Parameters of insolvency proceedings in developed countries and their dependence on economic performance

Luboš Smrčka, Markéta Arltová, Jaroslav Schönfeld, Lee Louda

Abstract – This study deals with the potential relationship between costs and yields of insolvency proceedings for creditors and the performance of an observed economy, which is measured by the GDP per head of population. The authors verified the hypothesis that the costs and yields in insolvency proceedings should be dependent on the extent of development of a given country, and that the extent of economic development can be measured precisely by product per head. This hypothesis can be tested by using mathematical models, whilst several further findings of lesser significance were obtained.

Keywords—Insolvency, GDP, insolvency proceedings, costs of proceedings, bankruptcy, yields for creditors.

I. Introduction

Logically speaking, there should be no dependence between the degree of quality by which insolvency proceedings in individual countries run their course and the extent to which this or the other country is developed.[1] In fact, however, it is manifest that countries which have a higher level of gross domestic product per head of population also show higher yields for creditors in insolvency proceedings and, likewise, lower costs.

In our following considerations, we will first focus on the general circumstances of insolvency proceedings and statistical data, which will be utilized so as to compare individual states

L. Smrčka is an associate professor at the University of Economics, Prague, Faculty of Business Administration (phone: 420- 224-098656; fax: 420- 224 098 649; e-mail: smrckal@vse.cz).

M. Arltová is an associate professor at the University of Economics, Prague, Faculty of Informatics and Statistics (phone: 420- 224-095482, e-mail: arltova@vse.cz)

J. Schönfeld is a professional assistant at the University of Economics, Prague, Faculty of Business Administration, (phone: 420-224-098652; fax: 420-224 098649; e-mail: jaroslav.schonfeld@vse.cz)

L. Louda is an external doctorand at the University of Economics, Prague, Faculty of Business Administration

[1] This text primarily concerns insolvency proceedings with entrepreneurial subjects.

in a realistic way. We will also perform certain operations with the aid of mathematical procedures, i.e. we will carry out regression analyses of gathered data. It will then be possible to evaluate the results gained and draw certain conclusions therefrom.

We generally presume hypothesis, the basis of which is formed on the assumption that the degree to which a specific country, or rather a specific economy, is developed is closely related to the product which the economy generates per population head. Therefore, the degree of economic development can be expressed with the aid of GDP per head of population indicators. Furthermore, the hypothesis in its basic form assumes that the more developed a tested country or economy, the higher the yields will be in the tested country for creditors in insolvency proceedings, and the lower the expenses will be for the actual realization of insolvency proceedings.

This is based on a general assumption, according to which long-successful economic systems and models of individual states achieve such success thanks, among others, to high-quality institutional foundations, the ability to advance rights, the rule of the law and other indisputably positive parameters of the economy as a whole.

II. Problem of insolvency proceedings and the available statistics

A. The problem of insolvency proceedings

The insolvency proceedings is among the fundamental problems of real economic systems, although relatively little attention is devoted thereto.[1] While considerable sums flow through insolvency proceedings in every economic environment, their cost is usually fundamentally dependent on the current economic situation. Insolvency proceedings in times of recession or crisis are especially significant.

The macroeconomic purpose of insolvency proceedings is to ensure that entrepreneurial assets trapped in environments of subjects who are incapable of sensible economic functioning are transferred expediently and with the lowest possible costs to the hands of such subjects that will arrange their renewed involvement in corporate connections and entrepreneurial activity. From the perspective of real economics, these proceedings should ensure that the rights of creditors are quickly and effectively fulfilled and should enable the enforceability of their receivables from the debtor in default or, more precisely, in bankruptcy. This, however, is

not primarily and necessarily an issue of time: What part of the receivable is enforced and at what cost is also at issue. As we see, there is a certain, clear difference between the national-economic and microeconomic point of view. [2]

The unique aspect of insolvency proceedings is that it is a collective procedure enforced by the state (law). As is generally known, the commencement of insolvency proceedings as a collective procedure when enforcing receivables closes the possibility of enforcing receivables individually (i.e. especially through forfeiture proceedings). [2]

The insolvency proceedings are an extraordinary institute which we can compare to other situations only with difficulty – it nevertheless shares some similarity to the solution of the problem of the common pool.   That is, for instance, with quotas, their distribution and apportionment. Similarly to the case of quotas, the participants of insolvency proceedings are faced with a relatively difficult choice – if they abide by all the regulations and prescribed procedures, it will require no small exertion on their part; at the same time, the corresponding profit will not be guaranteed to them and it could easily occur that another participant (who will not suffer as many limitations conditioned by the willingness to abide by the set regulations) will usurp for itself far more from the available or potential gain.

