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Main Causes and Process of Financial Distress

An Empirical Analysis of Hungarian Firms

SUMMARY: The purpose of our research series is to examine issues related to the economic efficiency of the Hungarian bankruptcy procedure. Based on a broad-based representative sample, we empirically test and prove our hypothesis that corporate defaults are the consequence of a specific financial/economic process. Our results confirm that the primary cause of corporate bankruptcy in Hungary is the firms' inability to create value (e.g. inefficient use of the asset portfolio), the first signs of which become visible as early as 4–5 years prior to default. As a result of poor operational efficiency, firms increase their financial leverage and, due to the two factors described above, companies tend to encounter liquidity shortage in the last year of operation (they face default in legal terms). This research contributes to shedding light on the economic content of bankruptcy, allowing for a more accurate appraisal of the efficiency of bankruptcy procedures. Our study points out that the success of reorganisation depends on the restoration of value creation rather than on debt restructuring arrangements.

KEYWORDS: bankruptcy, liquidation, restructuring, economic and financial default of firms

JEL CODES: G32, G33, G34

RESEARCH OBJECTIVE AND HYPOTHESIS

By analysing a broad-based sample of liquidated Hungarian companies, our study is intended to examine whether the road to bankruptcy outlines an organic development trajectory that could serve as a universal process model for the bankruptcy process in general.¹ We clarify, from an economic point of view, the content of the basic concepts related to the exit of companies from the market and confirm that the combination of a lack of value creation², high financing leverage and insufficient

liquidity may be behind corporate liquidation as an organic development process.

In our view, in order to assess the efficiency of bankruptcy, we need to distinguish between the two – legal and economic – approaches to bankruptcy. The latter designates the point at which the fundamental principle of any company's efficient operation – value creation – is compromised and the process becomes irreversible. Economic bankruptcy, in turn, identifies the optimal (efficient) time of the commencement of the bankruptcy procedure. Due to the information asymmetry between the company's external and internal stakeholders and different expectations about the future, the emergence of economic bankruptcy cannot be considered an objective point in time

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from the perspective of all stakeholders. It is therefore difficult to make an efficient decision on when to file for bankruptcy. The legal definition of bankruptcy assists in resolving this problem. As a formal procedure, bankruptcy (default) means the event when a firm (business unit) fails to perform its payment obligation by the deadline. The existence of a bankruptcy situation can be clearly captured and objectively identified on the basis of this symptom/phenomenon. However, since the existence of bankruptcy is not deduced from the fundamental situation of the company, the commencement of the bankruptcy procedure is inefficient. Capturing bankruptcy from the legal perspective is unsuitable for being an efficient selection tool for companies from the aspect of value creation. It does not facilitate

- the exit of companies unsuitable for value creation as early as possible;
- return to the market for companies fundamentally capable of value creation following restructuring.

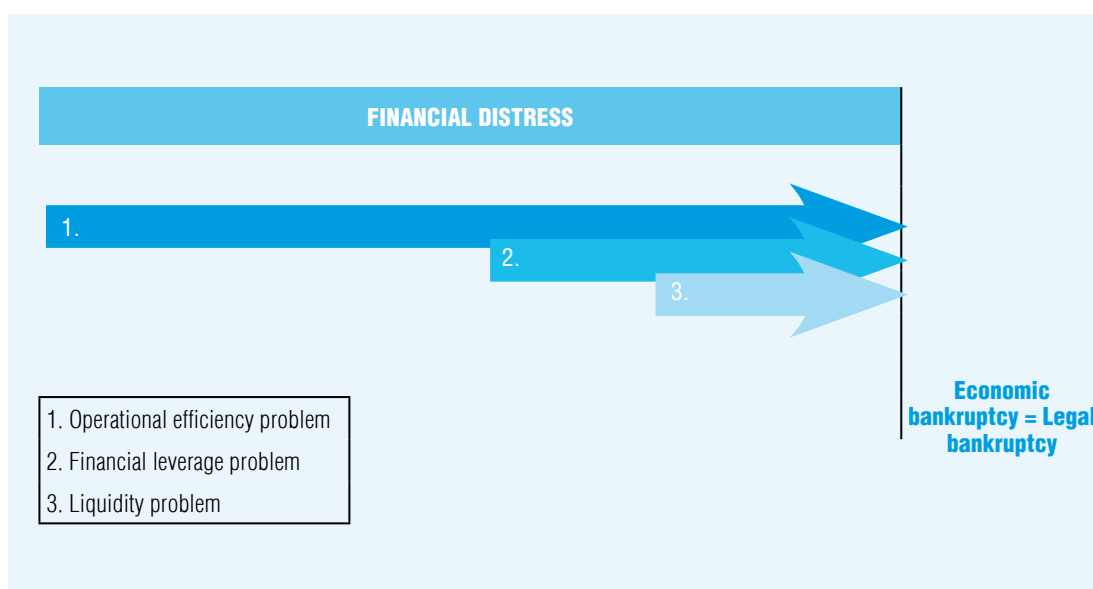
Economic (efficient) bankruptcy materialises in the wake of a process that can be accurately described financially/economically (this process is identified as the period of financial distress):

- the inadequately designed asset portfolio and/or poor operational asset efficiency lead(s) to value destruction;
- value destruction deteriorates the market value of the asset portfolio, which (even with) the same (assumed) debt amount, will increase the company’s financing leverage;
- as a result of all this, the company faces a liquidity shortage, which makes it obvious for all stakeholders that the firm is in financial distress. The process leads to insolvency, in other words, the company goes bankrupt in the legal sense of the word.

We assume that the factors described above can be – in line with *Figure 1* – arranged in a sequential order, i.e. the process of the company’s deterioration can be described accordingly. Confirming this hypothesis may

Figure 1

PROCESS MODEL OF FINANCIAL DISTRESS AND EFFICIENT BANKRUPTCY



Source: author's own editing

call management's attention to the fact that liquidity shortage and excessive financing leverage are typically preceded by the problem of operational efficiency. Consequently, the key factor in overcoming financial distress (formal or informal reorganisation) is typically the restoration of sustained value creation rather than loan restructuring.³

CONCEPT AND CAUSES OF BANKRUPTCY IN RELEVANT LITERATURE

A vast number of papers and concepts have been produced on the subject since the inception of bankruptcy research, both at the theoretical level and with respect to empirical tests, and by now bankruptcy prediction has become an independent and diversified branch of science. For the purposes of this paper, however, we focus our attention on grasping the concepts of bankruptcy and financial distress and on distinguishing between the legal and economic/financial approaches to bankruptcy.

