



DOCTORAL (PhD) THESIS

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AN ANALYSIS OF THE LIQUIDATED
SMALL ENTERPRISES IN HUNGARY

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1. RESEARCH PRELIMINARIES, OBJECTIVES

The regulation of corporate bankruptcy plays a key role in the economy, but its analysis most often comes to the front in times of economic crisis. The reason for that is, firms that have irrecoverable liabilities may inflict significant damage on the operations of their business partners as well as on the revenues of the national budget. Reviewing the relevant Hungarian data of the past years, it becomes evident that the number of enterprise liquidations reached a peak in 2012. In part, this was due to the insolvency of a large number of businesses hit by the economic crisis, but it is also the result of stricter action taken by the National Tax and Customs Administration as well as the Registry Court. In Hungary, nearly all companies to undergo liquidation are small businesses as they are much more exposed to changes in the economic environment than larger firms. Therefore, studying the trends related to the emergence of insolvency that can be observed at small enterprises may be valuable for all economic entities for assessing the risk of a future liquidation in the case of their own respective business partners.

With that in mind, my dissertation sets the aims of mapping out key indicators contained in publicly accessible financial reports, based on which it is possible to establish a distinction between liquidated companies and enterprises of normal operation, and next, by observing trends in liquidated companies' assets, defining a financial indicator based formula that is capable of revealing whether the legal basis of management liability can be established. Furthermore, based on an empirical research on the sale of assets undertaken at liquidated enterprises, I aim to shed light on any



differences at the demand side of assets based on the characteristics of specific assets.

1.1. Antecedents of research

At the beginning of a liquidation proceeding, the liquidator often finds the debtor enterprise lacking in assets, which has substantial repercussions on fulfilling the claims of creditors. Thus, for the sake of the economic environment, it is crucial to reveal trends related to changes in corporate assets prior to liquidation.

Hypothesis 1: At liquidated small enterprises, a trend of decreasing assets can be observed over several years prior to liquidation.

As a first step, based on the data of liquidated small enterprises that I classified into three categories according to company size, I will determine the rate of decreasing assets among these companies over the last three years of their operation.

My analysis, which focuses exclusively on insolvent enterprises, has a financial approach, therefore it is based around three key questions as to whether small enterprises of normal operation:

- manage fixed assets differently,
- have lower short-term liabilities,
- show greater operating profitability,

than those that eventually undergo liquidation. If this hypothesis can be confirmed, the differences in enterprise management revealed can explain why not all insolvent companies end up being liquidated. Based on the above, I'm formulating Hypothesis 2 divided into three parts.



Hypothesis 2: The financial indicators of insolvent companies of normal operation and those of companies that were liquidated point to differences in their enterprise management.

Liquidated small enterprises, for three years prior to liquidation, had:

- 2.a: lower quick ratios,
- 2.b: lower rates of short-term liabilities,
- 2.c: greater decrease in fixed assets,
- 2.d: lower rates of change in operating profits,
- 2.e: higher rates of financial exposure,

than insolvent small enterprises of normal operation. Within the specified company size categories, I will study whether there are differences to be observed between the operating profitability of liquidated companies and companies of normal operation.

In the next part of my research, in order to gain a more objective view of management liability as defined by law, I will study how financial indicators could be considered as supporting data in establishing the legal basis for the former management's liability. As the Bankruptcy Act, in effect since 1st March 2012, in 33/A.§ (1), prescribes, former chief executive officers of enterprises may be held liable if they, "following the emergence of an insolvency situation which may jeopardise operations, in pursuing their tasks of executive management, did not act in due consideration of the creditors' interests" (Act XLIX of 1991). The text of the law requires two findings of fact to be made for an executive officer to be held liable. One is the date of the emergence of said jeopardising situation, while the other is the definition of harm inflicted on creditors' interests.



Hypothesis 3: Based on the data contained in reports published by liquidated enterprises, the legal basis for management liability can be established.