Fishermen who did not respect the limits fixed by quotas will gain higher profits than those who submit thereto. They do, however, risk certain recourse if their contravention of the regulations is discovered. Catching more fish than the quota allows, however, entails contravening the regulations practically repeatedly. A similar situation occurs in insolvency processes, albeit with one or rather two fundamental differences. There are certain assets of the debtor's on which more rights (liabilities) have been issued than can be satisfied thereby (the assets). This means that there are creditors here with greater requirements than can be covered – although if one of them gains an advantage (even if unauthorized), its satisfaction will be higher than that of the other; moreover, the rest will be deprived of part of their satisfaction. Not to mention: this is the first significant difference from the example of the fishermen and one territory. There is also a debtor here who, in uninfluenced insolvency proceedings, will be deprived of all of its assets, i.e. at least of those that could be monetized and utilized to satisfy creditors. The debtor has a logical motivation to attempt to excise these assets from the reach and influence of creditors and thereby ensure supervision over those assets also in the future. In this sense, the classic words of *the prisoner's dilemma* are reminiscent of insolvency proceedings - of course, in the one-round variant, which increases the nervousness of all participants.

We can also refer to insolvency proceedings as the *final judgement*, as we can see from the perspective of history the development towards which insolvency proceedings tend; as far as the future is concerned, however, this does not exist from the debtor's perspective. [3] Nor does it exist from the

creditors' perspectives, as what they do not gain now, they never will gain. The fishing quota serves the purpose of the fishing grounds being preserved for forthcoming fishermen. Insolvency proceedings do not have this ambition, nor can they.

When we defined the difference between the macroeconomic and national economic point of view and the point of view from the position of real economics or that of microeconomics, then there is also an aspect that connects these points of view. If the subjects of the real world are confronted by the fact that insolvency proceedings are ineffective and yields for creditors are only marginal, this experience – which amounts to a reality of increased risk – has to be implemented into their commercial calculations. This, however, means that the new risk becomes part of the general price level. This of course means that the general competitive ability of the economy is negatively affected precisely by lack of performance, low efficiency and other negative attributes of insolvency proceedings, whilst the main role will be played by the uncollectibility or difficult collectability of debt.

B. The problem of statistical data

We declared that insolvency proceedings are among the processes of real economics which deserve critical and structured attention, we in fact have only sparse knowledge as to their course and outcomes. It is striking that, even with truly developed economies, no statistical data is available that would give an overview on certain crucial parameters of these proceedings. This concerns especially yields for creditors and also costs incurred for insolvency proceedings.

When we have such information at our disposal, this concerns results of partial investigations of samples of insolvency processes, not on total statistics. [4]– [7] In a certain way, moreover, these samples tend to be aimed, e.g. they specialize on small and medium-sized firms or, by contrast, on relatively large corporations. [4] Their ability to bear testimony on the general outcome of insolvency processes can therefore be problematic.

In fact, we thus have at our disposal only quite specific data contained in the publication *Doing Business*, which is regularly prepared by a team of professionals from The World Bank and International Finance Corporation. [8]

Although these figures are sometimes labelled as statistical data, this is not true. These are in fact results which we could rather label as a survey of expert opinions. Without even

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[2] This state is generally recognized and accepted, which does not, however, mean that discussion is not occasionally devoted thereto.[3]

[3] This is of course a slightly high-flown assertion in view of the fact that in some cases, debtor bankruptcies are settled not only by liquidation, but also by the financial rehabilitation method. Reorganization rather than bankruptcy occurs.

[4] This is not to say that such focus on some more specific groups of insolvency cases would primarily be erroneous or bad. Such a division could, on the contrary, be useful even from the perspective of real economics and the way in which entrepreneurial subjects evaluate information which reaches them. If a business has among its customers small and medium enterprises accounting for a volume of eighty percent of realized deliveries and one corporation of major significance making up twenty percent of the same, separate statistics (or more precisely, a statistical survey) will necessarily be valued more than information "mutually influenced" by two or more highly distinct groups. If such a business had the need to modify its trading habits according to information on usual default among businesses similar to those that are among its clients, specialized information for building such a strategy would serve better.

having to elaborate in fine detail as to how the given figures emerge,[5] it is necessary to describe the whole process to at least some degree. The team compiling the afore-mentioned comparison for evaluation of each of the monitored countries is comprised of a group of specialists whom we could call experts in a given problematic in a given region or directly in a given state. These specialists regularly receive for completion a questionnaire, a part of which is a model case of insolvency proceedings – this case is always the same. The approached experts are then to estimate what results would be gained in a given state in this specific (model) case. The resultant data on the duration of proceedings, their outcomes and costs are thus an estimate of how one case would culminate.

