Economic Aspects of Bankruptcy and Restructuring in Bankruptcy

Doctoral dissertation – Summarized findings

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Abstract:

Being a post-communist, central-eastern economy, Croatia and its insolvency system resembles many transitional countries in the region. In order to achieve a better perspective of the current situation, problems, and their possible solutions, an extensive research of the Croatian insolvency system was carried out. Questionnaires were sent out to bankruptcy judges, administrators and Bankruptcy Administration Offices at the Commercial Courts in Croatia. Interviews with some of the most experienced experts in the field were also performed.

Furthermore, an analysis of financial statements of Eastern-Croatian companies was done with the intention of creating a model of predicting bankruptcy and the classification of bankrupt and non-bankrupt companies. Discriminant analysis, the Logit model, and the Multidimensional scaling method were applied.

The results clearly show a high level of tolerance of government institutions towards insolvency. Filing for bankruptcy doesn't necessarily have to be expected even in the case of long-term (over one year) insolvency.

Keywords:

Insolvency, bankruptcy, business failure, procedure, Croatia, Central Eastern Europe, transition

JEL Classification:

C53, G33, K42, P36, P37, R15

Introduction

Being a post-communist, central-eastern economy, the Croatian insolvency system[1] resembles many transitional countries in the region. In order to achieve a better perspective on the current situation, problems, and their possible solutions, an extensive survey of the Croatian insolvency system was carried out. Questionnaires were sent out to bankruptcy practitioners and Bankruptcy Administration Offices at the Commercial Courts in Croatia. Interviews with some of the most experienced experts in the field were also performed.

Furthermore, an analysis of the financial statements of Eastern-Croatian companies was performed with the intention of creating a model of predicting bankruptcy and the classification of bankrupt and non-bankrupt companies. Discriminant analysis, the Logit model, and the Multidimensional scaling method were applied.

This paper is organized as follows. The first section briefly outlines previous studies in this field, in Croatia. The second section is an introduction into specific characteristics of the Croatian insolvency system. Findings of the qualitative analysis (results of questionnaire survey) are presented in the next section, while the fourth section reviews the results of the quantitative part of the research. These results are interpreted in the fifth section. Finally, the conclusion summarizes the findings of this paper.

[1] An insolvency system is here regarded as a totality of legal framework (Insolvency law and other laws and regulations implemented in bankruptcy procedures) and actual practice.

1. Previous studies

Bankruptcy studies in Croatia are relatively scarce. Most of them are done by the legal experts examining the legal framework of bankruptcies, and economists rarely contributed to this field. This is mainly because:

- there is no tradition of doing business in a market-driven economy, and until recently bankruptcies were exceptions – following this, usable data is most often either insufficient or inaccessible;
- even when some kind of quantitative data does exist, a relatively high level of acquaintance with the econometric models is necessary to extract findings from them, for which the business community (to some extent the Croatian academic world as well) is not properly educated; and
- for many decades the academic community was under a burden of obligation to observe economic phenomena in line with socialist-communist ideas which distorted the concept of bankruptcy.

Novak (2003) published the first contemporary study in this field in Croatia – using a financial statement database for 38 Croatian banks, he calculated eight ratios and created a model of predicting bank failures.

Crnkovic (2005) and Sajter (2005) did their Master's Thesis using similar methodology; Crnkovic trying to predict business failures of bank debtors, and Sajter creating a model of predicting bank failures. However, extensive research of the Croatian insolvency system previously did not exist.

Conversely, in the West there is a long tradition of bankruptcy research studies, from Smith and Winakor (1930 and 1935), Merwin (1942), Beaver (1966), and Altman (1968), to modern studies that use cutting edge mathematical and statistical techniques and methods (see Balcaen and Ooghe, 2006, for the review).

2. Basic outlines of the Croatian insolvency system

Most Central-Eastern European economies have implemented a communist-shaped paradigm of insolvency[2] throughout approximately, the second half of the 20th century. This collectivistic concept promoted employment as the primary interest of the economy, and implied that insolvent public companies should be rehabilitated in order to preserve jobs. Therefore, insolvency procedures such as those practiced in the West were largely unknown until the transition into capitalism took place.

With the fall of communism and the shift to the market economy, the concept of bankruptcy completely changed, and as Stiglitz (2001) noticed, with limited liability comes the notion of bankruptcy. Now a company had to bear the consequences of its ill behaviour and bad business.

However, the transition of insolvency systems is still not finished, as the mentality of interventionism still pertains not only in the minds of the policy-makers, but also in the minds of the workers who have witnessed many bail-outs of fallen

[2] In this paper the terms "insolvency" and "bankruptcy" are used interchangeably, as in Croatia only companies (legal persons) can declare bankruptcy, and insolvency is a prerequisite for declaring bankruptcy.

government-owned corporations (and their faulty management) throughout the decades. Consequently, it is widely considered that there is an *obligation* on the government's part to use tax payers' money in order to maintain and protect (bad) businesses, if those businesses provide employment for many workers[3]. Many regard it completely "normal" not to take responsibility for an unsuccessful business, and proofs of this attitude are presented in this paper.

Croatia can be seen as a good example of a country with a transitional insolvency system. In Croatia there is neither the heritage nor tradition of pure[4] market capitalism, and as a result, of a stable and firm bankruptcy system either. The Yugoslavian interpretation of socialism also put unemployment at the top of 'the unwanted list'; consequently insolvency procedures that ended with liquidation (and lay-offs) were an exception.