Beyond the fulfilment of creditors' interests it is also necessary to study the extent to which assets meant to fulfill creditors' claims is marketable, that is, what market trends we can expect to be faced with today in the area of asset liquidation. It is my assumption that the data related to the sale of assets of liquidated enterprises may reveal differences which can prove that asset values determined during the value assessment vary significantly for certain asset groups, while they vary less in the case of others.

Hypothesis 4: The value rate of assets (the quotient of liquidation value and real value) differs across asset types.

I will be comparing the assessed value set in the sale of assets records as the liquidation value, with the sale value acting as real value. Based on the characteristics of the individual assets subject to this study, I will divide hypothesis 4 in 3 parts.

4.a: The value rate of real estate, stocks and vehicle type assets differ from one another.

4.b: The value rate of real estate located in the capital is higher than that of real estate located in the country.

4.c: The value rate of individual assets of an assessed value below HUF 500,000 is higher than the value rate of those valued above HUF 500,000.



2. MATERIALS AND METHODS

Data related to the first part of my analysis was provided by a database owned by the Kaposvár University Faculty of Economic Sciences and built by an external economic consultancy firm. The unique database contains individual data compiled from annual reports published by enterprises operating in Hungary, as well as company registry data by 2013 inclusive. The basic data used for the analysis was stored in MySQL database manager, exported via data queries into Microsoft Excel 2010. My study was completed using the add-on XLSTAT 2013 integrating into Microsoft Excel, and the R statistical software.

2.1. Scope of data used in the analysis

The individual lines of the database contain the values of the balance sheet and income statement lines corresponding to each enterprise as published in their respective annual reports. Each enterprise has its own unique code (cégID), which is connected with other data sheets that include enterprise-specific background variables such as data referring to corporate seat, premises, scope of business, form of constitution and operational characteristics (liquidation, final settlement).

In the case of business entities undergoing liquidation, the liquidator must launch the process of asset sale within 100 days of the starting date of the liquidation proceeding. The sale must take place via the Electronic Sale System (EÉR) established centrally for this purpose. I analysed its public data compiled in the Excel spreadsheet software with a closing date of 31st July 2015. Based on that I built a database containing 331 data entries of tenders and auction sales.



2.1. Applied methods

During my analysis, I first created homogenous groups using cluster analysis in order to narrow small enterprise size. Next, I characterised the change in asset types at liquidated small enterprises over the years subject to the study via the distribution coefficient and chain ratios.

In order to reveal trends in the assets of liquidated enterprises, I exclusively study data corresponding to liquidated small enterprises. Next, I look for differences between liquidated enterprises and companies of normal operation using statistical methods based on data exclusively relating to insolvent small enterprises (negative equity for 3 consecutive years). Again, I study insolvent small companies to measure the importance of conduct presumably harmful to creditors' interests. Finally, I close my analysis by describing the market of liquidated companies' assets.



3. RESULTS AND EVALUATION

3.1. Segmentation of small-size enterprises

Applying the method of K-centre clustering, I identified the following four key enterprise characteristics based on which it was feasible to define categories:

- the balance sheet total shows all of the company's assets and resources,
- the net revenue clearly indicates the company's sales volume,
- the value of equity points to the company's level of financial solidity, while
- the average after-tax earnings show the company's three-year average of annual earnings.

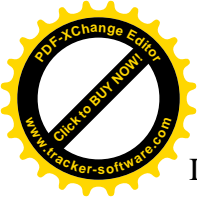
In my view, the study of additional data would not help in further refining the size-based segmentation, as all additional data contained in the annual reports are in close correlation with the above four types of financial data I used.

K-centre clustering resulted in the companies falling into one of three groups based on the values corresponding to four types of financial data (balance sheet total, net revenue, equity and after-tax earnings).

Table 1.: Segments of small-sized companies

Category	Net revenue	Balance sheet total
“XXS”	Below HUF 30 million	Below HUF 25 million
“XS”	Between HUF 30 million and HUF 500 million	Between HUF 25 million and HUF 500 million
“S”	Between HUF 500 million and HUF 1,500 million	Between HUF 500 million and HUF 1,500 million

Source: author's own work



I set an ‘and’ condition for the above criteria in determining the size category for each company, that is, an enterprise falls into the “S” category if both the net revenue and the balance sheet total meet or exceed the HUF 500 million threshold. The data slices I studied later were also grouped into the same three categories of company size along the same thresholds.

