Capital Circulation as Indicator of Mining Company Economic Footing

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Cirkulácia kapitálu ako základný ekonomický indikátor baníckeho podniku

This contribution analyses corporate capital structures of mining enterprises operating in the Ostrava-Karvina coal district, Czech Republic. These enterprises operated in the red for longer periods of time which fact led to their business collapse. A hypothesis is put forward, namely that some changes in corporate capital structures may provide for default risk signals.

Key Words*: Coal mine, bankruptcy*

Introduction

Run-down operations of mining enterprises, their closures and extinction were all prominent features of the Czech mining industries in the nineties of the last century. The affliction concerned ore mining, uranium mining was minimised, and also both underground coal mining and open-cast coal mining decreased.

Transformations towards market economies, which provided little or no room for financial redistributions and subsidies, were the obvious reasons for major disruptions in these firms' operations. Also other factors were highlighted as adding to the predicament: environmental damage, possibility of raw material imports from abroad, etc.

Understanding of the actual processes and reasons that shaped mining industries of the period is essential for both assessing the past and predicting the future developments. Prediction options for mining enterprise failures – their corporate bankruptcies – are of major importance for many economic and social entities:

- investors,
- debt holders,
- state,
- regional and local authorities, etc.

Presumably corporate failures are results of long-term economic processes reflected by various economic factors. Many prediction models have emerged that try to identify those factors of corporate economies that might be a signal and measure of imminent default. From this point of view there is no difference between a mining enterprise and any other industrial business activity.

Run-down operations of mining businesses

The term, run-down operations, means in fact the final stages of the business existence after 1989, marked by a changed economic paradigm. The attention of this study has focused on underground coal mining in the Ostrava-Karvina coal district, as the most important bituminous coal district in the Czech Republic. Past production maximums exceeded 24 million tons per year. Closures of the Ostrava-Karvina mines for reasons of economic inefficiency followed the sequence of this list:

Mining company	**Run-down report**	**Ceasing of operations**
Důl Jan Šverma	October 1991	December 1991
Důl Ostrava	November 1991	December 1992
Důl Heřmanice	January 1993	June 1993
Důl Odra	January 1994	June 1994
Důl Julius Fučík	January1995	March 1998
Důl Paskov	January 1998	June 1999

The review of economic activities will concern the first three mining firms of the list, as these had the shortest space of time available in which they could face the process of price liberalization started after

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1989. Rapid growth of external input prices was not matched to any reasonable extent by mining output prices. In-the-red operations of the mining companies, which became more or less common, continued with an increasing intensity. The economic losses were being counterbalanced by subsidy provisions of superior corporate authorities. The action served the purpose of restoring positive cash flows. The mining firm's accounting records showed slightly positive margins so that funding and taxation demands could be satisfied and lawful obligations met.

Basic accountancy documents – Balance sheets – served the purpose of reviewing the related economic efficiencies and capital structures. The closing periods of all three mining enterprise lives were characterised by decreases of:

- fixed assets,
- reserves,
- bank credits.

Decreases of fixed assets rely to run-down operations implying equity deficiencies that impede investments. Reserve decreases reflect reductions of production that concern both the mining enterprise inputs and their outputs. Bank credit decreases are implications of latent inefficiency but also explicit lower equity needs, as a consequence of the firm's actual output reductions. The run-down report followed a managerial decision that took into account the principal risk of economic inefficiency. The pivoting factor may be seen in difficult a local geology of the Ostrava-Karvina coal district. All mining operations were terminated in the Ostrava region but under the same economic conditions they continued in the Karvina region of the same district. Geological conditions of the Karvina localities are more favourable – a lower depth of mining operations, a greater seam thickness, lower seam pitches, etc. The mining production in this area can be economically viable.

We can conclude that the economic situation of the first half of the nineties of the last century could not provide for any better solution than the termination of operations when the financial redistribution and subsidising processes could not be continued any further.

The business extinction implied in flawed economies is rarely an abrupt occurrence as those caused by technical or natural catastrophes. The firms' decayed economic functioning may be a drawn-out process lasting for months or even years, and it would be of major advantage to be able to predict whether and to what extent the risk of default is imminent - whether it is worth of trying to go on even in a seemingly hopeless situation.

Corporate bankruptcy from the perspective of capital circulation

From a material standpoint, business is nothing else but a fabrication of products or performing of services but economically – irrespective of the actual business – it is just a circulation of capital.

Originally, it is the capitalist's own capital (share capital, etc.) or the outside capital (credits, loans, etc.). The capital pays for fixed assets (landed property, buildings, machines, etc.), current assets (raw materials and others inputs), and hiring of workforce. A classical production process starts with processing of raw materials or semi-products which operation adds the value of fixed assets (depreciations) and workforce to the semi-finished products. The semi-finished products' further processing is finalised by the production of goods – wares for the market. Marketing and sales of the wares changes them into receivables that – being realised – transform again to capital. This capital is a fresh input of the running process of the capital circulation. It refreshes consumed current assets, pays for the workforce, and redresses the balance of fixed assets. Capital resources can be also expanded by interventions from outside so that the process of assets' rejuvenation may accelerate on a higher level.

