International Institute for Applied Systems Analysis
IIASA www.iiasa.ac.at

The Dynamics of Russian Industrial Enterprises' Financial Situation (1992-1994)

Lipsitz, I.

IIASA Working Paper

June 1996

Working Paper

The Dynamics of Russian Industrial Enterprises' Financial Situation (1992–1994)

Igor Lipsitz

WP-96-064
June 1996

IIASA International Institute for Applied Systems Analysis □ A-2361 Laxenburg □ Austria
Telephone: +43 2236 807 □ Fax: +43 2236 71313 □ E-Mail: info@iiasa.ac.at

The Dynamics of Russian Industrial Enterprises' Financial Situation (1992–1994)

Igor Lipsitz

WP-96-064
June 1996

International Institute for Applied Systems Analysis □ A-2361 Laxenburg □ Austria
Telephone: +43 2236 807 □ Fax: +43 2236 71313 □ E-Mail: info@iiasa.ac.at

Foreword

The Economic Transition and Integration (ETI) Project at the International Institute for Applied Systems Analysis (IIASA) started a research activity on the behavior of Russian enterprises under liberalization, privatization and restructuring in 1995–1996. This activity originated upon the initiative of the Ministry of Economy of the Russian Federation. The major reason for focusing on this subject was the fact that the current state and further transformation of Russian medium and large sized enterprises became a challenge for the continuation and success of transition related reforms. Despite certain positive tendencies, numerous enterprises still adjust themselves to ongoing changes without considerable market adaptation and modernization. The emerging ownership structure and financial markets demonstrate limited positive influence on stockholders' incentives, decision-making process and strategies of restructuring.

In the course of these enterprise studies, a workshop on "Russian Enterprises on the Path of Market Adaptation and Restructuring" was organized at IIASA on 1–3 February 1996. Russian and Western experts, extensively working in the area of enterprise performance under transition, focused the discussions on recent empirical findings and analyses concerning the following issues: typical models of enterprise behavior; development of the financial situation at the enterprises and its determinants; impact of emerging markets and competition on enterprises; the consequences of privatization and patterns of restructuring; and enterprise social assets divestiture and conversion. The workshop arrived at both analytical conclusions and recommendations for policy measures stimulating "constructive" enterprise behavior. Possibilities for a joint research project on the motivations and behavior of enterprises in transition economies were also discussed.

The circulation of selected workshop papers as IIASA Working Papers is undertaken in order to provoke broad discussions of presented analytical results. In this paper Professor Igor Lipsitz reveals the trends of enterprises' financial situation dynamics on the basis of analyzing both financial and sociological data for a sample of companies in three Russian industries.

Contents

Abstract 1

1 Introduction 1

2 Overview of Some Publications 2

3 The Liquidity Dynamics 3

4 Final Remarks 14

References 15

The Dynamics of Russian Industrial Enterprises' Financial Situation (1992–1994)*

*Igor Lipsitz***

Abstract

This paper reports on an attempt to reveal the tendencies of the Russian enterprises' financial situation on the basis of an in-depth analysis of aggregated enterprise financial data for 1992–1994. We have studied the enterprises of three Russian industries: textile (22 companies), chemical (4 companies) and mechanical engineering (10 companies). An important part of the study was the collection of the complete financial accounting and sociological data for these companies. This made it possible to evaluate their performance during three years, using various statistical and applied financial methods and models and comparing financial and sociological data in order to receive a more complete picture. Firstly, we analyzed the whole group of enterprises belonging to the same industry to outline general characteristics. Then we studied the financial situation of each enterprise combining financial data with the results of sociological surveys. It was discovered that there is a profound divergence in business policies between enterprises in terms of planning horizon, risk aversion, subjective interests, etc. The undertaken in-depth analysis gives us reason to believe that some managers of Russian enterprises are now adapting to the new economic conditions in the country. But the financial situation of the large portion of enterprises is now so bad that it is difficult to expect rapid and large-scale transition of newly privatized firms from the current stage of stagnation to the stage of economic growth.

1 Introduction

Actual models of the behavior of Russian management can only be understood by undertaking a comprehensive study of individual companies. Only this can make it possible to obtain a reliable picture of industry as a whole. This is why, for a few years the Expert Institute of Russian Union of Industrialists and Entrepreneurs has been conducting such

*This paper is based on research carried out at the Expert Institute of the Russian Union of Industrialists and Entrepreneurs, Moscow. Studies were sponsored by the Ford Foundation, USA.

**Professor Igor Lipsitz works at the Expert Institute of the Russian Union of Industrialists and Entrepreneurs and at the Higher School of Economics in Moscow, Russia.

research. The last stage of this work, devoted to three industries (textile, chemical and mechanical engineering), enabled us to deepen our understanding of the situation and to flesh out clear and precise models of managers' behavior and changes of the financial situation in these important sectors of Russian industry.

The results of our study show that many Russian managers have begun to adapt to the extremely difficult new business environment. This process, however, is making slow progress now and is marked by a distinct trend towards a differentiation of enterprises with increasing polarization at two opposite ends: on the one hand, companies that make good headway, notwithstanding all the difficulties; and, on the other hand, companies that have reached the brink of bankruptcy.