3.2. Assets of the liquidated small enterprises

During my analysis, I used the data of liquidated small enterprises that published annual reports for at least three full years and also fulfilled their disclosure obligations in publishing a final report. Within the database at my disposal, a total number of 2,627 enterprises met these criteria.

At this point of my analysis, I made the following conclusions regarding liquidated small enterprises:

- the highest rates of decreasing company assets corrected for amortisation were observed over the last two years of operation, and the same trend was observed in the case of the greater company size over the full three-year period subject to this analysis, in a significantly larger proportion ($p=0.04513$; $p<2.2e-16$; $p<2.2e-16$),
- at the same time, over the period of the last two years prior to liquidation, conduct presumably harmful to creditors’ interests appears in all three size categories of small companies ($p=0,5165$; $p=0,621$).

3.3. Emergence of long-term insolvency and liquidation

In the next part of my research, the question I sought to answer was whether there was any statistical difference to be observed in the enterprise management of small enterprises that were all insolvent and

- were liquidated,



- compared to companies of normal operation¹.

Within the “XXS” size category – due to its low financial threshold limits – the rates of both forced entrepreneurship and operation with the mere aim of tax optimisation are presumed significant, therefore I excluded this group of small enterprises from the further stages of my data analysis.

Comparisons between the financial data of normally operating companies suffering from long-term negative equity and those that were liquidated show no differences in terms of:

- fixed asset management,
- short-term liability rates, or,
- operating profitability.

This is due to the fact that liquidation is a legal category, which may limit the successful use of forecasting models. This view is also supported by the court statistics of the year 2013. In 2013, in total, 22,148 pleas for liquidation were filed with the Court, with only one-third of which initiated by financial institutions or suppliers. Two-thirds of the pleas were filed by governmental organisations or the debtor companies themselves, whether directly or via their respective trustees in bankruptcy or receivers.

3.4. Management liability

According to the text of the law, the legal basis for a management liability lawsuit along with all its implications - based on the Anglo-Saxon common law - exists in the cases of persons holding chief executive positions for three years prior to liquidation if they,

¹ not liquidated



- following the emergence of insolvency that jeopardises operations,
- failed to give priority to creditors' interests,
- which lead to a decrease of company assets, or
- thwarted the full fulfilment of creditors' claims, or
- failed in managing any environmental damage arising from their operations.

To establish the legal basis for management liability, I continue to study enterprises of the categories “XS” and “S” that suffered from long-term negative equity (over a period of three years), which means the situation of insolvency jeopardising operations was present in all companies subject to this study. In order to be able to observe the due consideration of creditors' interests, I analyse trends in enterprises' assets and liabilities.

It is presumed that, among insolvent and liquidated small enterprises of the categories “XS” and “S”, 35.443 percent may have acted without due consideration for the priority of creditors' claims during any of the three years subject to this study.

3.5. Analysis of liquidated companies' sale of assets

In my study, I compared the indicative prices (value based on value assessment, real value) set by the liquidator and the prices applied at the actual sales transactions (liquidation value) in the case of specific asset groups. To express this particular ratio, I applied the following formula:

Equation 1.

$$\text{Value ratio} = \frac{\text{Liquidation value}}{\text{Real value}} \times 100$$



3.5.1. Analysis based on asset type

The basic statistical data showed that the average value ratio for vehicles (0.882) was significantly higher than the same averages for stocks and real estate (stocks: 0.619, real estate: 0.729). Thus it can be concluded that the liquidation value of vehicles is closer to real value than that of either real estate or stocks.

3.5.2. Analysis based on the location of real estate type assets

I divided the 183 data entries related to the sale of real estate at my disposal into two categories according to location: Budapest and other areas (country). The value ratio of real estate located in the capital was significantly higher ($p=0.002$) than that of real estate in the country (Budapest: 0.842, country: 0.702), therefore, the liquidation value of real estate in the capital is closer to real value.