Similar to our concept, a number of studies in the literature have argued that bankruptcy is an organic part of a longer process and a possible outcome of financial distress (Gordon, 1971; Scherrer, 1988). These definitions interpret bankruptcy along the lines of its legal definition (insolvency) and identify the stage preceding insolvency with the period of financial distress. As numerous authors have pointed out, financial distress often remains below the surface and it is only upon the declaration of bankruptcy that it becomes obvious and evident for all (Pindado and Rodrigues, 2005). Consequently, bankruptcy is often viewed as an alternative solution when all efforts to resolve financial distress fail. However, there is no consensus among the authors in the description of the process leading up to bankruptcy: there are various theories regard-

ing its starting point, the number of phases it involves, or the duration of the various phases.

The different approaches may be grouped by examining which of the previously discussed three financial areas (operational efficiency, financing structure, liquidity) they consider to be at the core of the criterion of financial distress.

① Operational efficiency problems are typically captured with negative profit and poor corporate performance (Gilbert et al., 1990; Turetsky and McEwen, 2001).

② Problems with the financing structure and liquidity adequacy are frequently explained by low cash-flow levels that are insufficient to cover maturing liabilities and by low interest coverage ratios (Whitaker, 1999; Purnanandam, 2005).

The classification belonging to the first category typically refers to economic bankruptcy, while the second involves financial bankruptcy (Hotchkiss, 1995).

Andrade and *Kaplan* (1998) associate economic bankruptcy with sustained operating losses, while *Altman* and *Hotchkiss* (2005) identify it with a state when the risk-weighted actual return on capital invested is significantly and enduringly lower than the returns on similar investments. The joint interpretation of the two studies is close to our view, namely, that it is companies destroying value permanently and irrevocably that are in a state of economic bankruptcy. The primary significance of this interpretation lies in one's perception of the expected success of a formal or informal post-bankruptcy reorganisation. As *Bebchuk* (1998) pointed out, the *going concern principle* can only take hold during reorganisation when the value created by the continued operation of the firm's assets is higher than the assets' liquidation value, which reflects the role of corporate fundamentals in the perception of the reorganisation's expected success. The reorganisation of firms facing economic bankrupt-

cy is less likely to be successful even though the firm has no substantial accumulated debt. By contrast, thanks to stable fundamentals, in the case of financial bankruptcy the going concern principle is not breached despite the company's insolvency and accordingly, value creating operations may be restored through the restructuring of the company's loans.

Obviously, as several authors have noted, financial distress does not always go hand in hand with bankruptcy. A company may avoid bankruptcy even in the face of financial distress (through, among other things, asset sales, downsizing, closure of loss-making operations) (Hashi, 1997), while unforeseen exogenous shocks (natural disaster, litigations, global economic/financial crisis) may culminate in a sudden, unexpected bankruptcy situation even if the company was not previously facing financial distress (Meyer, 1982).

The literature attributes a special significance to classifying the causes of bankruptcy into two groups: endogenous or exogenous causes. Endogenous causes, by definition, are company-specific, materialising merely at the level of individual companies. By contrast, exogenous factors have a profound effect on an entire industry or the national economy as a whole, with negative repercussions for all firms operating in the given environment. Several empirical studies have been dedicated to pinpointing the exogenous/endogenous nature of bankruptcy. Some authors link bankruptcy primarily to endogenous causes (Andrade and Kaplan, 1998; Memba and Job, 2013), while others – typically in times of recession – emphasise the role of exogenous factors (Nwogugu, 2004).

Besides the literature on the causes of bankruptcy, it is worth providing an overview of Hungarian studies – especially those focusing on bankruptcy models –, which closely follow the trends of the relevant international research. Bankruptcy models are intended to assist in separating, with fairly high certainty,

insolvent companies from those that are expected to remain solvent. For the most part, research on bankruptcy models concentrates on identifying the mathematical/statistical methods that can improve the classification accuracy/predictive power of bankruptcy prediction models. This series of research has headed in two main directions in recent decades.

① One of these trends attempts to explore whether the application of mathematical/statistical methods improves the accuracy of bankruptcy prediction models. The first Hungarian bankruptcy prediction model is founded on the application of discriminant analysis and logistic regression analysis based on indicators derived from 1990 and 1991 balance sheet and profit and loss account data (Virág – Hajdu, 1996; Hajdu – Virág, 2001). The branch-specific bankruptcy prediction model has been incorporated into the rating systems of a growing number of Hungarian financial institutions. The application of the artificial intelligence based neural networks method improved the classification accuracy of previous models. The empirical analysis of *Miklós Virág* and *Tamás Kristóf* confirmed that the application of neural networks to the observation units and financial indicators of the first Hungarian bankruptcy model improved the classification accuracy of the discriminant analysis and the logistic regression by 8.6 percentage points and by 4.7 percentage points, respectively. (Virág – Kristóf, 2006, p. 26).

② The second research trend is based on the assumption that professionals making lending decisions should be supported by models to which they can relate. With that in mind, some researchers have returned to the revision of traditional mathematical/statistical methods, attempting to improve their predictive power by taking greater advantage of the information concealed behind input data. In the same vein, *Tamás Nyitrai* (2014) demonstrated that taking account of temporal changes in financial indi-

cators may significantly improve the predictive power of traditional bankruptcy models.

Similarly, based on the analysis of historical financial data, this study is intended to confirm the bankruptcy process model set up under the previous section. It is not bankruptcy in the legal sense (i.e. insolvency), that is at the core of our analysis but economic bankruptcy and the process leading up to it. Our study is also consistent with the new trends emerging in the research of bankruptcy models. In an effort to increase the information content of input data in the research of bankruptcy models, as opposed to previous models, in his empirical test Tamás Nyitrai (2014) intended to predict which companies are likely to become insolvent in the following year based on the financial indicators of at least the previous three years instead of just one. In this study, in examining the process leading to economic bankruptcy we examined a period of 10 years in order to identify the causes of economic bankruptcy and the temporal sequence of their emergence. Although our study is not directly aimed at improving the predictive power of bankruptcy models, in our view it might provide researchers with useful input for working out a model with early warning capability.