This methodology naturally has its own highly limiting pitfalls. Most importantly, it in fact bears no testimony as to the true insolvency situation in the country which is to be thus described. The model case is in this sense of the word *model* in its international usage, but by no means does it necessarily show the true reality of a tested country. This means that, in a tested country, this model case could be substantially closer to a "standard case" than in another country – for instance, due to the fact that there is a generally worse state of enforceability of rights in one of these countries, and creditors have fewer possibilities to check a debtor's property. In such countries, it will then mean that debtors enter into insolvency proceedings with a smaller volume of property that could be monetized than in systems in which the possibility of excising property from the company is more complicated.

However, this procedure has one clear and indisputable advantage. It describes the opinions of the professional public as to the true performance of the insolvency system in this or the other state. Let us imagine that we had similarly structured statistics gained from a highly representative sample of insolvency cases in two countries. Practically speaking, we could assume that in places where there is a higher yield, lower cost and perhaps a shorter duration of insolvency proceedings, there is also a better insolvency law and other regulations, better and more educated judges and so forth. Yet this need not necessarily be true – the difference can be given insofar as one of these countries have errors in the laws which are meant to prevent outflow of assets from the business still prior to insolvency; the actual insolvency act and other circumstances could be very good.

The method chosen by the publication *Doing Business*, of course, has the unrepeatable advantage that the exact same case in all monitored countries is assessed. This means that the real performance of the actual insolvency system is assessed. As has already been said, this advantage is nevertheless accompanied by several disadvantages, especially the necessary subjectivity of the witness borne.[6]

III. REGRESSION ANALYSIS

With the awareness of certain limitations that are connected with data from *Doing Business*, one can also utilize these figures for further research. In compliance of the hypothesis on the relationship between economic performance and the performance of insolvency systems, we therefore began with a search for suitable statistical files which could be analysed together from the perspective of their differences in individual developed countries.

On the economic performance side, we chose GDP per head of population as a comparative datum. These are data drawn from official European Union sources.[10] This comparison was selected for several reasons – firstly, it would be somewhat difficult to work with absolute values of the gross domestic product itself, as these are understandably significantly dependent on the economic volume of the given country, for instance, on the number of inhabitants and others factors. The volume of GDP itself thus need not bear any testimony whatsoever as to the qualitative side of the tested economy; it speaks only of quantitative aspects.

Furthermore, it would make no sense to work with indexes based on international changes, as these data would be incommensurate with the way in which data on insolvency proceedings are given. This is due to the fact experts here define in the above-mentioned manner costs of proceedings as a percent proportion from monetization and, secondly, yields from receivables as a percent proportion from their volume. [7] This is thus an annual result which is not dependent on the result of the preceding year and does not in itself influence the future result in any way. Comparison with data originating from a time series, in which this datum would stem from previous data, would be nonsensical and could not lead to a reasonable result. We arrived at the conclusion that it is in fact GDP per head of population that determines or, more precisely, describes the economic development of the country, as it is something which we could call the "productivity" of the given economy. As a result, this data to a significant degree informs one on the qualitative level of economy. And finally, comparison using GDP in regular prices converted into euros was selected – regular prices are appropriate: at the given time in the given region, they correspond by their form and expression to receivables enforced in insolvency proceedings.

OECD states were selected as the group of researched countries; 29 of 34 member countries (2014) were included into the research (not all the necessary data is available at the given time in the case of the others).[8] The selection of OECD states as a comparative sample was given by the relative similarity of the countries in the sense of institutional organization and general economic customs, whilst this group at the same time provides significant differences in the sense

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[5] Those interested in more precise information can be referred to the pertinent web page, where the pertinent methodology is described in detail. [9]

[6] Of course, other circumstances have to be mentioned: the state of asset trade in a given country at a given time. The deeper the running crisis, the lower the asset price will be and the poorer the results – whereas the quality of insolvency law, courts and all other circumstances will not play a role in this regard.

[7] *Doing Business* itself works with the term "cents on the dollar", which is understandably the same as a percentage of the entire enforced receivable.

[8] These states are at issue: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea (South), Mexico, the Netherlands, New Zealand, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, Great Britain, the USA, Hungary, Norway, Iceland.

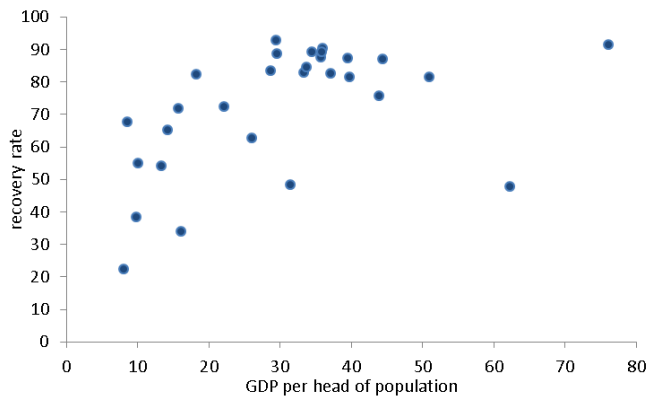of the manner in which the GDP per head of population is achieved.[9]