Croatia enthusiastically emerged out of Yugoslavia in a war that devastated many of its regions. Apart from all of this – war, the newly established independence,

[3] This is a somewhat narrowed reasoning; one should bear in mind that in Croatia (similar experiences can also be found elsewhere in the region) during the privatisation process in the 1990s there were many cases of fraudulent bankruptcies, where viable companies were intentionally divested of valuable assets and then liquidated during insolvency procedures. Workers in distressed companies always point out these fraudulent cases and perceive it as a *standard* model of bankruptcy. In this standard model a company declares bankruptcy only and only if some sort of interest group conspired to profit from the procedure. Clearly, this model fails to recognize bad management decisions and other usual reasons for bankruptcy, and always seeks to identify the above-mentioned interest group, which is then held responsible for all the business difficulties and for all the trouble in the company. To summarize: taught by experience, in Croatia the general public fails to identify non-fraudulent bankruptcies.

[4] The economic system in the former Yugoslavia was in many ways between communism and capitalism. It was inclined to communism, but after the split between Tito and Stalin, Yugoslavia tried to develop its own model of socialism based on the re-examination of Marx. Detailed explanation in Woodward (1995).

the fall of communism, and introduction of democracy and market-driven economy – a change of insolvency systems was also happening. Extensive transitional reforms included a completely new Insolvency Law[5] that the Croatian parliament enacted in 1997, which is (for the most part) a translation of the German *Insolvenzordnung*[6] (Insolvency Law). New Insolvency law brought also the concept of reorganization in bankruptcy (a German interpretation of US Chapter 11.), but this concept is still a complete mystery[7] to Croatian bankruptcy administrators and judges.

Still, the old perceptions and habits were hard to eradicate, and the mentality that someone would surely intervene if business difficulties become unbearable perseveres among many policy-makers, as well as among many entrepreneurs and workers[8]. Furthermore, prosecutions of fraudulent bankruptcies and late filings hardly ever occur.

As a consequence, most bankruptcies in Croatia are filed a long time after they were supposed to be reported, which means they are filed much later than after 60 days of insolvency[9].

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[5] Bankruptcy Law, Official Gazette of the Republic of Croatia, issue No. 44 of 1996.

[6] Bundesgesetzblatt 1994. I S.2866.

[7] In the period of 1995-2005, at the largest Commercial Court in Croatia (in Zagreb), which handles almost ¾ of all bankruptcy cases in Croatia, 4,265 bankruptcies were declared. Only one of these cases ended in reorganization, all others were liquidated.

[8] Government interventions and bail-outs are certainly not a Croatian invention nor specificity; but the difference is in the expectations of an intervention. While elsewhere only very important and large corporations can sometimes expect to be saved by the government, in Croatia almost every company that was founded during communism sees itself as a tradition that cannot be abandoned and left in times of distress.

[9] The bankruptcy trigger in Croatia is 60 days of insolvency, according to Croatian Insolvency law.

The figures backing the above statements follow: on 30th of April 2008 in Croatia there were 16,597 companies that were insolvent for more than 360 days but hadn't declared bankruptcy, on the same date the previous year (2007) that number was 14,624[10]. On the other hand, Croatian Commercial courts opened only 877 bankruptcy cases in the whole year of 2007[11]. Unfortunately, the number of convicted persons in Croatia for the act of fraud in bankruptcy in the six year period from 2000 - 2006, is *zero* (research done by Majstorovic, 2007.).

Following these numbers it is not surprising that in Croatia most companies that file for bankruptcy are completely divested of their assets, and the only thing that Commercial courts can do is to open the procedure, and close it immediately with a single judicial act. This is called "The Shortened Bankruptcy Procedure"[12] in which a bankruptcy is declared, and a company is liquidated without any delay (instantaneously). This is justified by the non-existence of assets that would bear the costs of the normal procedure. In Croatia more than ¾ of all bankruptcy cases are opened and closed straight away according to The Shortened Bankruptcy Procedure; this means that more than 75% of all companies when filing for bankruptcy have already been fully stripped of their assets[13].

[10] Information source: Financial Agency, Croatia. http://www.fina.hr (accessed 16.09.2008).

[11] Information source: High Commercial Court of the Republic of Croatia, http://www.vtsrh.hr/index.php?page=statistics&lang=hr (accessed 16.09.2008).

[12] According to the *Insolvency Modifications and Amendments Law*, Official Gazette of the Republic of Croatia, issue No. 129 of 2000.

[13] Information source: Commercial courts in the cities of Osijek and Slavonski Brod.

In this system reorganizations and survivals after the bankruptcy procedure are mostly a consequence of direct political interventions, not rational economic reasoning. According to Novak, Sajter, et al. (2006) in the period from 2000 to 2005 approximately 10 (the data is not completely available) reorganizations in bankruptcy were performed in the whole of the Republic of Croatia, while in the same period more than 13,000 bankruptcy cases were closed by liquidation[14]. One could say that this is not an Insolvency System; it is a *Liquidation* System where reorganizations hardly ever happen.

As in the German *Insolvenzordnung*, in Croatia an insolvency procedure is governed by the two main subjects: a bankruptcy judge (with the highest level of authority), and a bankruptcy administrator (who practically governs the whole procedure). Yet, their role is distorted by the fact that the judge appoints the administrator at a certain case according to his/her own personal discretion, as there is no system of appointing administrators. This leads to a situation whereby certain administrators govern dozens of cases, and others have not been appointed for years[15].

Moreover, judge not only 'employs' an administrator; he also determines the amount of the money the administrator will obtain as payment for his work and his

[14] High Commercial Court of the Republic of Croatia, http://www.vtsrh.hr/index.php?page=statistics&lang=hr (accessed 16.09.2008).

