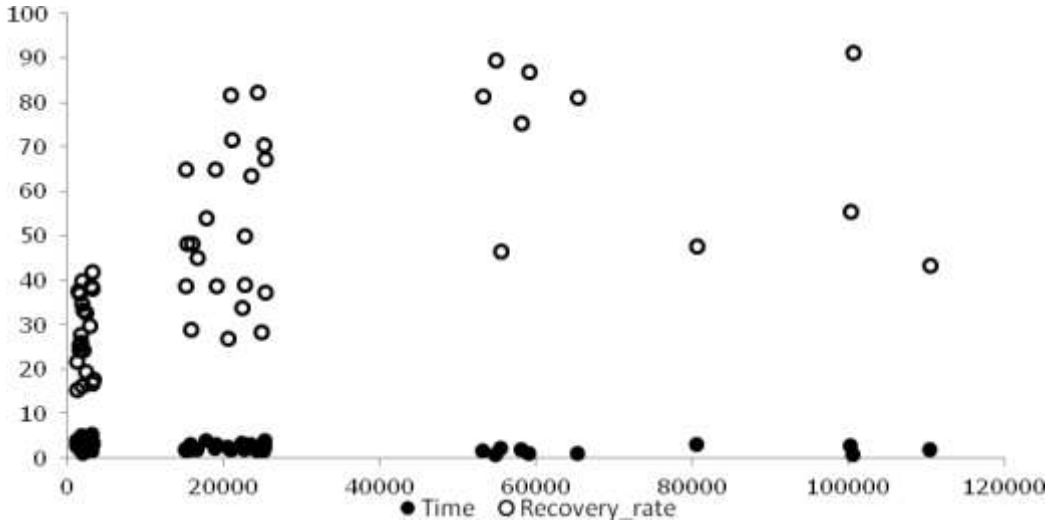
[6] The following countries are at issue, 21 in total: Oman, Bahrain, Cyprus, Saudi Arabia, Korea Rep., Bahamas, Malta, Slovenia, Greece, Portugal, Taiwan, Trinidad and Tobago, Estonia, Czech Republic, Slovak Republic, Uruguay, Lithuania, Chile, Latvia, Barbados, Seychelles.

[7] The following countries are at issue, 22 in total: Congo, Rep., Egypt, Arab Rep., Morocco, Micronesia, Sri Lanka, Bolivia, Philippines, Moldova, Honduras, Sudan, Solomon Islands, Vietnam, Uzbekistan, Nicaragua, Ghana, Nigeria, Zambia, India, Yemen Rep., Pakistan, Cameroon, Kyrgyz Republic.

[8] The Doing Business survey project is conducted in 189 countries; only 168 states, however, are recorded in the category of Resolving Insolvency – it does not exist in other insolvency proceedings, at least not in the form of which we are speaking.Nevertheless, certain states do not appear at all in similar statistics – a typical example is North Korea, but also Somalia, Syria or Equatorial Guinea; Afghanistan is often missing.

dollars, and the countries that are among the poorest (i.e. the line of marks in the left side of the graph) are understandably also easily visible. As regards the time of proceedings, the graph is not representative in this direction as the gauge does not enable adequate distinction; however, the general duration of proceedings truly drops with the wealth of the state – this fact will be described in more detail in the text that follows. By contrast, however, the recoverability of the investment is clearly visible.

Fig. 1 Costs and recoverability from insolvency proceedings in dependence to GDP per inhabitant in OECD countries in 2013 (costs in percent of property, recoverability in percent from investment, GDP in USD)



Source: International Money Fund, Doing Business, own calculations

Several particulars are worth a specific note. Firstly, it is good to notice the six countries from the first group which are highest in the proportional axis. These states are at issue: Norway (recovery rate 91.3 percent), Singapore, Denmark, USA and Australia; Sweden (75.5 percent) is the sixth country from this ten-member group of the wealthiest states with a markedly high recovery rate. In contrast to them, we then see four countries markedly less accommodating to creditors – once again, according to the order according to the recovery rate, they are the following states: Qatar (55.6 %), Switzerland, San Marino and Luxembourg (43.5 percent).