2 Overview of Some Publications

During the last few years different problems of Russian enterprises' transformation were studied by numerous researchers.

Alfandari, Fan and Freinkman (1995) argue that the Russian industry as a whole still faces rather soft budget constraints. However, the scale of transfers from the state budget is decreasing and, for most of the firms surveyed by these authors, does not exceed 6% of their output. Naturally, government transfers of such a minimal size are not able to provide recipients with the necessary funds for genuine restructuring.

The role in financing of enterprise restructuring that earlier belonged exclusively to the state budget or state banks (which was in fact one and the same), has not transferred until now to the new Russian commercial banks. So Schaffer, Fan and Lee (1995) argue that now in Russia most of the bank loans are short-term. It is not surprising that, due to high inflation and the low financial discipline of enterprises, about a quarter of the firms' total liabilities to banks is overdue. In this situation banks could not play the role of market controller. From the enterprise managers' point of view, banks as creditors in general do not have much influence on major enterprise decisions and usually do not hold shares in enterprises.

Such a situation, of course, does not promote the increase of investment activities of banks and other financial intermediaries. As Halligan and Teplukhin (1995) note, the rate of domestic investment is very low. Moreover, state investment still accounts for a high share of domestic investment, decreasing the real impact of privatization and revitalizing the ties between newly privatized firms and the state.

This has to be considered as a challenge because without private investments in enterprise assets and marketing activities, Russian enterprises can not overcome their difficulties and restore competitiveness. As Boycko and Shleifer (1994) point out, even those enterprises that do want to restructure often lack the capital to perform aggressively.

Taking the above mentioned opinions into account, let us examine the dynamics of the enterprises' financial positions more thoroughly.

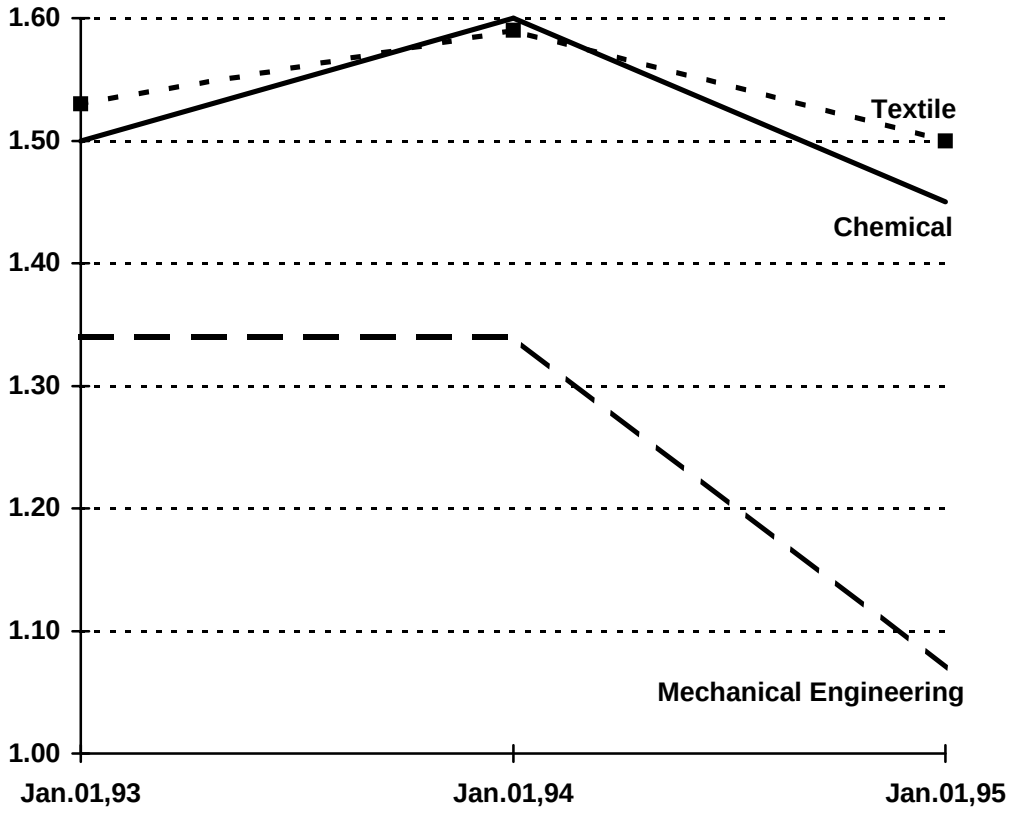

Figure 1: The Dynamics of Current Ratio in 1992–1994 for Enterprises in the Chemical, Mechanical Engineering, and Textile Industries

3 The Liquidity Dynamics

Given the fact that one of the main signs of the Russian economic situation now is arrears it seems logical to start analyzing the enterprises' financial situation by assessing the changes in their liquidity position.

For this purpose it is most suitable to compare three indicators: current ratio, cash ratio and acid-test ratio.

The *current ratio* is a most general indicator of solvency and it shows the sufficiency of a firm's working capital for covering its short-term liabilities. There could be different opinions about the rational upper limit for this ratio in the current Russian situation, but there are no doubts that it must be higher than 1.0.