[15] When the questionnaire survey was being done, one administrator responded that he would gladly participate in the survey, but although he passed the required exam for the administrator five years ago, he has not yet been appointed to a case.

expenses[16]. These decisions made by the judges cannot be questioned, as judge J. K. of the High Commercial Court of the Republic of Croatia asserted:

> However, citizens cannot argue with judges, nor can they criticize their verdicts. They are simply under-qualified, in the same way the patient is not qualified to judge if a doctor has treated him properly.[17]

Hence, not only do questions not get answered; they are banned in the first place.

On the other hand, as Croatia is on the path to being a member of the European Union, it has been forced to implement many reforms, as requested be the EU. For instance, a web-site is published where all the property being sold from the insolvency procedures can be browsed, some Commercial courts have begun to publish their documents on the Internet, and the High Commercial court has significantly improved its communication as all the important verdicts can now be found online.

[16] Here is another example of non-transparency: the actual amount of money an administrator receives is not presented to the public, as a judge is obliged by the law to publish the general document in which he proclaims that an administrator will receive his fees, but in this document the actual amount is excluded and hidden. This is completely legal and done according to the Insolvency law, Art. 29, Section 4.

[17] From the speech he gave in Zagreb at the 50th Anniversary of Commercial judiciary in Croatia, on 22 October 2004. Published on the web site of the High Commercial Court of the Republic of Croatia; http://www.vtsrh.hr (Accessed 01.12.2007.)

3. Questionnaire survey

Bankruptcy judges and administrators deal with bankruptcy every day, and therefore have valuable insights into the functioning of the Croatian insolvency system. However, law creators often consult theoretical experts only, while the practitioners get left out, and much too often there is a conflict between theory and practice. For this reason a questionnaire was created, attempting to articulate the voice of "the practice", and to identify key challenges and problem solutions in the Croatian bankruptcy system.

The questionnaire was sent out to:

- a sample of 270 bankruptcy administrators selected from a total population of 480. The sample was chosen by the criteria of length of their service, therefore attempting to obtain answers from the most experienced administrators;

- the full population of 132 judges at 13 commercial courts and at the High Commercial Court of the Republic of Croatia (at the time of the survey[18]); and

- legal departments of the 10 largest banks in Croatia, since banks are the most frequent creditors and regularly participate in bankruptcy proceedings.

By the May of 2007, the final results were obtained. The number of received responses was somewhat discouraging, but indicative of the difficult situation; only 24 administrators and 17 judges replied, and no reply was received from banks[19].

[18] The start was in November 2006.

[19] The addressees were given four options to reply: by mail, e-mail, fax, or online, using the form published on a web site that was made for this purpose. However, after many call-backs banks still refused to participate in the survey.

On the other hand, the answers received were extensive and full of relevant information. Thus, good insights could be obtained. It is important to emphasize that the respondents were highly experienced, with an average work experience of 14 years and an average age of 53.4 years.

One of the goals of this survey was the identification of the main problems in the Croatian bankruptcy system as perceived by bankruptcy professionals, and the first (and the most important) question in the questionnaire was: "*What are the most common problems you face in the bankruptcy process?***"**

Most of the answers were very similar. Presented here are some of the respondents' answers to the question above:

- Companies file for bankruptcy when there are no possibilities left for rehabilitation. In general, the management delays filing in order to stay in position as long as possible, and in doing so they completely exhaust the company. The best staff leave before the filing, and bankruptcy administrators have limited or no possibility of maintaining a 'going concern'.
- Business documentation handed over to the administrator is incomplete, destroyed, or stolen.
- Procedures are intentionally delayed. The services of attorneys-at-law are paid in such a way that every legal action (appeal, claim, report, statement, hearing, etc.) is accounted for separately. Therefore, it is in the interest of the attorneys to delay the procedure.

- Government institutions are often the largest debtors, and they act dishonestly to the citizens by spreading the wave of payment evasion. When in the position of creditor, in many cases the government fails to take responsibility, and does not take a stand in the processes. In some cases The State Tax Administration Office tolerates non-payment of taxes for many years, and government institutions sometimes look the other way for even a decade of non-payment of taxes and other debts.
- The management avoids paying due debts, and after declaring bankruptcy they simply open a new business under another name.
- Late filing for bankruptcy, beyond the stage of eventual recovery, is one of the key issues to be tackled; an earlier start of the procedure is a prerequisite for successful reorganizing in bankruptcy.

Trying to avoid pure criticism without constructive recommendations for the improvement of the system, much advice on how to upgrade and advance the procedures was given by the respondents. Some of them are:

- The Tax Administration Office and banks must be obligated to report to Commercial courts about the necessary filings for bankruptcy immediately after the conditions are met, otherwise strict legal sanctions should be imposed. Severe punishments should be given to those responsible for not filing for bankruptcy within the given time limits.
- An institution that would supervise bankruptcy procedures should be founded.
- Judges should not have absolute discretion when appointing administrators, an automatic system of appointing administrators should be enacted.

- The position of bankruptcy administrator should be better defined – they should be professionals, not someone whose primary interests is doing their regular job and dealing with bankruptcy in their spare time.
- The most important legal provisions should be explained in detail, so that there are no doubts in interpretation.
- When proposing changes of the law, economists should be considered as well, not only law experts, and the issue of conflict of interests should be dealt with. It cannot be allowed that the law makers are the same persons who are advisors to the large banks, or partners in law firms representing these banks, since banks have their own specific interest in bankruptcy procedures.