The case of Qatar is not in any way surprising; as we will see later, Arab countries generally have a somewhat lower recovery rate in comparison with equally wealthy states from other cultural – economic regions. The cases of the remaining three European and traditionally wealthy states are unusual and would deserve an independent study[9].

[9] Although the explanation that especially Luxembourg, but also Switzerland are countries known, among others, for their extremely high costs for legal services (and these are states which are very expensive from the perspective of carrying out

The table 1 shows the results of analysis of recoverability from insolvency proceedings in dependence to duration of proceedings in years and GDP per inhabitant. The model can be written in the form:

$$\widehat{recovery\ rate} = 65.05 - 11.16\ time + 0.00034\ gdp$$

from which it stems that an increase in the duration of insolvency proceedings by one year decreases the recoverability from the investment from these proceedings by 11.16 of a percentage point on average, and an increase of GDP per inhabitant by one USD increases the recoverability from the investment from these proceedings by 0.00034 of a percentage point on average, all under the assumption that the other variables in the model are constant. From the value of the multiple correlation index 0.73, it follows that the relationship is relatively strong. All tests were conducted on a five-percent level of significance.

Tab. 1 Results of regression analysis of recoverability from insolvency proceedings in dependence to duration of insolvency proceedings and GDP per inhabitant in 2013

Dependent variable: RECOVERY_RATE
Included observations: 53

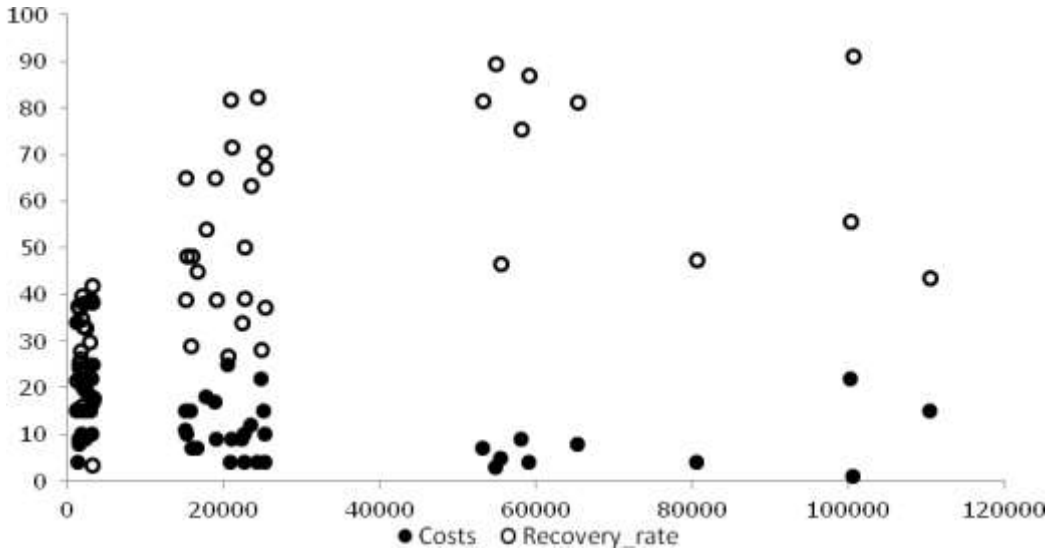
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	65.04779	6.262863	10.38627	0.0000
TIME	-11.15699	2.067052	-5.397534	0.0000
GDP_HP	0.000338	7.62E-05	4.430419	0.0001
R-squared	0.591375	F-statistic		36.18072
Adjusted R-squared	0.575030	Prob(F-statistic)		0.000000
		Durbin-Watson stat		1.532273

Source: own calculation

Another potential comparison is offered by the Fig 2.

Fig. 2 Costs and recoverability from insolvency proceedings in dependence to GDP per inhabitant in 2013 (costs in percent of property, recoverability in percent from investment, GDP in USD)

certain transactions) could be simple and attractive. However, the matter is in fact not so easily explainable this way and one must grant that the whole model would be fundamentally clearer after the elimination of these three countries.