As can be seen in Figure 1, the chemical and even textile industries, which faced the largest decrease in production, had suitable levels of the current ratio during 1992–1994, although in the course of 1994 the level of this indicator slightly decreased (from 1.59 to 1.50 for the surveyed enterprises in the textile industry and from 1.50 to 1.45 for enterprises in the chemical industry). The most dangerous situation was in mechanical engineering at the beginning of 1995: for the surveyed group of enterprises the level of this indicator substantially decreased during 1994 from 1.34 to 1.07. So the whole group of surveyed enterprises in this sector began 1995 not far from the level of complete insolvency.

Table 1: Dynamics of Cash and Acid-Test Ratios

Industries	Ratios	1.01.93	1.01.94	1.01.95
Chemical	Cash	0.05	0.08	0.10
	Acid-Test	0.60	0.43	0.53
Mechanical Engineering	Cash	0.13	0.07	0.02
	Acid-Test	0.54	0.64	0.62
Textile	Cash	0.11	0.05	0.09
	Acid-Test	0.73	0.61	0.54

It will be easier to understand the substance of this information if we compare it with the data concerning the other ratios: the *cash ratio* which is calculated as the sum of cash and short-term securities divided by short-term liabilities, and the *acid-test ratio* — calculated as the sum of cash, short-term securities and receivables from customers divided by short-term liabilities.

As we can see from Table 1, during 1992–1994 chemical enterprises (as well as textile enterprises in 1994) slightly increased their cash ratio although their levels were still lower than the minimal standard (about 0.2). At the same time, the enterprises in mechanical engineering which had the highest level of this ratio in 1992, faced a considerable decrease, and finished 1994 in the situation which could be described as "no cash, no securities".

At the same time, the acid-test ratio for enterprises in mechanical engineering was more or less stable, so we can assume that there was a process of current assets restructuring: enterprises in this sector have lost assets with a high degree of liquidity and instead of this have obtained relatively large sums of receivables.

In the textile industry quite the opposite situation can be observed: an increasing cash ratio and a decreasing acid-test ratio. This could be considered as a sign of the more advanced stage of textile enterprises managers' adaptation to the present Russian economic crisis (see more about this in: Russian Industry: A Portrait in the Interior of Crisis, 1995).

In an attempt to evaluate the dynamics of Russian enterprises' financial stability we have examined the *property coefficient* (Figure 2), which shows the share of equity in the total amount of a firm's assets.

While the theory of financial management recommends that the property coefficient should be stable and at the level no less than 0.6 (so that an enterprise should not be too dependent on borrowed resources), we can see that for all groups of the surveyed enterprises this indicator of financial welfare was completely unstable. Moreover, both the textile industry and mechanical engineering have nearly reached the lowest suitable level of this indicator at the beginning of 1995.

Some important conclusions can made by analyzing the levels of *net working capital* (calculated as the difference between cumulative working capital and short-term liabilities) and their dynamics. This indicator shows the share of net working capital (NWC) in all

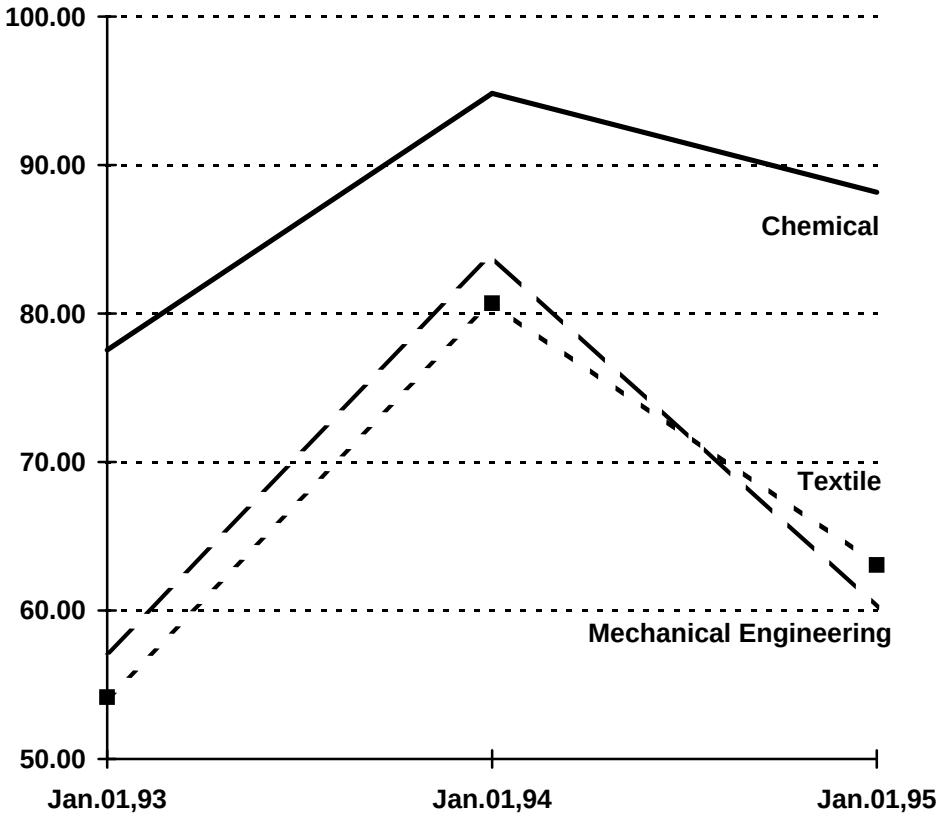

Figure 2: Dynamics of Property Coefficients' (%) for the Russian Chemical, Mechanical Engineering and Textile Industries in 1992–1994

assets. Thus, it indicates the share of working capital which could be used by enterprises in a more flexible way and which constitutes the basis for their relatively stable financial policy.