Analysis results of the presented questionnaire outline the key issues and problems in the Croatian bankruptcy system. In order to examine these results, quantitative analysis was also performed.

4. Quantitative analysis

The hypothesis of the econometric analysis states that many Croatian companies conduct their business regularly although they are highly unstable and insolvent, and should declare bankruptcy. Also that there is a high level of tolerance on the part of the responsible institutions towards the insolvent or highly distressed companies as they are allowed to continue operating even though they are insolvent. In many cases the bankruptcy procedure is not initiated even though the companies have great or extreme

difficulties operating; on the other hand in some cases bankruptcy is declared even though there are no clear foundations in financial reports for such an action.

Therefore, it is assumed that companies that do declare bankruptcy are very similar to those that resume their business and do not file for bankruptcy, and that the distinction between bankrupt and non-bankrupt will be very difficult. This means that financial statements do not necessarily reveal information about the upcoming failure. Generally speaking, even though they represent the historical performance, financial reports should contain enough information about the near future of companies, so that these statements can be used to distinguish, separate, and classify companies that will declare bankruptcy next year, and those that will not[20], but in Croatia this is not always necessarily true.

Following the methodology of studies which are perceived as cornerstones of bankruptcy prediction models, namely those of Altman (1968.) and Ohlson (1980), Discriminant analysis and the Logit model were chosen to analyze the information database obtained from a local bank. The Multidimensional scaling method (Mar-Molinero and Ezzamel, 1991) was also used, because it does not require prior knowledge about the status of the company.

The database obtained for the purpose of this research consists of 6,414 financial reports for legal persons situated in eastern Croatia, for the year of 2004. This database

[20] This is because it is assumed that bankruptcy is not a sudden, unexpected, and surprising event that ambushes a healthy company and conquers it in a short time-period, but rather an accumulation of business difficulties over time.

was used to create a sample of companies and their financial ratios, with the aim of predicting which of the companies will declare bankruptcy in the year 2005.

After receiving information about the number and the names of companies that declared bankruptcy in 2005 from the Commercial courts that operate in eastern Croatia, it was clear that for 18 companies that declared bankruptcy during that year (2005), financial reports for the previous year (2004) were obtainable from the database[21].

For each of these 18 companies another four companies were selected from the database according to the criteria of industry and size (measured by their turnover and total assets). A matched-pairs sample was avoided because of the unrealistic proportion of bankrupt to non-bankrupt companies assumed.

Therefore, the total of 90 cases in the sample consists of 72 financial reports for the companies that did not file for bankruptcy during the year of 2005, and of 18 companies that did.

Models that attempt to predict bankruptcy most often rely on financial ratios. Certain qualitative measures depicting the quality of management are also desirable, but they are extremely difficult to obtain. Hence, nine ratios for 90 companies were calculated as follows:

[21] For these 18 companies a classic insolvency procedure was performed, not the shortened bankruptcy procedure. The cases where shortened bankruptcy procedure was executed were excluded, since the credibility of their financial reports can be put in question, and most of these cases are economically inactive.

- X1 = Working Capital / Total Assets;
    - indicates liquidity position compared with the size of the company,
- X2 = Retained profit brought forward / Total Assets;
    - shows the cumulative capability of a company in creating profit,
- X3 = Earning before taxation / Total Assets;
    - a standard profitability ratio,
- X4 = Operating income / Total Assets;
    - shows the capability of a company in creating turnover,
- X5 = Cash / Short-term Liabilities;
    - generally, a lower ratio indicates a higher risk of bankruptcy,
- X6 = Fixed Assets / (Capital + Long-term Liabilities);
    - shows the relationship of long-term positions in the balance sheet,
- X7 = Operating Income / Operating Expense;
    - indicates the capability of creating profit,
- X8 = Total Liabilities / Total Assets;
    - higher indebtedness indicates a higher risk of bankruptcy (ceteris paribus), and
- X9 = Earnings before Interest and Taxation / Interest payable (and similar charges);
    - it is based on the profitability which can be influenced by the accounting strategy of the company.

After calculating these ratios multicollinearity was observed, since its existence violates assumptions of both Discriminant analysis and the Logit model which are based on the ordinary least squares method. Correlations with p-levels are presented in Table 1.

The highest levels of correlation (which are significant) can be found with the X1 (Working capital / Total Assets) and X2 (Retained Profit / Total Assets), and X1 and X8 (Total Liabilities / Total Assets) ratios. Since these correlations are not very large (-0.57 and 0.55, respectively) there were no prior exclusions of independent variables.

The dependant variable is named STATUS, and this is a binary variable where companies that declared bankruptcy were coded as *S*, and companies that did not as *Z*. The comparative statistical analysis of ratios for two groups of companies is presented in Table 2.

Discriminant analysis was the first method performed. The Backward Stepwise method was used in order to filter out the variables with low discriminant capabilities. Standard values for tolerance (Toler. = 0,01) and *F* to enter and *F* to remove (*F* to ent. = 11; *F* to rem. = 10) were selected. The results of the Discriminant analysis are presented in Table 3.

The Backward Stepwise method excluded all variables but X1. Total Wilks lambda is 0.72 which can be perceived as good[22], at a high level of significance

[22] 0 = no discrimination, 1 = perfect discrimination

($p<0.0000$). Hence, only one variable – Working Capital to Total Assets – discriminates between groups. Data for the excluded variables is presented in Table 4.