DESCRIPTION OF THE EMPIRICAL RESEARCH

In line with the abovementioned objectives of this study, based on a sample of Hungarian companies we sought to explore

- the extent to which the existence of pre-liquidation financial distress can be confirmed;
- whether dividing the process of economic bankruptcy into asset efficiency, financing and liquidity phases can be confirmed in the case of financial distress.

Research data, sample and methodology

In order to examine the special traits of Hungarian companies, we compiled a broad-based representative sample. The data source is Bureau van Dijk's *Amadeus* database. The sample comprised (a total of 15,564) Hungarian companies from the *Amadeus* database that were under liquidation and terminated their activities in the period of 2003–2012.

The company with the longest lifecycle within the sample operated for 66 years, while the shortest operating period was less than 12 months. The general life expectancy of the companies under review was 7.09 years, while the median company operated for exactly 5 years. Standard deviation was 5.26 years. (See *Figure 2*)

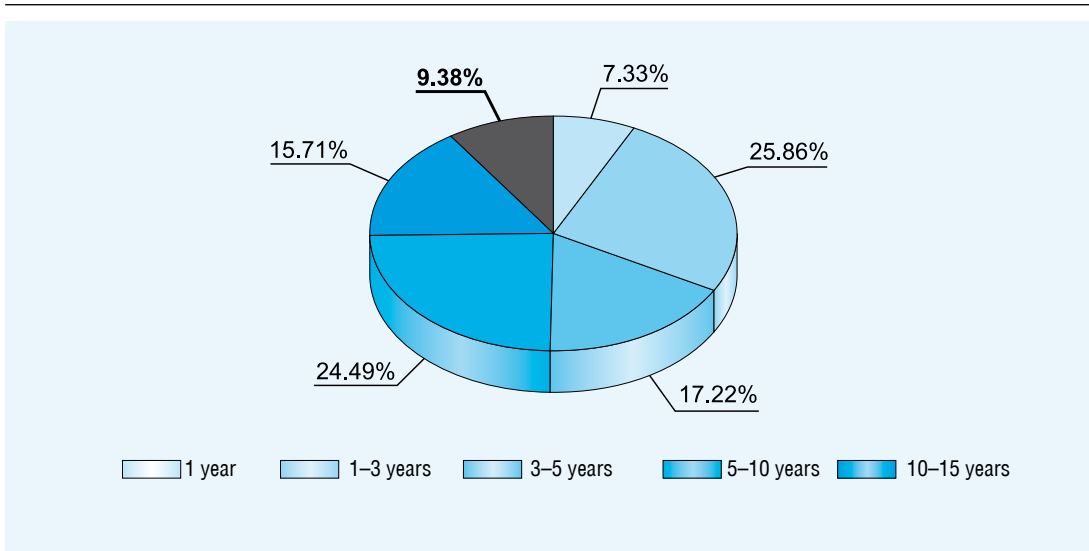
Our empirical analyses were based on data derived from the financial statements of the companies within the sample. The last year of operation was considered to be the year in which the company filed its last annual report and collected sales revenue (T year). Each year of a company's operation was considered based on the distance between the given year and the company's last year of operation (for instance, $T-1$ year designates the company's penultimate year of operation).

We then proceeded to generate indicators from the annual financial data of the firms in liquidation that were capable of capturing corporate performance in terms of operational efficiency, financing leverage and liquidity.⁴ We grouped companies based on their NACE Rev. 2 sector classification, and defined the median value of each sector included in the sample (18 sectors) for each year of the review period (2003–2012) in order to put the resulting corporate indicators into context.

Finally, we analysed the corporate indicators from a number of aspects: in a dynamic approach, we examined their temporal chang-

Figure 2

PERCENTAGE OF HUNGARIAN COMPANIES WITHIN THE SAMPLE IN LIQUIDATION ACCORDING TO LIFECYCLE



Source: Author's own calculations based on the Amadeus database

es and their trends and, in a static approach, we checked them against the industry-adjusted medians relevant to the given year. We applied the following methods for testing our research hypothesis:

- annual change in the indicator;
- examining the indicator's quantified value or its value relative to a given threshold pre-defined on the basis of economic aspects;
- examining the condition of the companies relative to the median value defined for the sector as a whole for the same year.

VALIDITY AND EXPLANATION OF THE HYPOTHESES

The purpose of this study is to confirm that most companies face financial distress before bankruptcy, which financial distress evolves alongside an organic development trajectory determined by the previously discussed

bankruptcy process model. For testing our hypothesis, we examined the performance of companies within the sample from the following aspects:

- asset efficiency (operational efficiency)
- financing structure
- liquidity position, solvency

Table 1 presents the indicators used to capture these three categories and includes our main findings.

Asset efficiency (operational efficiency)

In our hypothesis, the bankruptcy of a company can be described as an organic process resulting from the low operational efficiency of the company. Thus, the emergence of operational efficiency problems is the first warning sign of the existence of financial distress and accordingly, the longest-lasting problem before bankruptcy occurs.⁵