As shown in Figure 3, the substantial decrease of this indicator in 1993 was typical for the enterprises of all three industries, especially for the textile industry. In 1994, both the textile and chemical industries slightly improved their situation, but the enterprises in mechanical engineering now, in fact, do not have working capital of their own at all.

One can also arrive at a not too optimistic conclusion while analyzing *long-term assets* levels. This ratio indicates the financial reliability of an enterprise in the long run as it indicates the share of the entire long-term capital (equity + long-term liabilities) in the enterprise assets.

As shown in Figure 4, for all three industries, 1994 was marked by the decline of this indicator. And again, the lowest position is characterized by mechanical engineering — long-term assets here make up only about 60% of all assets. This means that enterprises in mechanical engineering are now in a very unstable position and depend to a great extent on current capital fluctuations.

The general picture for the surveyed enterprises' financial stability dynamics was obtained using an *Altman's coefficient*, which shows the "likelihood of bankruptcy".[1] This

[1]The computation of the "likelihood of bankruptcy" (Z), according to Altman's method, is as follows: Z = (Current Assets/Total Assets) x 1.2 + (Retaining Earnings/Total Assets) x 1.4 + (Shareholders'

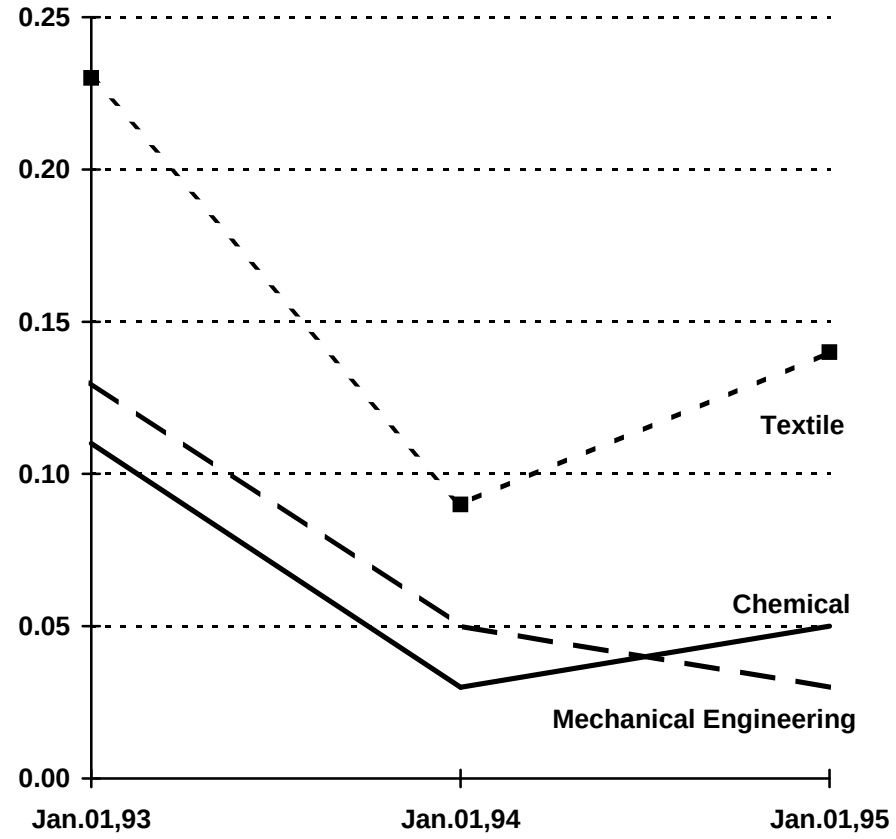

Figure 3: The Dynamics of Levels of Net Working Capital (%) in the Chemical, Mechanical Engineering and Textile Industries in 1992–1994