Classification functions for the Discriminant analysis can be given as:

$f(Z) = -0.417 + 1.991X1$. and $f(S) = -2.017 - 2.889X1$; where a case is classified in either group *Z* or *S*, depending on which classification function provides higher score.

Even though the model is correct in a total of 88.89% cases, it underestimates the probability of bankruptcy, as in the group of bankrupt companies only half of the cases were correctly classified. On the other hand, almost every case in the non-bankrupt group is correctly categorized. The classification matrix is given in Table 5.

The Logit model was done on the same dataset, with nine ratios as independent variables for 90 companies, and binary variable STATUS (*Z*/*S*) as the dependant variable. The bankrupt group *S* was coded as 0, while non-bankrupts (*Z*) were coded as 1.

The Logit model was formed using the Hooke-Jeeves and quasi-Newton nonlinear estimation procedure, and the Backward Stepwise procedure was applied as well. After the exclusion, two variables were left in the model, and the results are presented in Table 6.

The constant term was found insignificant, and besides X1 (which corresponds to Discriminant analysis) ratio X6 (Fixed Assets / [Capital + Long-term Liabilities])

was also found to be significant in explaining differences between bankrupts and non-bankrupts.

The Logit model can also be expressed by the following equation:

$$Y = \frac{e^{(6,272X1+1,163X6)}}{1+e^{(6,272X1+1,163X6)}}$$

Results of the Logit model also show an underestimate of the probability of bankruptcy, as it is completely accurate in identifying non-bankrupts (with 100% correctness), but on the other hand only half of the bankrupt cases were predicted to be distressed. In total, the Logit model predicted 90.00% of the observed companies to be 'healthy'. The classification matrix of the Logit model is given in Table 7.

Alongside Discriminant analysis and the Logit model, Multidimensional scaling method (hereinafter: MDS) was also applied. MDS is an efficient method for evaluating the hypothesis of this study because it does not require prior knowledge about the status of the company. Therefore, there are no codes and classification; just maps as a visual tool for evaluating resemblances to bankrupt and non-bankrupt companies.

Variables were standardized, and a correlation matrix was done which consists of 90*90 companies in the sample. These correlations represent distances among cases.

After doing the Scree test (Figure 1.) for 6 dimensions, and observing Shepherds diagram for 3 and 4 dimensions, it was decided to select 4 dimensions as an appropriate measure of scale.

Maps were made which interpret the correlations as distances among the companies in two-dimensional space. Bankrupt companies are highlighted in red , and the names of the companies were coded[23].

Figures 2 to 5 present MDS maps. On Figures 3 and 4 ellipses were made to emphasize grouping of the companies, but they were drawn arbitrarily and are not the results of the MDS method. Obviously, Figures 2 to 5 show scattering and poor grouping of companies according to their status.

5. Interpretation of the results

Models produce relatively statistically significant results, but they tend to overemphasize the optimistic business outcome and have difficulties identifying distinctive characteristics of bankrupt companies, as they much too often predict them to be 'healthy'.

Working Capital to Total Assets ratio is very important in predicting bankruptcy in Croatia, but it is still not completely sufficient to identify and separate companies that will file for bankruptcy next year. This would suggest that qualitative variables (such as management competence, importance of the business for the local community, strength of political influences, etc.) whose information is not contained in the financial statements play an important role in predicting which companies will go bankrupt.

[23] Bankrupt companies were coded with letters only, while non-bankrupts were coded with a letter and a number.

Therefore, financial statements exhibit a high level of similarity between bankrupt and non-bankrupt companies. It was surprising to find that financial reports in some cases show absolutely no early-warning signs of distress, which could lead to suspicions about their credibility.

In order to confirm these findings, leading men of corporate sectors within three of the largest banks in Eastern Croatia were interviewed. They confirmed that the financial statements are often manipulated, especially in the smaller companies, and that there are no unambiguous rules about which companies will (or should) file for bankruptcy in Croatia. They witnessed bankruptcies of companies that they found completely unpredictable, and often suspect frauds. However, never were they asked to testify in any kind of judiciary proceedings, nor did they ever experience someone being convicted or prosecuted.

6. Conclusion

A transitional insolvency system, as the example of Croatia evidently shows, displays an excessive degree of disorder and a high tolerance level from institutions who are supposed to restrain insolvency. Consequently, in Croatia one does not have to expect filing for bankruptcy even in the case of significant business distress and long-term insolvency, as the data shows that in approximately 95% cases insolvency is tolerated.

One of the reasons for this lies in the fact that the government institutions themselves are very often the initiators and the first link in the chain of insolvency, as

they fail to meet their debts in due time, much too often. Following their example, and being unable to service their own due debts because these institutions did not fulfil theirs, many companies and individuals still consider it “normal” not to pay on time, spreading the wave of insolvency.