Fig.1 Recovery rate for investors from insolvency proceedings (in percent from investment) and GDP at current market prices per head of population (in EUR thousands) in 2013.
Source: data World Bank, IFC (2013), AMECO (2014)

Fig. 1 does not require particularly broad interpretation. It can be seen at first glance that there is clearly a relationship between economic efficiency, measured by the amount of GDP per head of population, and between the extents to which creditors' receivables in insolvency proceedings are satisfied. Needless to say, even among those states where a low GDP per head of population can be found, we can notice a significant difference in recoverability of investment – after all, countries which are below the line of 10 thousand euros,[10] demonstrate a significant difference in percent of enforced receivables, within a range from 22.3 percent in the case of Turkey to almost 68 percent in the case of Mexico. Nevertheless, it can be observed that the recovery rate grows along the lower axis of Fig.1 towards the right (i.e., towards higher GDP per head of population).

Tab.1 Regression analysis results of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population in 2013 in OECD countries

Dependent variable: RECOVERY RATE
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	54.11412	6.906715	7.835002	0.0000
GDP	0.593861	0.200751	2.958194	0.0064
R-squared	0,244774	Adjusted R-square		0,216803
F-stat.	8,750910	Prob.		0,006364
DW stat.	1,804110			

[9] Norway reaches about nine times higher a level of gross domestic product per head of population than Mexico or Turkey. For further comparison, it is interesting to note that Mexico, with 18 percent, is among the states with the highest costs for insolvency proceedings (Turkey shows costs of 15 percent of the enforced amount). While Mexican experts, however, state that investors would recover almost 68 percent of their investment (of receivables applied in the scope of insolvency proceedings) in the model case, the situation in Turkey is considerably worse, given that only in the vicinity of twenty percent of the receivable can be expected. We will further investigate especially the case of Mexico.

[10] From the bottom, it is Turkey, Hungary, Poland and Mexico.

Tab.1 Results of regression analysis of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population. The model can be expressed in the following form:

$$\widehat{recovery\ rate} = 54.11 + 0.59\ \text{gdp}$$

from which it follows that if the GDP at current market prices per head of population is higher than one thousand euros, the recoverability of a receivable enforced within the scope of these proceedings is higher by 0.59 of a percentage point. It follows from the regression coefficient (0.59) estimate and from the correlation coefficient (r = 0.49) that this is in fact a proportional relationship. All tests were conducted on a five-percent level of significance. [11]

When we want to summarize the result clearly, it then applies that the more developed an economy, the higher the probability of better satisfaction of creditors in insolvency proceedings. The base hypothesis of this study is thus proved, even despite the fact that a more careful scrutiny of Fig.1 reveals an array of placement among individual countries that clearly defy the basic trend, while at least two cases markedly deviate at first glance from an imaginary mean of sorts. The first is the afore-mentioned Mexico, the highest-placed mark in the graph from the column of the first four marks. The second country is Switzerland, which we find as the penultimate towards the right, although very low. More will yet be said about both countries.

Information on the recoverability of investment (the rate of the enforced receivable) is only one side of the coin; the second is necessarily costs for the whole proceedings. As has already been noted, these costs are quantified as percent of the enforced sum, and in the following analytical part we will investigate the relationship of costs and yields to the gross domestic product in OECD countries.

From the following Fig. 2, it is to a certain extent clear that there is a relationship between both quantities, i.e. between costs and the yield from the receivable. This is to a certain extent logical. We can assert that if all other parameters of insolvency proceedings were the same, i.e. if insolvency proceedings in the researched countries ran according to generally identical regulations, and if it at the same time applied that the asset market was in the same state in all the monitored countries and had the same absorptive abilities, then the degree of creditor satisfaction would be decided precisely by costs for proceedings as such, i.e. remuneration of insolvency administrators, court fees, the amount of standard administrator costs and other similar circumstances. Of course, it could also be asserted that costs of proceedings are creditors' costs, as they are always defrayed from the insolvency proceedings' yields. Other solutions do not come into consideration besides this, at least not in any rational insolvency system arrangement.