3.5.3. Analysis based on assessed value of assets

With regards to the assessed value (real value) I divided the 331 sales data entries and studied whether real value and liquidation value of assets below HUF 500,000 are closer to one another than the same values in the case of assets above HUF 500,000.

The Mann-Whitney test showed that the liquidation value of assets below the assessed value of HUF 500,000 is significantly ($p=0.024$) closer to real value (below HUF 500,000: 0.957, above HUF 500,000: 0.688) than that of the relatively more valuable assets.



4. CONCLUSIONS

Based on the study of liquidated small enterprises in Hungary, I drew the following conclusions:

- In the size category “S”, the rate of decreasing assets is higher. Within the small enterprise sector, in the case of enterprises with a balance sheet total below HUF 25 million and net revenue below HUF 30 million, it can be observed that, during the last year of operation, over 25 percent of asset decreases may imply conduct harmful to creditors’ interests.
- With regards to the enterprise management of small companies suffering from long-term negative equity, with a balance sheet total of HUF 25 to 1,500 million and with net revenue between HUF 30 to 1,500 million, there is no difference to be observed in terms of financial indicators. The reason for that, in my view, may be differences corresponding to the creditors’ legal status.
- In relation to coinciding changes in insolvent small enterprises’ assets and liabilities, I expressed the possibility of establishing the legal basis for management liability pursuant to the Bankruptcy Act. It is presumed that the legal basis for filing management liability lawsuits exists in the case of 35.44 percent of liquidated small companies within the “XS” and “S” categories that form part of my analysis sample.
- According to the data relating to the sale of assets through liquidation, the value ratio of vehicles is significantly higher and thus is closer to 100 percent than that of stocks or real estate. The value ratio of real estate located in the capital is significantly higher than that of real estate in the country. Finally, the value ratio of relatively less expensive assets



(below HUF 500,000) is higher than that of more expensive assets (above HUF 500,000).

Through my analyses I observed that it was not possible to draw far-reaching conclusions regarding the operational characteristics of liquidated small enterprises, even considering the significant data filtering I applied via the size-based segmentation. For the most part, it is due to the fact that liquidation is a legal category which, in most cases, does not fulfill the criteria for insolvency from a financial or accounting point of view.

Hypothesis 1: At liquidated small enterprises, a trend of decreasing assets can be observed over several years prior to liquidation.

Partially agreed. Within the smallest size category (“XXS”), the presence of the trend of decreasing assets in all three years subject to my study is less typical. However, within the size categories of “XS” and “S”, the assumption regarding the decrease of assets and the continuous intensification of that decrease during the period leading up to the date of liquidation is justifiable. In addition, within all three segments of small enterprises, conduct presumably harmful to creditors’ interests (liabilities stagnating or increasing in parallel to assets) can also be observed at a growing rate as the date of liquidation approaches.

Hypothesis 2: The financial indicators of insolvent companies of normal operation and those of companies that were liquidated point to differences in their enterprise management.

Rejected. Insolvent small enterprises that underwent liquidation, over the three financial years prior to liquidation, did not show:

- 2.a: lower quick ratios,
- 2.b: lower rates of short-term liabilities,



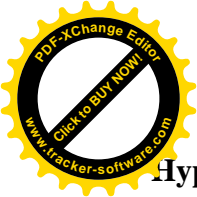
- 2.c: a greater decrease in fixed assets,
- 2.d: lower rates of change in operating profit,
- 2.e: higher rates of financial exposure,

than insolvent small enterprises of normal operation.

Among insolvent, liquidated and normally operating small enterprises of the “S” and “XS” size categories, the only factor that indicates a significant difference ($p=0.0000$) between the respective averages during the companies’ earlier operation is the growth rate of net revenue. With regards to liquidity and profitability corresponding to 2011 and 2012 data, the two groups are statistically identical. Therefore, in my view, based on court statistics, the main reason behind the launch of liquidation proceedings resides in the legal status of creditors. Two-thirds of pleas for liquidation are filed with the Registry Court by governmental organisations or debtor companies (trustees in bankruptcy, receivers) themselves.