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Table 1. Correlations of independent variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9
X1	1,0000	,5501	,3646	,2537	,3911	-,4452	,1727	-,5707	,0461
	p= ---	p=,000	p=,000	p=,016	p=,000	p=,000	p=,103	p=,000	p=,666
X2	,5501	1,0000	,1805	,2329	,4039	-,3229	,1065	-,4217	-,0168
	p=,000	p= ---	p=,089	p=,027	p=,000	p=,002	p=,318	p=,000	p=,875
X3	,3646	,1805	1,0000	,2803	,4126	-,2102	,5028	-,2491	,1772
	p=,000	p=,089	p= ---	p=,007	p=,000	p=,047	p=,000	p=,018	p=,095
X4	,2537	,2329	,2803	1,0000	,1267	-,2254	,1355	,1413	,1062
	p=,016	p=,027	p=,007	p= ---	p=,234	p=,033	p=,203	p=,184	p=,319
X5	,3911	,4039	,4126	,1267	1,0000	-,1821	,0944	-,3777	-,0325
	p=,000	p=,000	p=,000	p=,234	p= ---	p=,086	p=,376	p=,000	p=,761
X6	-,4452	-,3229	-,2102	-,2254	-,1821	1,0000	-,0520	,1207	,1693
	p=,000	p=,002	p=,047	p=,033	p=,086	p= ---	p=,626	p=,257	p=,111
X7	,1727	,1065	,5028	,1355	,0944	-,0520	1,0000	-,2904	,1466
	p=,103	p=,318	p=,000	p=,203	p=,376	p=,626	p= ---	p=,005	p=,168
X8	-,5707	-,4217	-,2491	,1413	-,3777	,1207	-,2904	1,0000	-,0150
	p=,000	p=,000	p=,018	p=,184	p=,000	p=,257	p=,005	p= ---	p=,888
X9	,0461	-,0168	,1772	,1062	-,0325	,1693	,1466	-,0150	1,0000
	p=,666	p=,875	p=,095	p=,319	p=,761	p=,111	p=,168	p=,888	p= ---

Table 2. Comparative statistical analysis of ratios for two groups of companies

Indicator	Group: Z – 72 S – 18	Ratios				
		X1	X2	X3	X4	X5
Mean	Z	0,194	0,146	0,053	1,736	0,266
	S	-0,282	0,024	0,005	0,698	0,012
Median	Z	0,164	0,066	0,017	1,496	0,088
	S	-0,340	0,000	0,000	0,488	0,001
Stand. deviation	Z	0,276	0,179	0,084	1,490	0,521
	S	0,433	0,085	0,016	0,866	0,022
Variance	Z	0,076	0,032	0,007	2,221	0,271
	S	0,187	0,007	0,000	0,749	0,000
Minimum	Z	-0,538	0,000	0,000	0,000	0,000
	S	-0,933	0,000	0,000	0,000	0,000
Maximum	Z	0,879	0,719	0,429	7,379	3,576
	S	0,540	0,364	0,068	3,344	0,085
		X6	X7	X8	X9	
Mean	Z	0,718	1,032	0,538	18,243	
	S	0,736	0,674	0,857	-145,913	
Median	Z	0,655	1,018	0,524	0,530	
	S	0,299	0,740	1,000	-3,924	
Stand. deviation	Z	0,578	0,510	0,276	258,844	
	S	1,007	0,322	0,238	466,393	
Variance	Z	0,334	0,260	0,076	67.000,081	
	S	1,014	0,104	0,057	217.522,357	
Minimum	Z	0,000	0,000	0,000	-675,400	
	S	0,000	0,000	0,255	-1.985,286	
Maximum	Z	3,193	4,915	1,000	2.043,500	
	S	3,348	1,104	1,000	8,646	

Table 3. Summary of results of Discriminant analysis with Backward Stepwise exclusion

No. od variables in the model = 1; Wilks' Lambda = 0,724 approx. F (1,88) = 33,493 p< 0,0000						
Remaining variable	**Wilks' Lambda**	**Partial Lambda**	***F*-to remove (1,88)**	**p-level**	**Tolerance**	**1-Toler. (R^2)**
X1 = Working Capital / Total Assets	1,000	0,724	33,493	0,000	1,000	0,000

Table 4. Variables excluded from Discriminant analysis using the Backward Stepwise approach

	Wilks' Lambda	**Partial Lambda**	***F* to enter**	**p-level**	**Tolerance**	**1-Toler. (R^2)**
X5	0,724	1,000	0,013	0,911	0,888	0,112
X2	0,724	1,000	0,000	0,984	0,760	0,240
X3	0,721	0,995	0,395	0,532	0,918	0,082
X9	0,690	0,953	4,338	0,040	0,994	0,006
X7	0,684	0,944	5,186	0,025	0,999	0,001
X8	0,698	0,964	3,259	0,075	0,799	0,201
X4	0,698	0,964	3,218	0,076	0,984	0,016
X6	0,662	0,914	8,157	0,005	0,733	0,267
X5	0,724	1,000	0,013	0,911	0,888	0,112

Table 5. Classification matrix of discrimination analysis

	Percent correct	Z p=0,80	S p=0,20
Z	98,61	71	1
S	50,00	9	9
Total	**88,89**	80	10

Table 6. Results of the Logit model

Logit model, binary dependent variable (Z / S), backward stepwise exclusion (p = 0,05)				
	Estimate	**Stand. error**	**Wald stat.**	**p-level**
Constant	0,351	0,734	0,229	0,632
X1 = Working Capital / Total Assets	6,272	1,996	9,871	0,002
X6 = Fixed Assets / (Capital + Long-term Liabilities)	1,163	0,663	3,081	0,079

Table 7. Logit model's classification matrix

	Predicted Z	**Predicted S**	**Percent correct**
Observed Z	72	0	100,00
Observed S	9	9	50,00
Total correct: **90,00**% (81 / 90)			