On the other hand, there cannot be a simple dependence in the relationship between the yield for the creditor and the cost for insolvency proceedings, as the parameters for proceedings in individual countries are never the same, even if only due to the fact that insolvency laws differ significantly; there is variance

even in the definition as to when a debtor is bankrupt, there is varying enforceability of rights and agreements. Debtors are forced to declare or admit bankruptcy in various situations, and creditors too can declare debtors to be debtors in bankruptcy under different regulations. We can thus assert that, in some countries, debtors enter into the insolvency process with a smaller amount of assets than in other countries. This is given by the fact that certain arrangements enable debtors to stall insolvency proceedings and attempt either to control the situation or excise assets from the business or generally out of the reach of the creditors; the pertinent regulations are stricter in other countries.
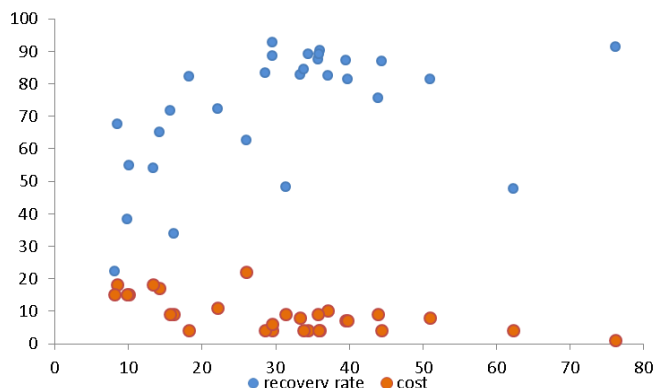

Fig. 2 Recoverability and costs from insolvency proceedings in dependence to GDP at current market prices per head of population in OECD countries in 2013 (costs in percent of property, recoverability in percent from investment, GDP in EUR thousands) Source: data World Bank, IFC (2014), AMECO (2014)

We can observe a great divergence of situations in various national economies, where it often occurs that if laws are set too favourably towards debtors, it has an impact on creditors' possibilities to gain their property. This occurs due to the simple fact that this property is in fact not present anymore, as it has already been expended in attempts to rescue the business, or it has been removed from the creditors' reach. In such a situation, however, costs of proceedings necessarily grow: When little is enforced, labour costs and the administrator's costs will be high in proportion to enforced property. If much has been enforced, the exact opposite applies. Thus, if EUR 900 thousand from EUR one million (i.e. 90 percent of the volume of the receivable) is enforced in a certain country, costs of proceedings at EUR 45,000 represent five percent of the enforced sum. If a mere EUR 279 thousand (27 percent of the entire receivable) is enforced, the same EUR 45,000 changes to 16.6 percent of the enforced sum. This relationship should be borne in mind when evaluating all of the following data.

When examining Fig. 2, we can thus observe once again a relatively clear situation, that a country positioned left in the lower axis, i.e. states with a low productivity of the national economy and lower GDP per head of population, tend to show higher costs, i.e. they are in an area between fifteen to twenty percent on the vertical axis, or on the axis by which costs can be measured. Yet it is illustrative to leave the recovery rate result in this graph also (the results are, of course, the same as

in Fig. 1). We can observe a specularity of relation between recovery rate and costs.[11]

Tab. 2 Regression analysis results of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population in 2013 in OECD countries. *Source: data World Bank, IFC (2014), AMECO (2014), calculation own*

Dependent variable: RECOVERY RATE

Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	2.243395	0.548988	4.086421	0.0004
GDP	1.577508	0.165750	9.517395	0.0000
R-squared	0, 527554	Adjusted R-square		0, 584130
F-stat.	14,795010	Prob.		0,000336
DW stat.	1.637552			

Tab. 2 shows results of analysis of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population. The model can be written in the form:

$$\widetilde{recovery\,rate} = 2.24\ cost + 1.58\ gdp$$

Conclusions follow which are in certain respects problematic towards the basic hypothesis of this work. The main problematic conclusion is the statement that increase of insolvency proceeding costs from property by one percentage point increases the recoverability from investment from these proceedings by 2.24 of a percentage point, under the assumption that the GDP at current market prices per head of population is constant. We here arrive at a direct conflict with the hypothesis of the study, according to which increased costs, by contrast, should lead to a reduction of yields. We will return to this problem later.

The second conclusion, however, fully supports the hypothesis. In the model, an increase of GDP at current market

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[11] In this regard, one has to confront in an honourable manner the case of Switzerland, which we see on the GDP per head of population axis as the second from the right. Some people might want to explain the low yield of less than fifty percent of the receivable, which ranks this country far behind many poorer states, by drawing attention to the well-known high expense of qualified legal services in the Swiss Confederation. This, however, is not an acceptable interpretation, as the costs here monitored are those incurred by the proceedings as such, i.e. costs for monetizing the debtor's property or, for instance, for the services of an insolvency administrator (or otherwise known as the participant of the proceedings who performs technical and other actions throughout the process, directs monetization, draws a record of and supervises the debtor's property and so forth. If one of the creditors hires its solicitors in order to be represented in the proceedings by a qualified person, this expense are not part of this item. In fact, we do not have an adequately plausible interpretation for the position taken by Switzerland according to the evaluation of experts on insolvency proceedings in this country. We consider especially confusing the low costs accompanying the relatively low yield from insolvency proceedings. Swiss law is relatively benevolent towards debtors operating businesses; we are of the opinion, however, that this in itself does not suffice to explain this anomaly.

prices per head of population by EUR one thousand increases recoverability from investment from these proceedings by 1.58 of a percentage point under the assumption that costs of insolvency proceedings from property are constant. Then the hypothesis that creditors attain higher satisfaction in economies with higher performance (which we could also describe as economic systems with a higher quality of the system as a whole) would truly apply.