Hypothesis 3: Based on the data contained in reports published by liquidated enterprises, the legal basis for management liability can be established.

Agreed. Based on the provisions of the Bankruptcy Act, I defined the situation of insolvency jeopardising operations as the value of long-term negative equity. Naturally, temporary insolvency may occur at companies with positive equity, however, once an enterprise finds itself in long-term indebtedness, it is certainly in a situation of insolvency jeopardising operations. I defined conduct presumably harmful to the priority of creditors’ interests as a decrease of assets corrected for depreciation combined with stagnating or growing liabilities. As a result, I concluded that, in the case of 35.44 percent of liquidated enterprises, the legal basis of management liability pursuant to the Bankruptcy Act can be presumed to exist.



Hypothesis 4: The value rate of assets (the quotient of liquidation value and real value) differs across asset types.

Partially agreed.

- The value ratio of real estate is significantly lower than the value ratio of vehicles, however, it is statistically equal to the value ratio of stocks. It can be concluded that, among the three asset types subject to this analysis, the sale of vehicles can be considered as the most efficient.
- The value ratio median of real estate located in the capital is nearly 100 percent (97.2 percent) whereas, with regards to real estate located in the country, this rate only corresponds to 55.6 percent of the cases. Therefore, the assessed value of real estate located in the capital set via value assessment is nearly identical to the price applied at the sales transaction.
- In the case of assets below the unique assessed value of HUF 500,000, the probability of identical value ratios is 2.4 percent, which indicates significant statistical difference between the value ratios of assets of the two groups. The assets of relatively lower assessed value are exchanged at nearly 100 percent, whereas those above HUF 500,000 are, on average, sold at 68.8 percent of their assessed value.



5. NEW SCIENTIFIC RESULTS

Based on my research, the following new and novel scientific results can be formulated:

Result 1: The segmentation of small enterprises based on company size reveals different trends with regards to changes in assets for each particular group, however, conduct presumably harmful to creditors' interests emerges in the case of each size category.

Dividing the small enterprise sector into 3 size categories made it possible to observe how the assets, and parallel to that, the liabilities of each group of small enterprises evolved. It has gained statistical justification that, in the case of enterprises in the smallest size category ("XXS"), the trend of decreasing assets is less evident, whereas conduct presumably harmful to creditors' interests appears within all three size categories..

Result 2: Having compared insolvent small enterprises of normal operation and insolvent liquidated small enterprises, it is concluded that there are no differences to be observed with regards to liquidity and profitability prior to liquidation. The reason behind the liquidations is due to the creditors' legal status rather than to financial indicators.

Having excluded the segment of enterprises with the lowest financial indicators (size "XXS") and focusing exclusively on enterprises suffering from long-term insolvency, I applied the nonparametric two-sample Mann-Whitney test that returned the following results:

At liquidated insolvent enterprises,

- quick ratios are not lower,
- short-term liability rates are not lower,



- rates of decreasing fixed assets are not greater,
- operating profitability is not lower,
- financial exposure is not higher,

than at insolvent enterprises of normal operation. I called on court statistics for further insight. Based on the data, I concluded that two-thirds of pleas for liquidation are filed by governmental organisations or the debtors themselves. Therefore, it is to be presumed that, whenever a supplier wishes to be informed on the risk of liquidation affecting a particular enterprise, it is sufficient to review public data to reveal whether the enterprise in question has fulfilled its obligations of data disclosure and of taxation. If so, it can be assumed with 66 percent certainty that the company in question will not be liquidated.

Result 3: Developing the objective financial indicator that supports establishing the legal basis for management liability.

Management liability pursuant to the Bankruptcy Act applies only to cases in which the enterprise is liquidated. The Act prescribes that chief executive officers of enterprises can be held liable if they, following the emergence of a situation of insolvency which may jeopardise operations, fail to give priority to creditors' claims. I equated the concept of 'insolvency jeopardising operations' with long-term negative equity (negative equity for 3 consecutive years). The harm inflicted on the priority of creditors' interests corresponded to coinciding changes in both assets and liabilities. As a result, the legal basis for management liability was successfully established in the case of 35.44 percent of liquidated small enterprises in the categories "XS" and "S" subject to this analysis. The results, of course, do not point to actual breaches of law by enterprises' chief executives, as the discussion of any



particular case of management liability can only be pursued within the frameworks of individual civil lawsuits.