Figure 1. Scree test

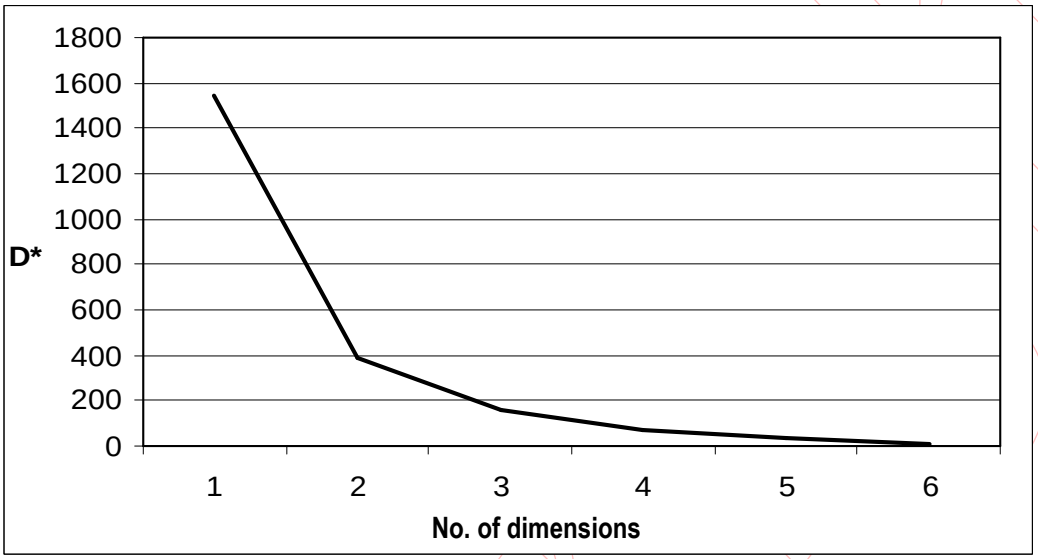

Figure 2. MDS map 1

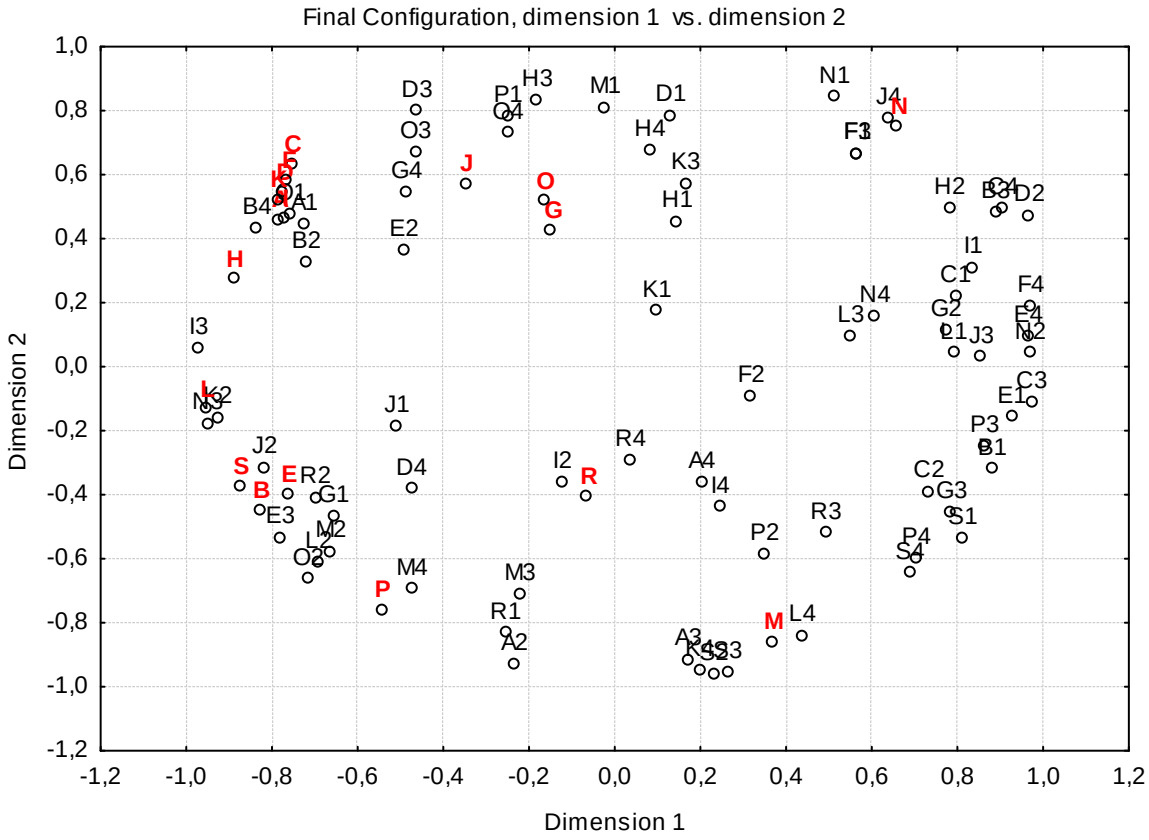