When we summarize the described model based on data for 29 economies, then both partial regression parameters are positive, so it is in fact a proportional relationship. From the values of the multiple correlation index of 0.73, it follows that the relationship is relatively strong. All tests were conducted on a five-percent level of significance. [11]

It is now necessary to return to the first relationship, which tells us that an increase in insolvency proceeding costs from property by one percentage point increases the investment recoverability from these proceedings by 2.24 of a percentage point, under the assumption that GDP at current market prices per head of population is constant. By closer examination of Fig. 2 and its data foundation, we find that the average costs of insolvency proceedings (not weighted by the size of the economy), reaches a value of 9.2 percent of the value of the enforced property. Average yields (again not weighted) are then 72.9 percent of the receivable. Even a perfunctory glance at all the data reveals that there are two countries in the file which markedly deviate from the notion of the relationship between costs and yields in proportion to the performance of the national economy. We have mentioned both: the first is Switzerland, which, given a high GDP (over EUR 62 thousand) and low costs (4 %), attains a surprisingly small yield for creditors (under 48 %) according to documents from *Doing Business*. The second country is Mexico, which, given a very low GDP at current market prices per head of population (EUR 8.6 thousand) and despite relatively high costs (18 percent) attains a very high yield for creditors (67.6 percent of the enforced receivable). These two states diverge from the general trend, which is precisely shown by Fig. 3.

As we can see on the following image, we could label the general inclination of the data far more frankly after eliminating these two states, which applies especially in the issue of yields. The removal of the two countries from the model strengthens the general impression on the position of the individual states when the trend of growth of yields in dependence to the growth of GDP at current market prices per head of population and at the same time to the reduction of costs of insolvency proceedings. If we wanted to describe the result in a truly colloquial manner, one could say that the new version of the graphic expression of Fig. 3 is substantially neater.

Understandably, the question arises as to why precisely Switzerland and Mexico show such significant divergences from the trend which the remaining 27 countries so clearly confirm.[12]

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[12] Emerged doubts could lead many readers towards calculating individual marks in Fig. 2 and Fig. 3, although it will be a considerable problem to calculate a count of 29 or, more precisely, 27 marks of the same colour, i.e. one mark for every researched state. The problem is, however, very simple:
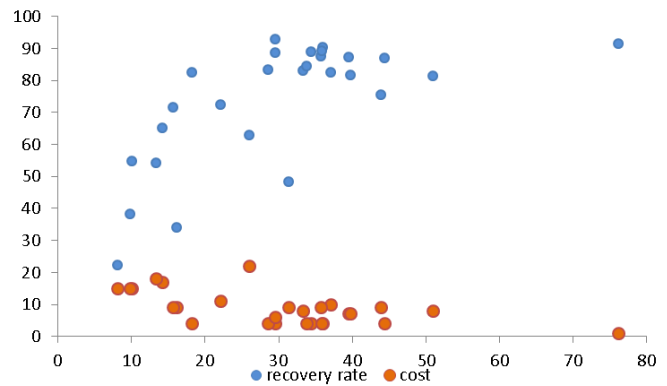

Fig. 3 Recoverability and costs from insolvency proceedings in dependence to GDP at current market prices per head of population in OECD countries in 2013 (costs in percent of property, recoverability in percent from investment, GDP in EUR thousands) Version without Switzerland and Mexico
Source: data World Bank, IFC (2014), AMECO (2014)

One of the possible interpretations could be an error by the respondents of questionnaire on the basis of which *Doing Business* arises. Naturally, it is impossible to ignore the fact that the group of experts who complete the pertinent data for a given country are either too optimistic or, on the contrary, too pessimistic in their opinions. This would, however, necessarily lead to the survey issuing figures that do not correspond with reality. This suspicion is certainly relevant and cannot simply be rejected. In the case of Mexico, the yield from the receivable could truly be a mistake. If the data from *Doing Business* state that creditors gain 67.6 percent of the entire volume of receivables, and insolvency proceedings cost 18 percent of what is enforced, this then means that the entire enforced sum should represent 82.4 percent of registered and recognized receivables. In view of the characteristic of Mexican economy and the institutional maturity of the country, such an assumption can most certainly be cast into doubt.[13]

Every insolvency system is different, laws work differently in every country, as does the enforceability of the law and, most importantly, in numerous countries there are widely divergent regulations as to which trading companies and which entrepreneurs can even enter into the insolvency process as such. To put it more precisely, the following is at issue: In certain states, insolvency proceedings as such are open only to companies that fulfil certain criteria; in principle, the criteria are similar to those fixed by the Czech legal code as a conditioned ticket to reorganization. [12] It is thus primarily necessary to fulfil a certain condition as to size. This then

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some marks of countries do indeed overlap very strongly and are visible only when the image is enlarged to the maximum.