Table 1

FINANCIAL INDICATORS OF HUNGARIAN COMPANIES, LIQUIDATED BETWEEN 2003 AND 2012, IN THE YEARS BEFORE LIQUIDATION

| | T | T-1 | T-2 | T-3 | T-4 |
|--|---------|---------|---------|--------|--------|
| Percentage of firms significantly underperforming the industrial median (by at least 50%) | | | | | |
| EBITDA/total assets | 66.8% | 51.4% | 44.7% | 42.4% | 40.8% |
| EBITDA/sales revenue | 69.1% | 57.9% | 53.2% | 51.4% | 50.9% |
| annual change in assets | 22.30% | 11.36% | 7.38% | 6.07% | 4.83% |
| total liabilities/total assets | 58.8% | 46.9% | 39.4% | 34.5% | 33.3% |
| EBITDA/interest expenditure | 79.80% | 70.22% | 64.64% | 62.04% | 62.29% |
| current assets/stl | 48.56% | 35.27% | 28.85% | 23.57% | 22.12% |
| Percentage of firms performing below/above the threshold | | | | | |
| EBITDA<0 | 54.67% | 40.45% | 31.47% | 27.17% | 27.43% |
| After tax result<0 | 61.63% | 50.70% | 43.64% | 38.14% | 37.84% |
| Total liabilities/total assets>=1 | 51.5% | 36.2% | 27.1% | 20.4% | 17.6% |
| current assets/stl<1 | 61.34% | 50.58% | 44.37% | 39.62% | 38.80% |
| EBITDA/interest expenditure<1 | 60.27% | 36.64% | 25.86% | 21.53% | 19.71% |
| loans/total assets>1 | 1.24% | 0.68% | 0.38% | 0.19% | 0.21% |
| Median value of specific indicators of the firms in the sample | | | | | |
| Tangible assets/total assets | 13.16% | 17.26% | 19.07% | 20.28% | 22.16% |
| Receivables/short-term assets | 30.02% | 32.13% | 43.14% | 35.76% | 32.77% |
| annual change in assets | 0.90 | 1.00 | 1.04 | 1.07 | 1.09 |
| STL/total liabilities | 100.00% | 100.00% | 100.00% | 98.98% | 99.48% |
| | T-5 | T-6 | T-7 | T-8 | T-9 |
| Percentage of firms significantly underperforming the industrial median (by at least 50%) | | | | | |
| EBITDA/total assets | 39.7% | 39.3% | 36.9% | 35.3% | 37.3% |
| EBITDA/sales revenue | 49.4% | 49.3% | 46.8% | 44.3% | 40.0% |
| annual change in assets | 3.86% | 4.20% | 2.94% | 4.84% | – |
| total liabilities/total assets | 31.6% | 31.2% | 28.5% | 24.1% | 24.4% |
| EBITDA/interest expenditure | 58.63% | 60.00% | 56.18% | – | – |
| current assets/stl | 21.59% | 22.74% | 22.15% | 17.57% | 18.52% |
| Percentage of firms performing below/above the threshold | | | | | |
| EBITDA<0 | 26.59% | 27.00% | 26.50% | 26.71% | 25.00% |
| After tax result<0 | 38.45% | 37.93% | 36.84% | 33.72% | 29.09% |
| Total liabilities/total assets>=1 | 16.6% | 16.6% | 15.3% | 12.6% | 12.2% |
| current assets/stl<1 | 37.87% | 37.89% | 36.40% | 35.14% | 33.33% |
| EBITDA/interest expenditure<1 | 17.67% | 16.97% | 16.85% | 16.67% | – |
| loans/total assets>1 | 0.05% | 0.21% | 0.49% | 0.00% | 0.00% |
| Median value of specific indicators of the firms in the sample | | | | | |
| Tangible assets/total assets | 23.14% | 25.09% | 28.06% | 32.63% | 29.83% |
| Receivables/short-term assets | 22.54% | 26.57% | 37.12% | 34.91% | 25.14% |
| annual change in assets | 1.11 | 1.10 | 1.12 | 1.04 | – |
| STL/total liabilities | 99.74% | 99.80% | 97.86% | 94.95% | 82.82% |

Source: Author's own calculations based on the Amadeus database

In selecting the indicators, we sought to distinguish between operational and financing effects; accordingly, for the purposes of our analyses, the EBITDA (earnings before interest, taxes, depreciation and amortisation) based indicators are considered to be of primary importance (EBITDA/total assets; EBITDA/sales revenue). Indeed, based on the Hungarian financial statements this item appears to be the best suited to capture operating cash-flows without reflecting the effect of the financing leverage. (See Figure 3)

Examining the EBITDA/total assets indicator, we found that 37 per cent of the companies in liquidation⁶ underperformed the industry-adjusted median significantly (by at least 50 per cent) in the 10 years preceding bankruptcy, and approaching the date of liquidation, firms significantly underperforming the median company are increasingly over-

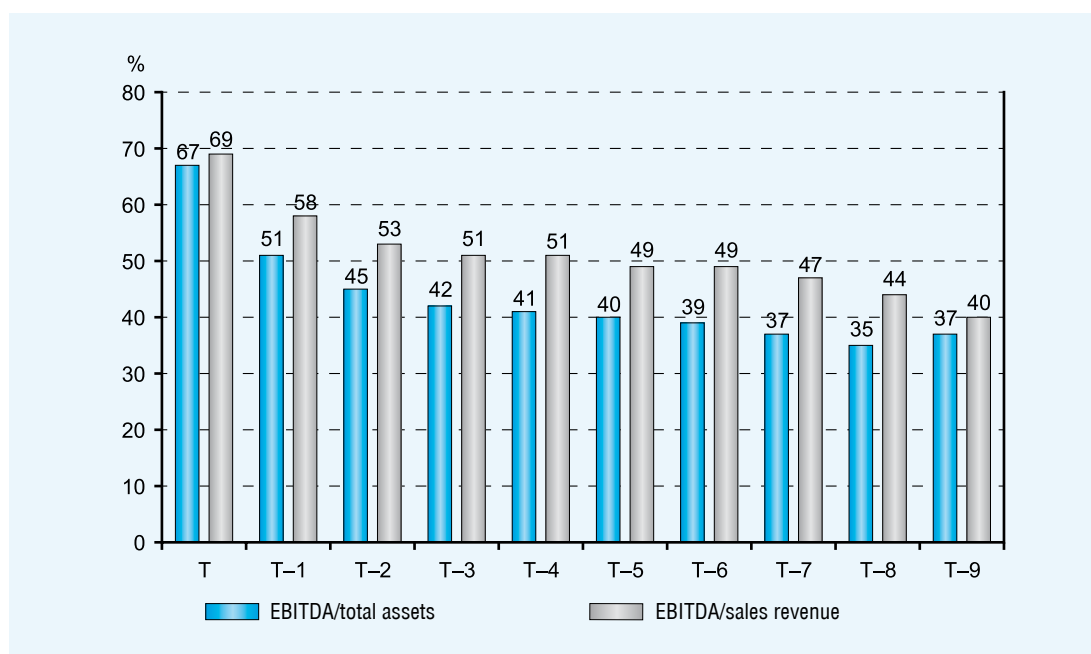
represented in the sample. According to the indicator, in the second last year preceding bankruptcy, the ratio of distressed firms exceeded 50 per cent, and was over 65 per cent in the last full year of operation preceding bankruptcy.

The percentage of firms significantly underperforming the industry-adjusted median was found to be somewhat higher when efficiency was measured by using the EBITDA/sales revenue indicator. In this case, the ratio of distressed firms reached 50 per cent as early as the fifth year prior to bankruptcy.