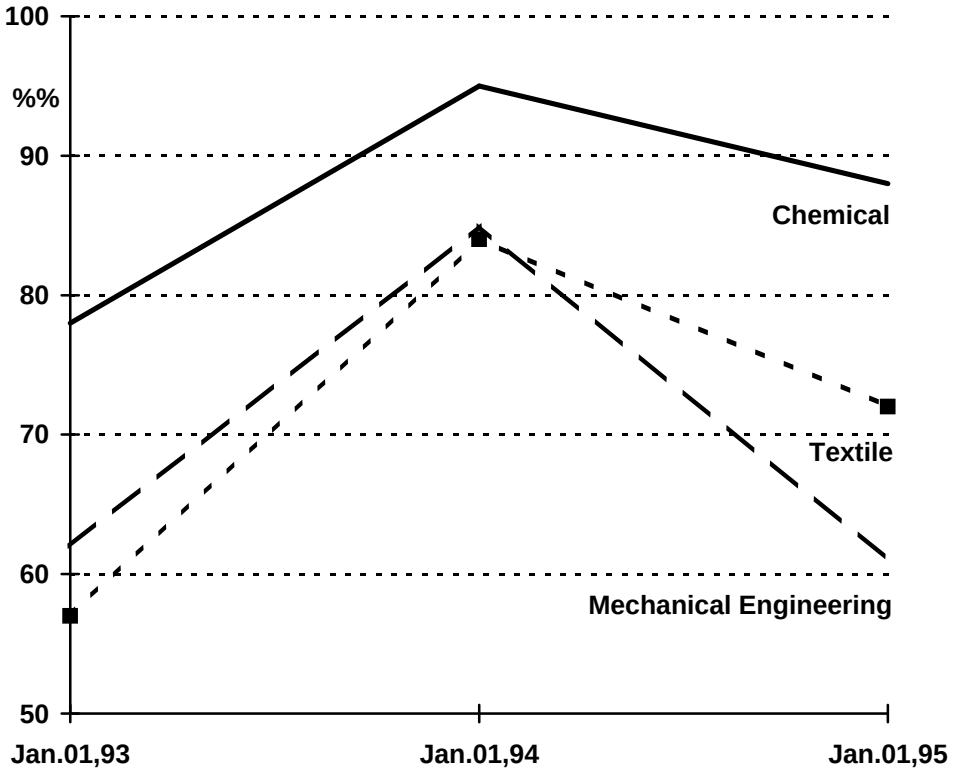

Figure 4: The Dynamics of Long-term Assets Levels (%) in the Chemical, Mechanical Engineering and Textile Industries in 1992–1994

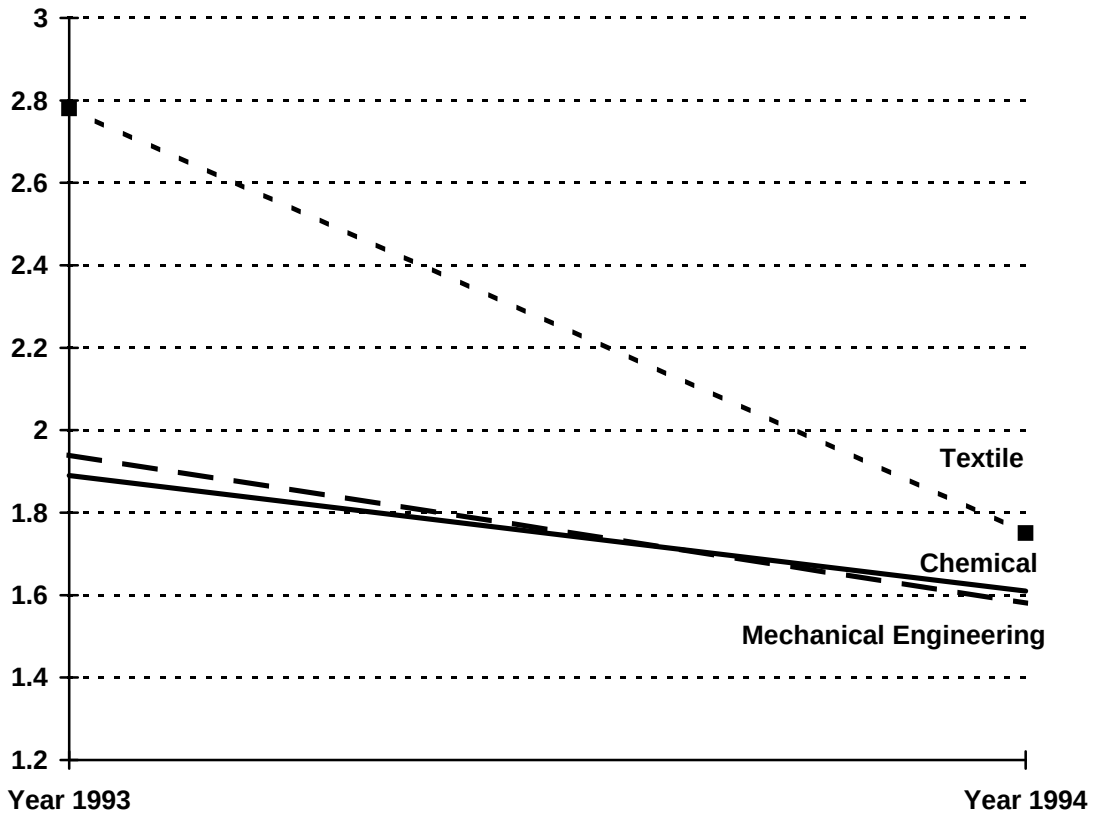

Figure 5: The Dynamics of Altman's Coefficient

comprehensive indicator reflects both the structure of assets and the dynamics of sales. Of course, the absolute levels of this coefficient can not tell us too much about the likelihood of real bankruptcy for the surveyed Russian enterprises — Altman's criterial scale was developed for quite different economic conditions. However, the comparative analysis for a number of industries as well as observing this coefficient in dynamics provides some useful information (Figure 5).