[13] This note is by no means intended as an attempt to in any way lower the level of development in Mexico. Nevertheless, it is truly difficult to conceive that the general enforcement achieved would be higher than in numerous states that are most certainly on a far higher institutional level. For instance, the total monetization of debtor assets in the model case (on which the *Doing Business* survey is based) would reach 78.7 percent of total receivables, 83 percent in Sweden and so forth. If we were to take as decisive the data on Switzerland, the total enforced sum would represent only 49.6 percent of the volume of receivables.

leads to relatively humorous and sometimes, at first glance, incomprehensible situations where (according to statistics) tens of thousands of companies go bankrupt, but in states which are shaken by financial crises, political uncertainty or an extreme level of unemployment, the path of insolvency proceedings is taken by barely a hundred companies annually.

The structure of the "insolvency package" (i.e. the composition of companies that go bankrupt in a given year) is thus to a large extent influenced by the setting of laws. And given that national differences of setting insolvency law are truly great in individual countries, a large "grey area" emerges in every international comparison, in which it is truly difficult to create conditions which would enable serious comparison of individual processes in these states.

Tab. 3 Regression analysis results of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population in 2013 in OECD countries (without Switzerland and Mexico). *Source: data World Bank, IFC (2014), AMECO (2014), calculation own*

Dependent variable: RECOVERY RATE

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	72.39563	11.32426	6.392967	0.0000
COST	-1.653909	0.634020	-2.608605	0.0154
GDP	0.512255	0.222071	2.306715	0.0300
R-squared	0.565972	Adjusted R-square		0.529803
F-stat.	15.64800	Prob.		0.000045
DW stat.	2.117835			

It can be mentioned that besides the clearly exceptional cases of Switzerland and Mexico, we could nevertheless still find certain cases in the set of 27 states that recede more or less from the relationships defined in the initial hypothesis. This is most certainly the case with France, where, given the high quality of the economy (a GDP of EUR 31.5 thousand per inhabitant) and average costs (9 percent), pay-outs to creditors reach only 48.3 percent of their receivables. Nevertheless, France is relatively well known insofar as their insolvency law is highly problematic [2], [6]: firstly, it favours debtors relatively strongly, and secondly, it prefers "public interest", which primarily entails preserving employment. Therefore, although France does not exactly conform to the general trend as shown by the results of the analysis, it was left in the sample, as the reasons of difference and low performance of the system are in this case most probably known and are rooted directly in the insolvency legislation itself.

Tab. 3 shows results of analysis of recoverability from insolvency proceedings in dependence to GDP at current market prices per head of population (of course, after reducing the sample from 29 to 27 countries). The model can be written in the form:

$$\widehat{recovery\ rate} = 72.39 - 1.65\ cost + 0.51\ gdp$$

from which it follows that increase of insolvency proceeding costs from property by one percentage point increases the recoverability from investment from these proceedings by 1.65 of a percentage point, under the assumption that GDP at current market prices per head of population is constant. This revised result, having emerged by analysis of a smaller sample of countries, corresponds precisely to the assumptions that were summarized in the hypothesis upon which this text is based and the research which is the foundation thereof. The second conclusion is similar to that of the sample of 29 countries, but is stronger than in the full sample. A higher GDP at current market prices per head of population by EUR one thousand increases the recoverability from investment by 0.51 of a percentage point, which applies under the assumption that costs from insolvency proceedings from property are constant. Both partial regression parameters are positive, so it is in fact a proportional relationship. From the value of a multiple correlation index of 0.75, it follows that the relationship is relatively strong. [11] All tests were conducted on a five percent level of significance.

IV. CONCLUSIONS

We can form several conclusions on the basis of regression analyses, into which data on insolvency processes provided by *Doing Business* were entered on the one hand, and statistical data on the level of GDP at current market prices per head of population on the other.