Source: International Money Fund, Doing Business, own calculations

Even here it applies that a mere analysis of placement of individual countries would bring many interesting insights. For the present, however, we will limit ourselves to just a few remarks[10]. It should generally apply that in the right section of the graph (i.e. where the wealthier states are gathered) we should find a lower level of costs (expressed as percentages from the enforced sum) – it is truly clear that (once again, with exceptions) costs in their proportional expression in the direction from the left to the right drop (which is also confirmed by the following calculations).

Tab. 2 Results of regression analysis of recoverability from insolvency proceedings in dependence to costs for insolvency proceedings and GDP per inhabitant in 2013

Dependent variable: RECOVERY_RATE				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.91163	4.997189	10.58828	0.0000
COSTS	-1.182656	0.264636	-4.468988	0.0000
GDP_HP	0.000350	8.14E-05	4.298506	0.0001
R-squared	0.537873	F-statistic		29.09763
Adjusted R-squared	0.519387	Prob(F-statistic)		0.000000
		Durbin-Watson stat		1.864682

Source: own calculation

The table 2 contains the results of analysis of the relationship of recoverability from insolvency proceedings to their cost and GDP per inhabitant. The model can be written:

[10] A significant extreme state, where costs of insolvency proceedings expressed in percentages from the enforced sum are lower than the recovery rate expressed as a percentage from the original investment appears in the group of the poorest countries. This of course does not mean that the costs are necessarily higher also in the absolute amount, but if we remember that experts from individual states assess the same case "as though it took place in their country", the differences between the institutional maturity of the wealthiest countries transpire of be especially drastic and devastating.

$$\widehat{recovery\ rate} = 52{,}91 - 1.18\ costs + 0.00035\ gdp$$

from which it stems that an increase in the costs of insolvency proceedings from the property by one percentage point reduces the recoverability from the investment from those proceedings by an average of 1.18 of a percentage point, and an increase of GDP per inhabitant by one USD increases the recoverability from the investment from these proceedings by 0.00035 of a percentage point on average, all under the assumption that the other variables in the model are constant. From the value of the multiple correlation index 0.73, it follows that the relationship is relatively strong. A fundamental insight is thus that there is indeed a mathematically expressible relationship between the quality of an economy expressed by means of GDP per inhabitant and between basic parameters of results of insolvency proceedings

5 Confirmation of the hypothesis with the aid of regression analysis

The following table shows the results of reciprocal analysis of all four variables, where the recovery rate is understood as being the fundamental relationship.

Tab. 3 Results of regression analysis of recoverability from insolvency proceedings in dependence to their costs, duration and GDP per inhabitant in 2013

Dependent Variable: RECOVERY_RATE				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	75.86948	5.886421	12.88890	0.0000
COSTS	-0.956910	0.216805	-4.413681	0.0001
TIME	-9.605228	1.800904	-5.333559	0.0000
GDP_HP	0.000257	6.77E-05	3.793106	0.0004
R-squared	0.707616	F-statistic		39.52922
Adjusted R-squared	0.689715	Prob(F-statistic)		0.000000
		Durbin-Watson stat		1.674758

Source: own calculation

From the analysis of the relationship of recoverability from insolvency proceedings in dependence to their costs, duration and GDP per inhabitant it follows

$$\widehat{recovery\ rate} = 75.87 - 0.96\ costs - 9{,}6\ time + 0.00026\ gdp,$$

that an increase in the costs of insolvency proceedings from the property by one percentage point reduces the recoverability from the investment from those proceedings by an average of 0.96 of a percentage point, an increase in the duration reduces recoverability from investments from these proceedings by 9.6 of a percentage point on average and an increase of GDP per

inhabitant by one USD increases the recoverability from the investment from these proceedings by 0.00026 of a percentage point on average, all under the assumption that the other variables in the model are constant. From the values of the multiple correlation index 0.84, it follows that the relationship is strong. This is a clear confirmation of the hypothesis expressed in the introduction of the work.

Acknowledgment

The article is processed as one of the outputs of the research project *"Research of insolvency practice in the CR, with the aim of forming proposals for changes in the legislation that would enable increased yields from insolvency proceedings for creditors, which would contribute towards increasing the competitiveness of the Czech economy"*, registered at the Technological Agency of the Czech Republic under the registration no. TD020190 and as an output for the grant of the Grant Agency of the Czech Republic no. P402/12/G097 *DYME-Dynamic Models in Economy*.

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