As one can see, the levels of Altman's coefficient of all groups of enterprises substantially declined during the period analyzed, indicating the increasing risk of bankruptcy. It is worth mentioning that in spite of the fact that in some aspects enterprises in the textile industry look slightly more adapted for the current economic situation, Altman's coefficient demonstrates that they are also in a very dangerous state. We suppose that this is rooted, first of all, in the rapid decrease in sales in the textile industry, because the most considerable part of Altman's coefficient is the ratio of sales to total assets. During

---

Equity/Total Liabilities) x 0.6 + (Gross Sales/Total Assets) x 3.3 + (Net Operating Profit/Total Assets) x 0.99.

The "likelihood of bankruptcy" (Z value):

$Z < 1.80$ — very high;

$1.81 < Z < 2.70$ — high;

$2.71 < Z < 2.99$ — bankruptcy is possible;

$Z < 3.00$ — very low.

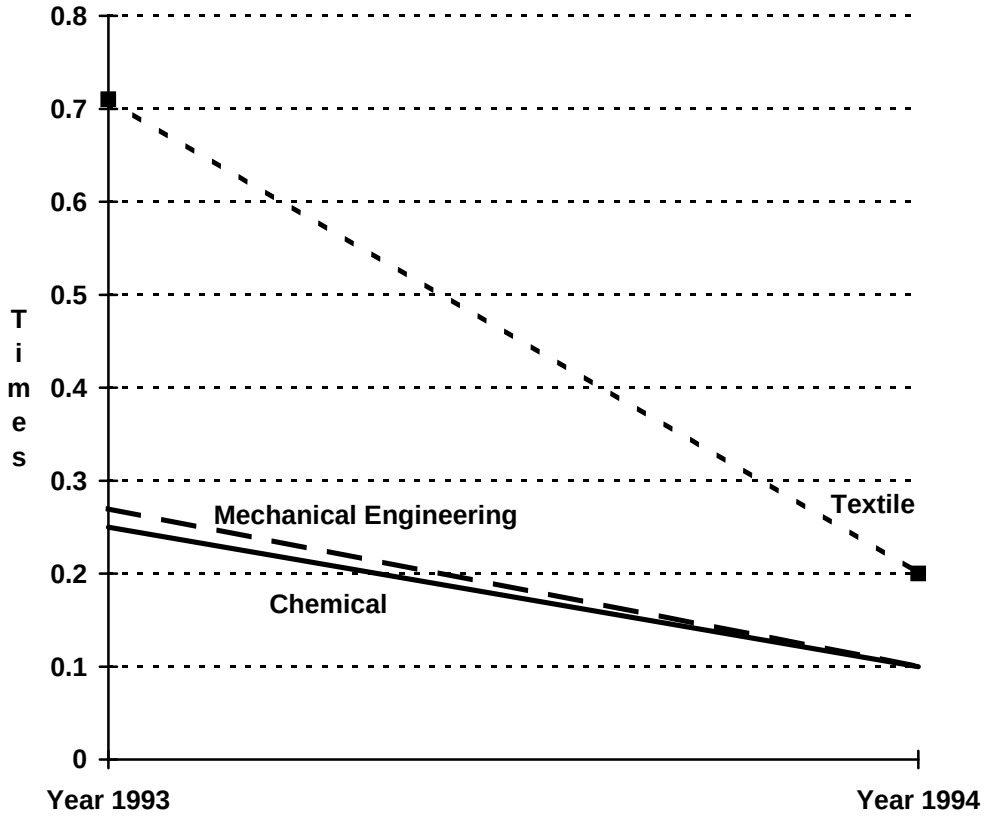

Figure 6: The Dynamics of Total Assets Turnover (times) in the Chemical, Mechanical Engineering and Textile Industries in 1993–1994

1994, the textile industry lost 44.5% of output and now produces less than a quarter in comparison with 1990.

This hypothesis was verified by analyzing the *sales to total assets ratios*. Figure 6 shows that the textile industry enterprises have been faced with the greatest — 3.5-fold decrease in total assets turnover.

Even more dramatic was the recession in *capital assets turnover*: during 1994 it declined in the textile industry 14.38 times in comparison with the decrease in mechanical engineering and the chemical industry — 2.70 and 2.50 times, respectively.

However, a more complete picture is given by analyzing the *inventory turnover* for the surveyed enterprises of these three industries. Figure 7 demonstrates that in the chemical industry 1994 brought substantial growth of inventory turnover. This means that enterprises have obtained better performance in sales but the result was reached at a very low level of capital assets utilization. Naturally, such tendencies finally lead to profitability changes.

As Figure 8 presents, the enterprises of all three surveyed industries during 1994 have faced the decline of the most integral profitability index — *the profitability of all assets in the gross profit*. At the beginning of 1995, the average profitability of all enterprises did not exceed 5%. Especially rapid reduction was typical for the surveyed enterprises in the textile industry (from 20.03% to 4.20%).