Result 4: During the sale of assets of liquidated enterprises, differences between liquidation value and real value can be observed according to type, location and value of assets.

In my analysis of assets, based on the literature reviewed, I defined the value at which an asset can be sold during the liquidation proceedings as liquidation value. I defined the market price set during the value assessment by a third-party expert commissioned by the liquidator as real value. Based on the sales data of liquidation assets, I studied the data divided into three categories (real estate, vehicle, stocks) and found vehicles at a significantly higher value. Having analysed the value ratio of real estate using 183 samples, I concluded that real estate located in the capital had a significantly higher value ratio than real estate located in the country. I divided the 331 samples into two groups based on value with a HUF 500,000 threshold. I observed that the relatively less expensive assets (below an assessed value of HUF 500,000) had a higher value ratio than those valued above HUF 500,000.



6. PUBLICATIONS IN THE FIELD OF THE DISSERTATION

Scientific publications in scientific journals::

In Hungarian:

1. Koroseczné Pavlin Rita – Kövér György – Parádi-Dolgos Anett – Szóka Károly: Kisvállalkozási méret felosztása, E-CONOM 4: (2) pp. 42-49. (2016)
2. Bareith Tibor Koroseczné Pavlin Rita, Kövér György: Felszámolások vizsgálata a Nyugat-dunántúli régióban, E-CONOM 3: (2) pp. 102-124. (2014)
3. Koroseczné Pavlin Rita - Parádi-Dolgos Anett: Versenyképesség és a vállalkozásalapítás követelményei, TAYLOR: GAZDÁLKODÁS-ÉS SZERVEZÉSTUDOMÁNYI FOLYÓIRAT: A VIRTUÁLIS INTÉZET KÖZÉP-EURÓPA KUTATÁSÁRA KÖZLEMÉNYEI 6: (2014/3-4 / No. 16-17) pp. 13-20. (2014)

Full scientific publications in proceedings:

In foreign languages:

1. Rita Koroseczné Pavlin - Anett Parádi-Dolgos: The speciality of bankruptcy of Hungarian companies in food industry, PROCEDIA ECONOMICS AND FINANCE (Vol.30.) pp. 710-719. (2015), IISES 3rd and 4th Economics and Finance Conference. Róma, Olaszország: 2015.04.16



2. Bareith Tibor - Koroseczné Pavlin Rita - Kövér György: Dél-dunántúli régió és a felszámolások kapcsolata a 2008-as világválság után, In: 11th Annual International Conference on Economics and Business: Challenges in the Carpathian Basin: Global Challenges, Local Answers. 1109 p., Konferencia helye, ideje: Csíkszereda, Románia, 2014.05.16-2014.05.17. Csíkszereda: Sapientia Hungarian University of Transylvania, 2014. pp. 232-255. (ISBN:978-973-53-1287-9)

3. Rita Koroseczné Pavlin - Anett Parádi-Dolgos: The Prognosis of Liquidation by Financial Ratios, In: Proceedings of the 4th International Conference of Economic Sciences. Konferencia helye, ideje: Kaposvár, Magyarország, 2013.05.09 -2013.05.10. Kaposvár: Kaposvár University, 2013. p. 375-382. (ISBN:978-963-9821-62-0)

In Hungarian:

1. Koroseczné Pavlin Rita - Parádi-Dolgos Anett: A fizetésektelen mikrovállalkozások tárgyi eszköz állományának elemzése, In: XIX. Ifjúsági Tudományos Fórum. Konferencia helye, ideje: Keszthely, Magyarország, 2013.04.25. Keszthely: Pannon Egyetem, Georgikon Kar, 2013. pp. 1-6. (ISBN:978-963-9639-51-5)