The deviation between the values derived from the two indicators underpins that the difference between liquidated and financially viable firms is more pronounced with respect to sales revenue than in terms of available assets. This also means that, presumably, financially viable firms do not generate significantly

Figure 3

PERCENTAGE OF FIRMS SIGNIFICANTLY UNDERPERFORMING THE INDUSTRY-ADJUSTED MEDIAN IN TERMS OF OPERATIONAL EFFICIENCY IN PRE-BANKRUPTCY YEARS



Source: Author's own calculations based on the Amadeus database

higher sales revenues with the asset portfolio at their disposal than the companies that face liquidation, but the former recognise a higher portion of the sales revenues as profits.

In several studies, the generation of negative profit is considered to be the criterion of financial distress. In the Hungarian sample, we examined profit generation at the level of after-tax results as well.

With respect to after-tax results, we found that 61.6 per cent of the companies facing liquidation recorded negative after tax results in the year preceding bankruptcy, and in the penultimate year the ratio of loss-producing firms was 50.7 per cent. Examining profitability at the level of EBITDA, we found that one year prior to bankruptcy filing nearly 55 per cent of the firms reported negative results, while the ratio of loss-producing firms was 40.45 per cent two years earlier.

A high percentage of Hungarian firms filing for bankruptcy recorded negative profits both at the level of EBITDA and at the level of after-tax results, especially in the two years preceding bankruptcy. The fact that such a high percentage of firms generate losses even at the EBITDA level underpins that companies facing bankruptcy often encounter efficiency problems irrespective of financing costs; in other words, loss generation is essentially the result of business activity rather than the effect of financing.

In exploring the exact time at which a company enters the stage of financial distress, several studies point out the significance of asset sales in the period of pre-bankruptcy financial distress. As pointed out by a number of authors (Wruck, 1990; Gilbert et al., 1990), companies may avoid bankruptcy through the disposal of their assets. Based on our sample, the median of the annual change in the assets of liquidated companies is around 1 – irrespective of the observation period relative to liquidation –, which indicates that the firms con-

cerned maintained their asset holdings. Even in the year immediately preceding liquidation, only 22.3 per cent of the companies recorded a negative annual change in assets in excess of 50 per cent compared to the industry-adjusted median of asset changes, while the corresponding ratio is only 11.36 per cent in the second year preceding liquidation. A possible explanation could be the fact that the companies concerned had limited asset holdings in the first place, or that the internal structure of the assets (such as a high ratio of accounts receivable to total assets) prevented the quick shedding of assets. The analysis of the assets' internal structure reveals that in the sample composed of liquidated companies, the median value of the ratio of tangible assets to total assets was only 13 per cent in the last year of operation, 17 per cent in the second year before liquidation and only 30 per cent even in the 10th year before liquidation (see *Table 1, Section 'C'*). The low asset holdings of Hungarian firms prevent the companies from easing their potential financial difficulties by way of asset sales.

Financing structure

According to our hypothesis, in the next phase of the evolution of financial distress the financing leverage of the company increases in the environment of the value destruction stemming from the low level of asset efficiency even irrespective of the effect of any other factors (such as new borrowing). Leverage is typically measured with the proportion of shareholders' equity at market value and debt (including cost of capital) used to finance a company's assets; i.e. with the D/E or the D/(E+D) ratio. On the basis of the database available, this indicator is replaced by the total liabilities/total assets indicator, assuming that at Hungarian companies all liabilities are funds with associated cost of capital.

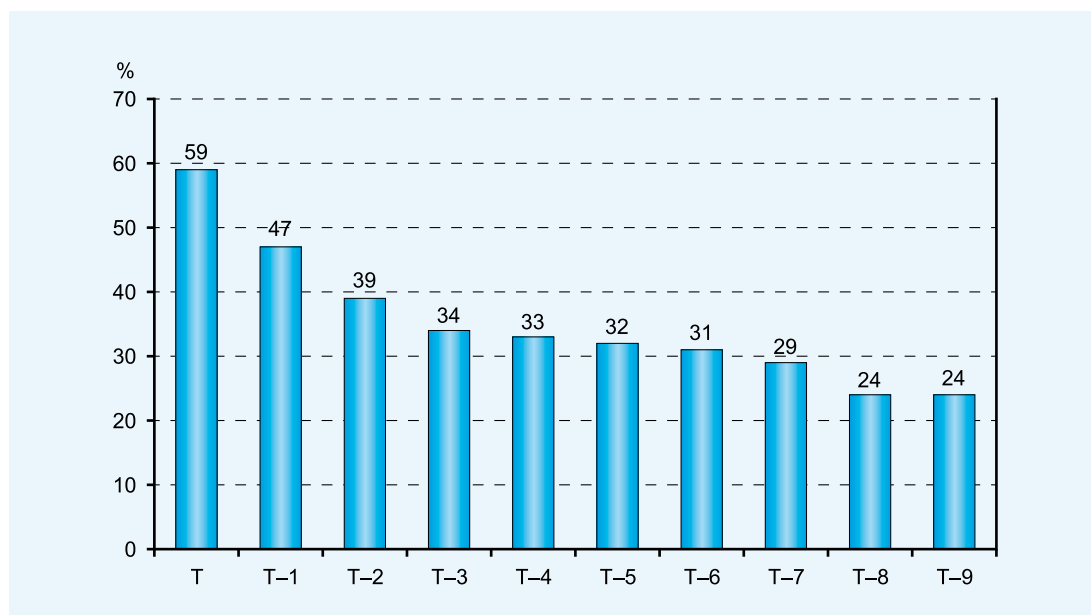
Based on the analysis of total liabilities/total assets, we received a value higher than 1 in the year directly preceding the liquidation at 51.5 per cent of the firms. The percentage of firms where liabilities exceeded the value of assets was 36.2 per cent in the second, and 27.1 per cent in the third year preceding liquidation. In comparing the respective indicator of liquidated companies to the total liabilities/total assets indicator of the relevant industry-adjusted median, we found that 58.8 per cent of the companies exceeded the median company's total liabilities/total assets ratio by at least 50 per cent in the last year of operation. The corresponding ratio was nearly 50 per cent even in the second year preceding the termination of operations. (See Figure 4)

In the traditional sense (approximated with long-term debt), the indebtedness of Hungarian companies is low. However, when out-

standing debt is extended to total liabilities, the picture is entirely different. This is because, as opposed to international practice, Hungarian firms tend to rely primarily on short-term funds, as confirmed by the fact that, in terms of the internal structure of liabilities, the median value of the ratio of short-term liabilities to total liabilities is close to 100 per cent across all time horizons both at liquidated and at financially viable companies. This directs the attention to three important factors: firstly, in examining the relationship between the evolution of bankruptcy and outstanding debt, short-term liabilities should also be considered in addition to the traditionally interpreted long-term debt. Secondly, financing structure and liquidity are closely correlated at Hungarian liquidated companies, with solvency assuming special significance. Thirdly, short-term funds translate to continuous refinancing risk.