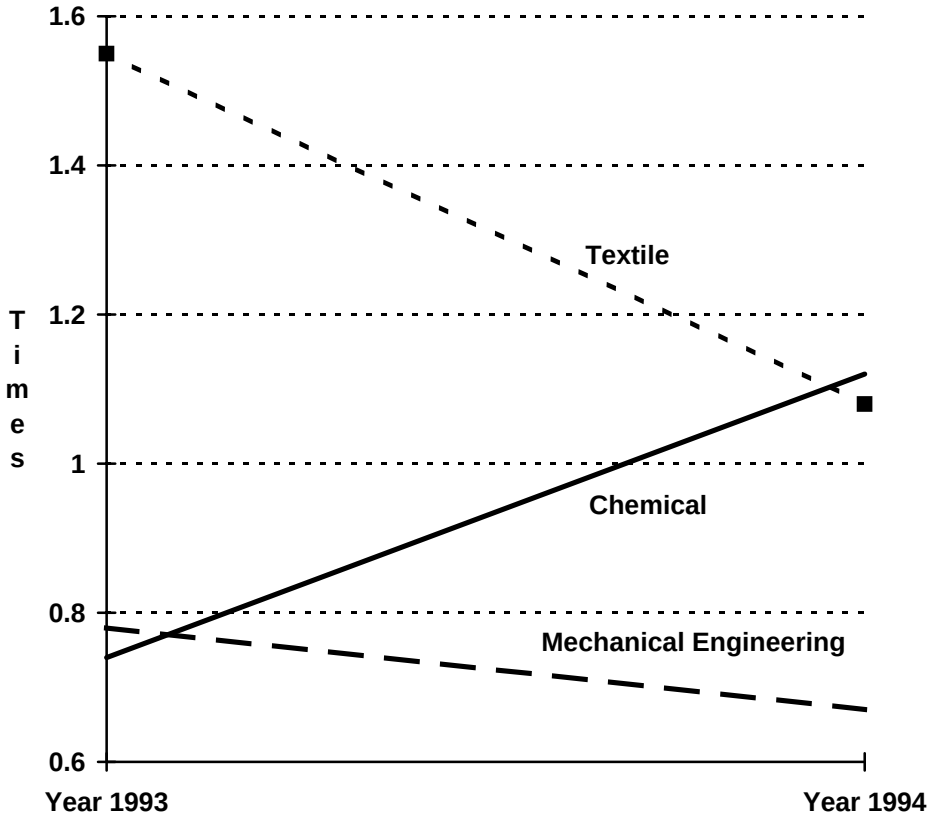

Figure 7: The Dynamics of Inventory Turnover (Times) in the Chemical, Mechanical Engineering and Textile Industries in 1993–1994

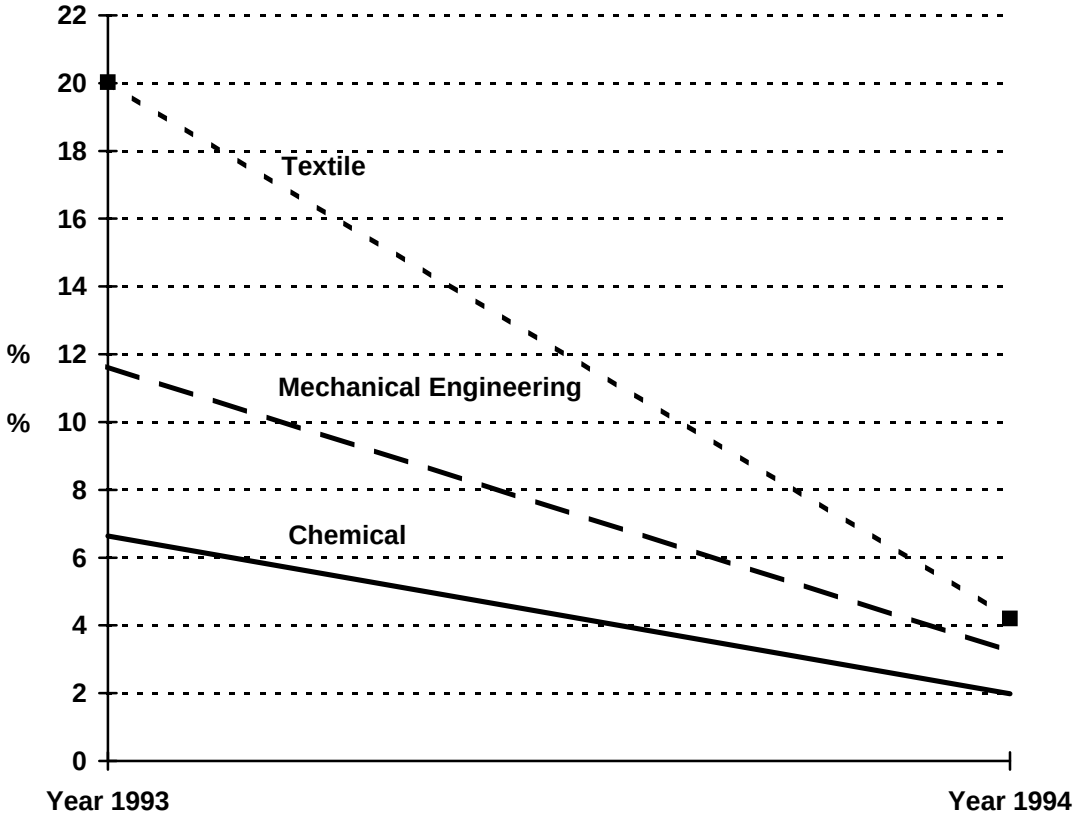

Figure 8: The Profitability of All Assets in the Gross Profit (%) for the Enterprises in the Chemical, Mechanical Engineering and Textile Industries in 1993–1994