Theoretically the depreciations of fixed assets should provide a source for their renewal, sales of goods should cover costs of processing inputs, labour, and firm's indirect costs. If profit margins are generated, they can provide a source for the extended reproduction of assets or job multiplying.

It is obvious from this enterprise functional paradigm that the capital and job renewal are processes that ask for stable rejuvenations. Although these processes can be variably structured, they cannot stop. Cutting the circling flow of capital would result in the necessity to finance the capital and job maintenance only by the intervention of outside entities, which in fact can be done but only for limited periods of time.

The capital formation or diversifying its formation and exploitation portfolios can characterise processes of capital circulation more concretely. But this circulation can be disrupted by:

- difficulty or impracticability of equity capital extensions (owner's investment, etc.),
- difficulty or impracticability of getting debt capital (bank loans, liabilities),
- problematic maintenance of operational cash flows as results of bad sales, and in-the-red operations (which make the problem of disrupted cash flows even worse),
- problematic sales of fixed assets items.

Capital circulation disruptions may vary in duration and intensity. Theoretically, this condition implies two possible scenarios:

1 Resignation

The company accepts what is undesirable but inevitable and its operations implicate the following capital structure changes:

- Fixed assets shrink that is caused by the investment stoppage, continuing depreciations, fixed assets voluntary or execution sales,
- Current assets decrease that is caused by lowered or zero sale rates that mean a slump of receivables and declining stock of inputs,
- In-the-red operations implicate an equity decrease or even their negative value,
- Liability trends imply inflows of outside capital: the decreased production implicates lower material and workforce inputs. This scales down debts but the equity scarcity implies delayed payments, which again aggravates debts. Bank credits can hardly be expected to follow.

2 Struggle

The company struggles to improve its economic footings by savings and reductions, restructuring initiatives, instalment schedules, etc., and still continues to produce. This usually implies changed capital structures:

- Fixed assets shrink by investment reductions and depreciations,
- Current assets expand which is caused by the continuing production and sales of stocks which in its turn leads to the increased accounting of receivables. But receivables also expand by 'negative feedback' – customers are reluctant to pay to producers that are supposed to teeter on the brink of collapse,
- Owner's equities sink by continuing in-the-red-operations,
- Outside capital closely depends on the liabilities development. Even decreases of bank loans may be assumed as the company tries to avoid a collapse by stringent pay-off policies. It cannot be even excluded that stigmatised firms go bust not on accounts of their deadlock but are consequences of a creditors' deliberate action. Often trivial sums are concerned and a speculation can be suspected.

Taking the above mentioned factors into account and assessing the economic footings of the mining companies, 'Jan Šverma', 'Ostrava', and 'Heřmanice', we can maintain that they belong to the category of resigning companies.

Indicators of default imminent danger are to be sought in the process of a company capital circulation about which Balance sheets inform. Ratio indicators can be put forward that would reflect the company's production activities – 'commerce receivables related to current assets' or 'stocks related to current assets'. The income from operations is indicated by ratios of 'equity to total assets'. But economy is not a static entity and its dynamism cannot be solely assessed by static criteria. Development indicators can be put forward – indices – especially such that indicate companies' capital structure changes as depending on economic results: the fixed assets index, current assets index, receivables index, stocks index, profit index, the index of fixed to the total assets ratio, index of current to the total assets ratio, etc.

These indicators should be verified for their relevance by statistics of companies that collapsed for economic reasons. The initial step consists in generating a database of statistical characteristics for individual indicators combined with databases of economically 'sound' companies. A hypothesis should be verified that disturbances in capital circulation may indicate risks of enterprise default. The hitherto realised analyses in the Czech Republic (Dvořáček et al. 2005) can be regarded as pilot project initiatives in need of further investigative efforts.

Conclusion

A lot of attention has been paid to the problem of corporate default prediction (Altman 1981, Hol and Wijst 2002, Norton and Smith 1979) that could not be all dealt with due to a limited extent of this paper. The non-existence of explicit corporate default prediction methods is supposed to be attributed to the fact that the studies refer to different periods, countries and industries. Another factor may be that virtually all of these studies lack a theoretical framework to guide the empirical research effort. In the absence of a theory that provides testable hypotheses, each empirical result has to be evaluated on its own merits and one can only hope that patterns emerge from the multitude of results. (Hol and Wijst 2002). The proposed analysis of capital circulation seems to be helpful in the effort to find solutions to the problem and is worth of further investigation.

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References

Altman, E., I. et al.: Application of Classification Techniques in Business, Banking and Finance., *JAI press, Greenwich, Connecticut, 1981.*

Dvořáček, J. et al.: Analýza příčin a predikce rizika uzavření hlubinných dolů., *Dílčí zpráva grantového projektu č. 105/05/0515, VŠB-TUO, 2005.*

Hol, S.,Westgaard, S., van der Wijst, N.: Capital structure and the prediction of bankruptcy., *July 2002.* www.cs.sunysb.edu/~ mverma/capitalstructureandbankruptcy.pdf

Norton, C., L., Smith, R., E.: A Comparison of general price level and historical cost financial statements in the prediction of bankruptcy., *Accounting Review, January 1979, 72-86.*