Figure 4

PERCENTAGE OF FIRMS SIGNIFICANTLY UNDERPERFORMING THE INDUSTRY-ADJUSTED MEDIAN IN TERMS OF TOTAL LIABILITIES/TOTAL ASSETS IN PRE-LIQUIDATION YEARS



Source: Author's own calculations based on the Amadeus database

Liquidity, solvency

In the literature, an important measure of financial distress is the ratio of available cash-flow to maturing payment obligations, which is designed to gauge the liquidity position of companies.

Nevertheless, in order to capture liquidity position, we used the EBITDA/interest expenditure indicator and the ratio of current assets to short-term liabilities, which we find more in line with the structure of Hungarian financial statements. (See Figure 5)

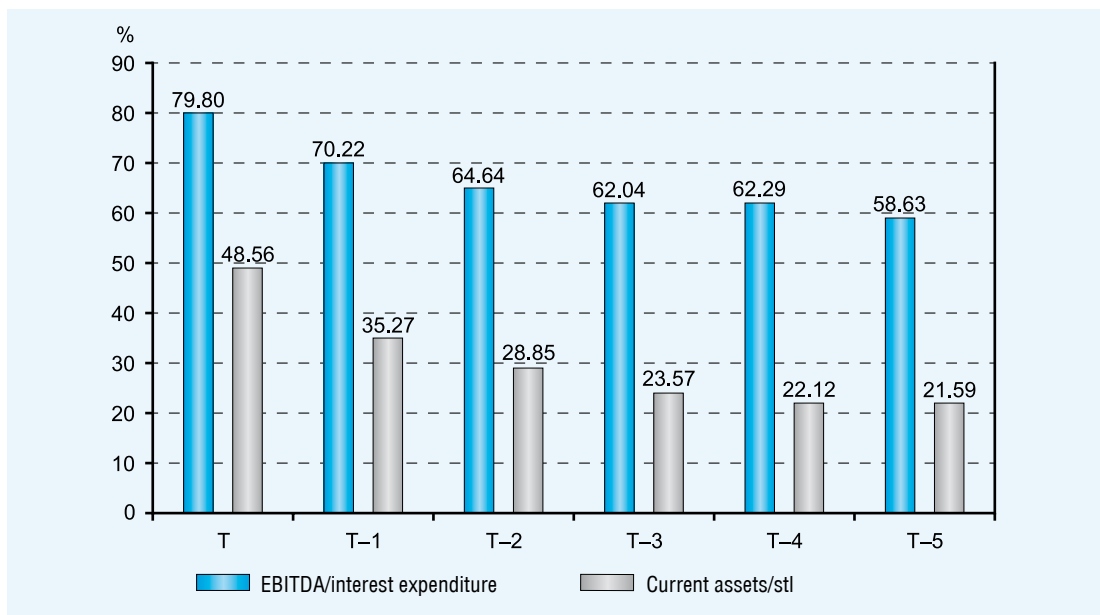
Assessing the position of companies brought under liquidation based on the current assets/short-term liabilities ratio relative to the median sectoral performance, we found that the ratio was at least 50 per cent below the median value at nearly 50 per cent of the companies under review in the last year of operation and at 35 per cent of the companies

two years prior to liquidation. The quantitative value of the ratio was below 1 at 61.34 per cent of bankruptcies in the last year of operation and this applied to 50.58 per cent of the companies in the second last year preceding bankruptcy.

EBITDA/interest expenditure data suggest that the value of the indicator was below 1 at 60 per cent of the liquidated companies in the last year of operation, whereas the corresponding percentages were 37 per cent and 26 per cent in the second and in the third year prior to liquidation, respectively. We found that the percentage of companies in financial distress was higher in comparison to the industry-adjusted median: the interest coverage ratio was at least 50 per cent lower than the industry-adjusted median at about 80 per cent of the liquidated companies in the last year of operation, while this percentage was around 70 per cent two years before liquidation.

Figure 5

PERCENTAGE OF FIRMS SIGNIFICANTLY UNDERPERFORMING THE INDUSTRY-ADJUSTED MEDIAN IN TERMS OF LIQUIDITY IN PRE-LIQUIDATION YEARS



Source: Author's own calculations based on the Amadeus database

The two indicators point to somewhat different pictures, which may be attributed to two reasons. Firstly, the lion's share of companies' assets comprise current assets associated with a financing structure that is based on short-term maturities; accordingly, the maturity mismatch between the liabilities side and the assets side brings to light the existing problems only in the year directly preceding liquidation. Secondly, the interest coverage ratio is closely related to profitability and financing structure as well, whereas the liquidity ratio is not related directly to profitability. As we have seen, the profitability of liquidated companies is considered fairly low, which explains the low level of the interest coverage ratio.

Temporal emergence of financial distress at Hungarian companies

Primarily due to the lack of a uniform definition, there is no general consensus in relevant literature about the specific point in time when the first warnings of pre-bankruptcy financial distress become visible. Typically, researchers consider the 5–6 years preceding bankruptcy the period in which the first signs of deterioration may arise (Outecheva, 2007).