Figure 3. MDS map 2

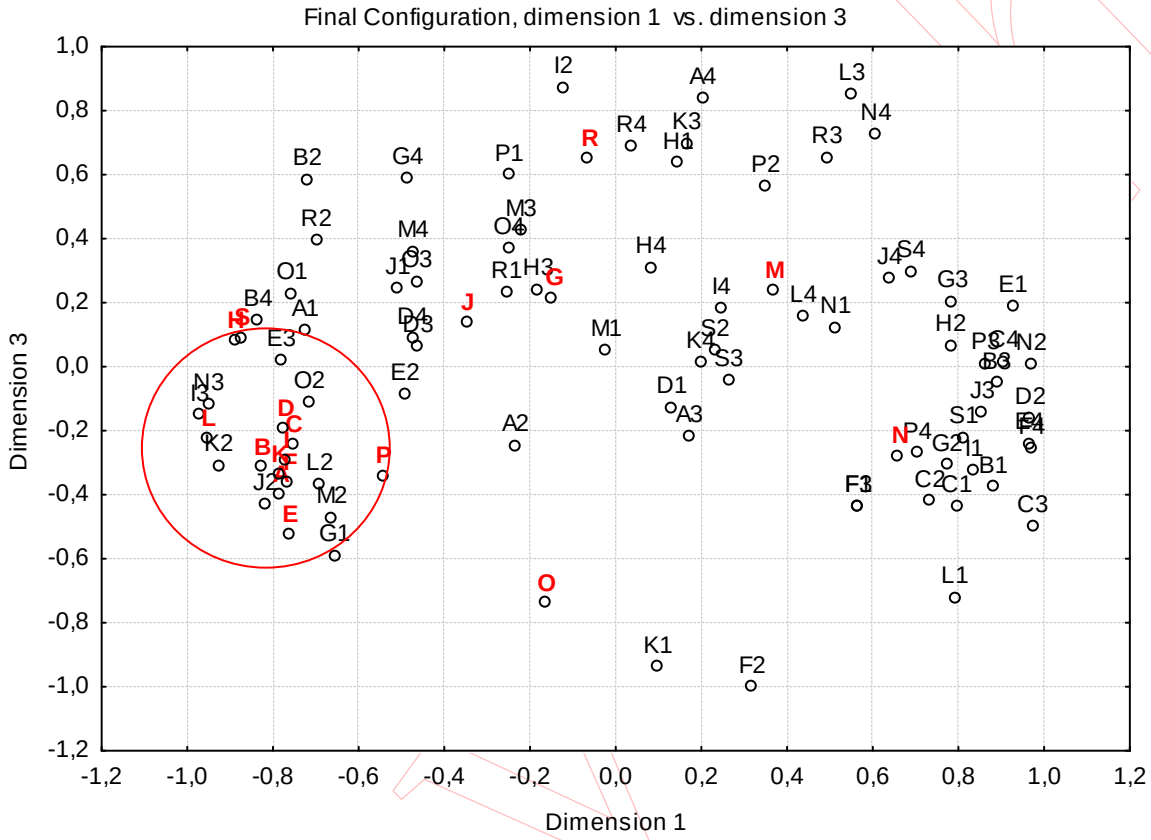

Figure 4. MDS map 3

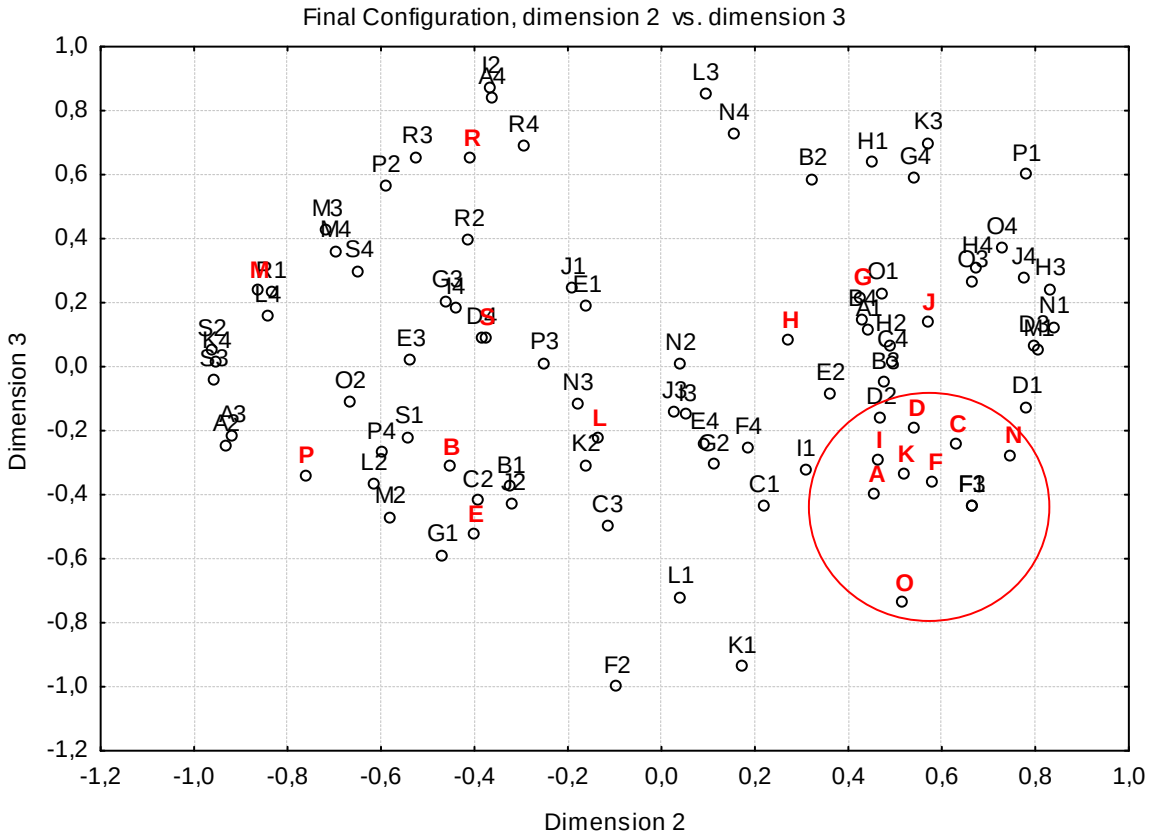

Figure 5. MDS map 4