The first of these is the assertion that it was possible to confirm the hypothesis according to which the efficiency of insolvency processes is higher in countries which demonstrate a generally higher productivity of the national economy expressed precisely by the data on GDP at current market prices per head of populations. These countries reach a lower level of costs and at the same time, higher satisfaction for creditors. This is shown both by the model described and by viewing Fig. 3, where it is clear that states positioned on the horizontal axis more to the right, i.e. states with higher GDP at current market prices per head of population, usually show a higher utilization percentage of insolvency proceedings for creditors and lower costs for these proceedings. [14]

The second conclusion is that in all monitored cases of individual OECD countries, it applies that higher costs for proceedings lead to a reduction of yields for creditors. If we reverse this relationship, we can assert that higher expenses for the insolvency process (i.e. higher remuneration of insolvency administrators, for instance) do not lead to an increase in the quality of insolvency proceedings – at least not in the sense

[14] Here it is understandably necessary to draw attention yet again to the mathematical logic of the whole matter – if debtors in a given country enter insolvency proceedings with relevant property, lower costs of proceedings are logical, as this datum is defined as a percentage of the volume of recorded property at the value of its monetization. Therefore, if costs reach 4 percent, for instance, these could in fact be the same or higher in its absolute value than in a country where costs in percent are optically higher – seven or more percent, for instance.

that this would result in higher efficiency of proceedings expressed by a higher yield. One of the reasons is, once again, the paradox described in note 13.

This conclusion nevertheless has interesting connotations. We can draw numerous further assertions therefrom, which can in fact go directly to the most sensitive areas of insolvency proceedings. If increasing the remuneration of insolvency administrators and a general rise in costs of proceedings do not lead to a higher enforced sum (for instance, thanks to a greater and more structured interest in entrusted cases on the part of the administrator), it would then be possible to reduce these costs without greater effect on the quality of result – at least to a certain extent. This would without doubt lead to greater satisfaction of creditors; moreover, it would not necessarily entail any intervention into the administrator's earnings. Likewise, if the general maximum number of insolvency administrators performing their duties were to become limited there where such a decree exists or would emerge, a generally lower amount of money would suffice to finance the whole system.

The last conclusion is a certain need to interpret correctly the given results in view of the general problem of insolvency proceedings and individual insolvency acts. It seems that the main problem in those states which show the effect of the "connected dish" (i.e. high costs and likewise low yields for creditors) is the elementary fact that the system essentially enables debtors to delay with relative ease the declaration of bankruptcy or hiding of a bankruptcy for so long that their assets are thoroughly insufficient to reasonably cover creditors' receivables. Nevertheless, the data from *Doing Business* primarily do not cover this problem due to the fact that – as has already been said – they are based on expert estimates on the settlement of one specific model case. However, because these experts use as a departure point their experiences with the possibilities of monetizing a debtor's assets, we can assume that their responses also include references to the general situation of insolvency case settlement in a given country.

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Assoc. Prof. Luboš SMRČKA, M.Sc., PhD. In 1984, he graduated from the Czech University of Life Sciences in Prague. After 1993, he left the Institute of Experimental Botany at the Czechoslovak Academy of Sciences to start business. He gradually acquired several professional specializations: tax advisor (1993), broker (1996), certified balance accountant, (1998), forensic expert in economy, prices, and valuation specialized in the valuation of securities, RM-S and stock exchange and business valuation (2000, extended in 2003), accounting and tax expert (2001).
In the last 6 years, he has worked as a Lecturer in the Department of Business Economics at the Faculty of Business Administration of the University of Economics in Prague. In 2013, he gained the title of Associate Professor. He focuses primarily on the area of insolvency proceedings, their macroeconomic impacts and issues of insolvency law and the problem of personal finances. Assoc. Prof. Smrčka is the author of numerous books and articles in professional publications.
Assoc. Prof. Markéta Arltová, M.Sc., Ph.D. She studied the field of Economic Statistics at the University of Economics in Prague. In 1999, she defended her doctoral dissertation study in the field of Statistics. At present, she is working as an associate professor at the Department of Statistics and Probability at the University of Economics in Prague. She specializes in the problem connected with the analysis of economic, financial and demographic time series.
Jaroslav Schönfeld, M.Sc. PhD. graduated from the University of Economics in Prague in 2007. He works at the Czech Savings Bank, Inc., in the department of restructuring and recovery. Since 2008, he has also been active at the University. He deals with financial management, restructuring, insolvency and pricing. He is the author of the monograph *Modern View on the Valuation of Receivables* (CH Beck 2011) and numerous articles in professional journals.
Lee Louda, M.Sc. studied at the Czech Technical University in Prague – Faculty of Mechanical Engineering in 1992; in 1994, he took a broker's examination and operated actively on the capital markets in the CR until 1999. In 1998-2000, he successfully passed the Institute of Property Valuation at the University of Economics in Prague in the field of securities. In 1999, he passed the insolvency administrator's examination, and in 2010, he passed a special insolvency administrator's examination. In 2013, he commenced doctoral studies at the University of Economics in Prague – Faculty of Business Economics. He focuses mainly on the area of insolvency proceedings in practice, especially financial rehabilitation methods of settling bankruptcy.