Evidently, based on the Hungarian sample – and provided that the company has at least 5 or 6 years of operation –, according to the EBITDA/total assets ratio nearly 40 per cent of the companies significantly underperformed the sectoral median in the fifth and the sixth year, while according to the EBITDA/sales revenue ratio this percentage is almost 50 per cent. According to the indicators designed to capture financing structure and liquidity, the majority of companies show no signs of significant underperformance relative to the industry average in this period at all;

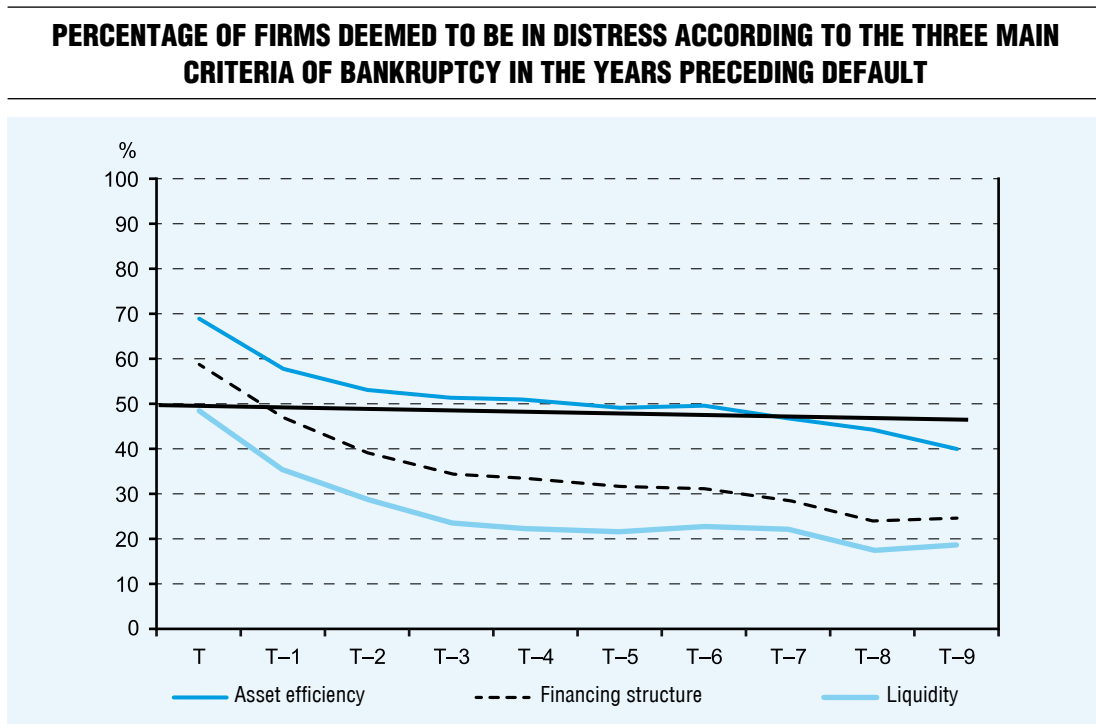
therefore, the existence of early warning signs at Hungarian companies is questionable. It is especially true in view of the fact that almost 50 per cent of the companies are terminated before the end of the fifth year of operation. In examining the ratios reflecting changes in the financing structure (total liabilities/total assets) and in the liquidity position (current assets/short-term liabilities) we found, once again, that almost 50 per cent of the companies underperformed the industry-adjusted median in the 1st–2nd year prior to liquidation. Consequently, our findings (see Figure 6) reconfirm the research results of Tinoco and Wilson (2013), who found that pre-bankruptcy problems became apparent in the 1st–2nd year preceding bankruptcy.

Based on the results, our findings confirm our initial hypothesis, and the efficient bankruptcy process model outlined in the initial hypothesis (see Figure 1) can be supplemented with observations regarding the course of financial distress on the basis of the Hungarian corporate sample.

Figures 6–7 confirm our view that the primary cause of the bankruptcy of Hungarian firms lies in the inappropriate selection or inadequate operation of assets, the first signs of which can be measured as early as 4 to 5 years before the default. The increasing financial leverage and indebtedness of companies can be observed 1 or 2 years prior to bankruptcy, while liquidity shortage arises in the last year of operation. The vast majority of the liabilities of Hungarian firms comprise short-term debt, which automatically generates liquidity problems. This explains why the phases of financing leverage and liquidity problems have nearly the same duration in Figure 7.

At the Hungarian liquidated companies under review, asset efficiency problems coupled with the lack of efforts to restore the company's capability of value creation leads to leverage problems and generates liquidity

Figure 6



Source: Author's own calculations based on the Amadeus database

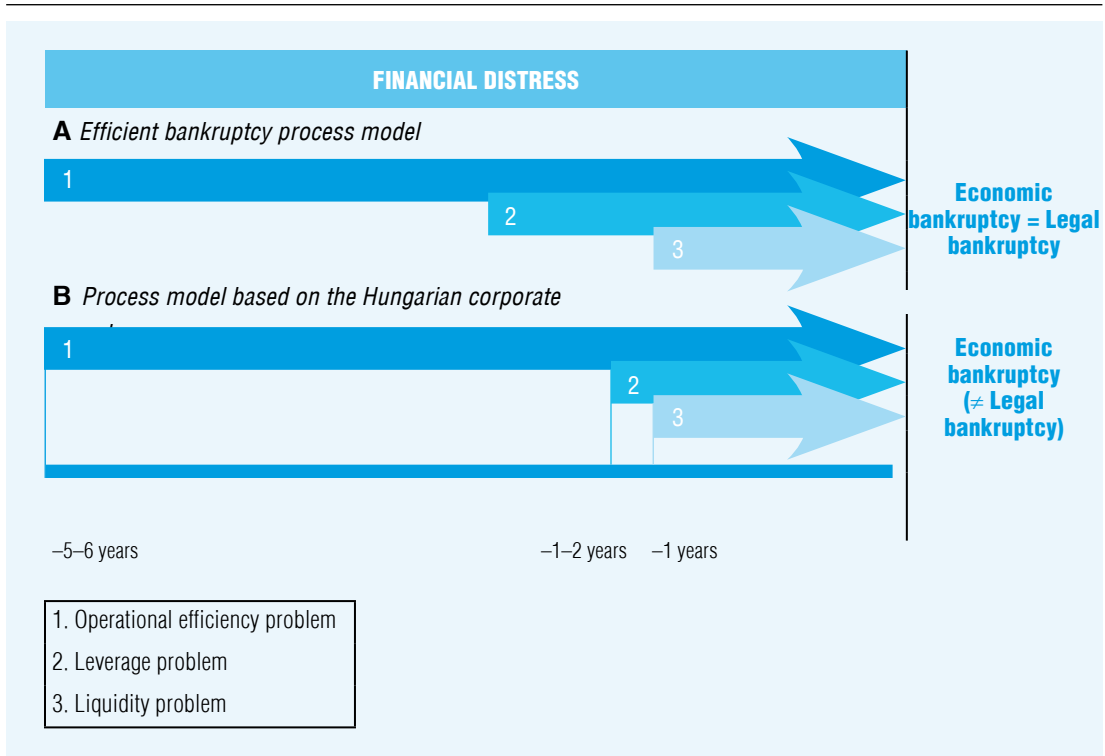
shortages. At the same time, it should be noted that in many cases bankruptcy in the legal sense does not coincide with the time of economic bankruptcy. Our findings suggest that a vast number of liquidated companies cannot be qualified as distressed in terms of value creation based on our chosen approach. This is because from time to time – as assumed by the authors referred to in the theoretical summary and as confirmed by our own findings regarding the review period – endogenous effects are amplified or even overridden by exogenous effects.

90 per cent of the companies included in the sample were terminated in the period between 2008 and 2011. (Regarding their sectoral distribution, wholesale and retail companies as well as construction firms, i.e. companies sensitive to business cycles, were overrepresented in the sample). Although we found evidence that economic bankruptcy is the result of an

organic evolutionary process where the typically long period of value destruction is accompanied by short periods of high leverage and liquidity shortage, data clearly show that, in addition to the endogenous factors under review in this study, the shock induced by the recent crisis was also an important contributor to corporate bankruptcy. External/exogenous effects might become the causes of bankruptcy in and of themselves or alternatively, they may amplify/accelerate the course of economic bankruptcy. At the same time, companies liquidated after the 2008 crisis were undercapitalised with limited holdings of assets; moreover, their persistently low profitability prevented the accumulation of capital, which could be a crucial element in the survival of recession periods. Another typical feature of the period was the dominance of short-term liabilities within total liabilities, which carried severe refinancing risk. In times of recession,

Figure 7

FINANCIAL DISTRESS AND THE EXTENDED BANKRUPTCY PROCESS MODEL BASED ON A SAMPLE OF HUNGARIAN COMPANIES



Source: Author's own editing

refinancing becomes increasingly difficult; the options available to companies dwindle; the gridlock phenomenon takes hold, and a company might find itself insolvent even without any prior symptom of economic bankruptcy. Similar to the companies of emerging markets, Hungarian firms have insufficient reserves to withstand such situations. This conclusion is consistent with the opinion of *Ooghe* and *Prijacker* (2008); namely, that due to their accumulated reserves, major corporations stand a better chance of survival.

CONCLUSIONS

Our analysis of the data derived from the corporate sample comprising companies that

were brought under liquidation in Hungary in the past 10 years confirmed that the bankruptcy process model outlined by us is suitable for describing the road to liquidation. The original cause of bankruptcy is the persistent lack of value creation followed by increasing leverage and finally, liquidity shortage. At the same time, the last two phases of the three-phase model nearly coincide with each other: the problem of high leverage (indebtedness) arises nearly simultaneously with the problem of liquidity shortage. In our view, at Hungarian firms (and presumably, in emerging markets) this can be attributed to the insufficient depth of financial intermediation, a severe lack of financing from the moment of foundation and the dominant share of short-term debt in liabilities.

The bankruptcy process model outlined – and confirmed on the basis of domestic corporate data – in this study presents the causes of internal bankruptcy in sequential order. Importantly, in assessing the causes of bankruptcy, exogenous effects should also be considered, especially in times of crisis. Exogenous factors act like a catalyst during the evolution of a bankruptcy situation. Despite poor asset efficiency and persistent pre-bankruptcy loss generation, companies can remain solvent as long as they can refinance their debt continuously. However, insolvency (i.e. legal bankruptcy) may arise easily as a result of an exogenous shock, revealing the fact that the company entered economic bankruptcy years earlier. In many cases, however, bankruptcy in

the legal sense does not automatically imply the existence of economic bankruptcy; indeed, it might be triggered by an unexpected external shock. In times of a credit crunch, faced with the “queuing/gridlock” phenomenon arising from the *en-masse* termination of credit arrangements, a company may find itself insolvent despite continuous value creation and bankruptcy – in the legal sense – takes hold.

Finally, the main conclusion of this study in regard to the reorganisation-oriented bankruptcy regulations observed worldwide during the 2008 crisis, is that stakeholders should primarily focus on the restoration of value creation during a reorganisation procedure instead of the restructuring of loans.

NOTES

¹ This article uses the following terminology:

Bankruptcy (default) is understood as an event where a firm fails to satisfy its payment obligations by the deadline (in the process of the legal procedure, this is a condition for launching the bankruptcy procedure).

Economic default means the point in a firm’s lifecycle when value destruction becomes a perpetual and irreversible internal process. In addition, from a legal perspective, a firm may go bankrupt even before or after this point in time.

Financial distress is a complex process preceding economic default.

The outcome of *bankruptcy*, as a formal procedure, can be the restructuring or the liquidation of the company.

International literature often uses the terms ‘default’ and ‘bankruptcy’ synonymously, suggesting that the content of the two terms is identical: both mean the breach of payment obligations. The term ‘bankruptcy’ refers to companies being subjected to bankruptcy or liquidation procedure for failure to perform their payment obligations.

² We examined firms’ ability to create value from the perspective of the owners; in other words, a company was considered to be a value generating business if the actual return on its investments exceeded the expected return, i.e. the opportunity cost of capital. Otherwise, the activity of the company destroys value. Of course, disregarding the company as a profit-oriented organisation, we can examine the external effect that it exerts on society and economy as a whole. From this perspective, the company’s activity, which destroys value from the owners’ perspective, might actually create value for the community (it might create a market for suppliers, jobs – directly or indirectly – for employees, tax revenues for the central budget, etc.). For the purposes of this study, these external effects are disregarded.

³ In its legal sense, bankruptcy does not assume the existence of economic bankruptcy at the given company; the company’s insolvency may well be due to unexpected, exogenous shocks.

- ⁴ We excluded from the calculation of the indicators all companies for which financial data were unavailable for more than 3 years in the review period (2003–2012).
- ⁵ Low asset efficiency is the condition when a company persistently fails to achieve the expected return on the operation of the asset portfolio. Generally speaking, this means that the company cannot produce normal profits on an operating basis. In the absence of market information – as only the companies’ annual financial statements were available – instead of market yields, we applied accounting categories to capture operational efficiency.
- ⁶ The $T-9$ year was only examined for those firms that had at least 10 years of operation in the review period; in other words, their operation was continuous between 2003 and 2012.

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