Table 2: Profitability of Equity in Gross Profit

Industries	1993 (%)	1994 (%)	1993/1994 (times)
Chemical	11.74	2.16	*5.44*
Mechanical Engineering	33.37	4.53	*7.37*
Textile	51.08	5.96	*8.57*

It is important to compare the profitability of all assets and the *profitability of equity* in order to realize the influence of borrowed money on the financial effectiveness of enterprises. As is obvious from Table 2, the profitability of equity for enterprises of the three surveyed industries was considerably higher than for all assets although the tendency of changes was just the same. However, the decline of equity profitability in gross profit was characterized by a substantially higher scale than the decline of all assets' profitability: for the chemical industry these indicators were 5.44 and 3.35, for mechanical engineering — 7.37 and 3.60, and for the textile industry — 8.57 and 4.77.

Analysis of the data referring to *working capital profitability* (Figure 9) results in the following conclusions:

1. For none of the surveyed groups of enterprises borrowing was not efficient in the present Russian situation. The only result was the enterprises' general profitability decline;

2. The decreasing share of equity in all enterprises' assets (see Figure 2) forms the basis for an even more rapid decline of the total profit;

3. Even in those industries, where enterprises have achieved some improvements in financial and general management displaying the growth of working capital profitability (in our survey we found such a situation in chemical enterprises — see Figure 9), it could not change the whole situation. The main reason for the poor financial state of enterprises are excessive capital assets which constitute a heavy burden for enterprises in the conditions of a narrowed market.

The aforementioned conclusions are confirmed by analyzing the *operating cost ratio* calculated as a ratio of the gross profit to the total costs. As can be seen in Figure 10, those ratios also declined in 1994. However, the rates of decrease (in the chemical industry — 5.87, in mechanical engineering — 1.22, and in the textile industry — 1.63 times), were much lower than those of the profitability of all assets, and in mechanical engineering and the textile industry — even lower than the equity profitability decline.

As a more systemic indicator of enterprise behavior, we used the *coefficient of business activity*. This indicator is calculated by multiplying inventory turnover by the profitability of the main business operations. The dynamics of this coefficient shows whether the enterprise does increase its business activity or not. As shown in Figure 11, enterprises

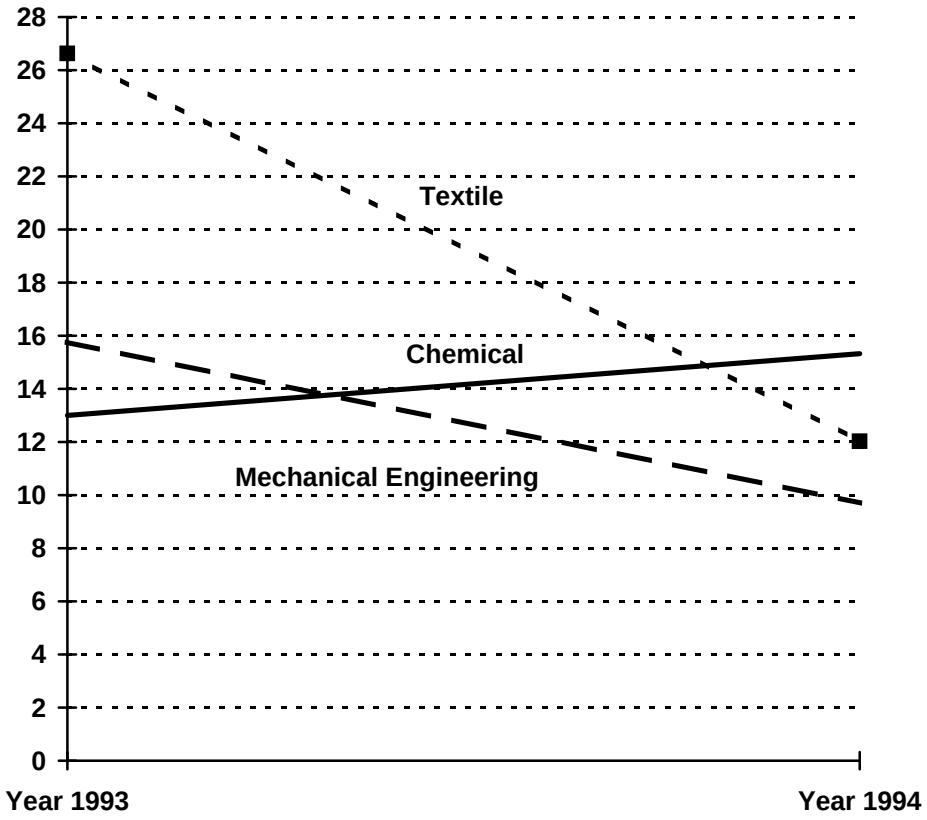

Figure 9: The Dynamics of Working Capital Profitability in the Gross Profit (%) in the Chemical, Mechanical Engineering and Textile Industries

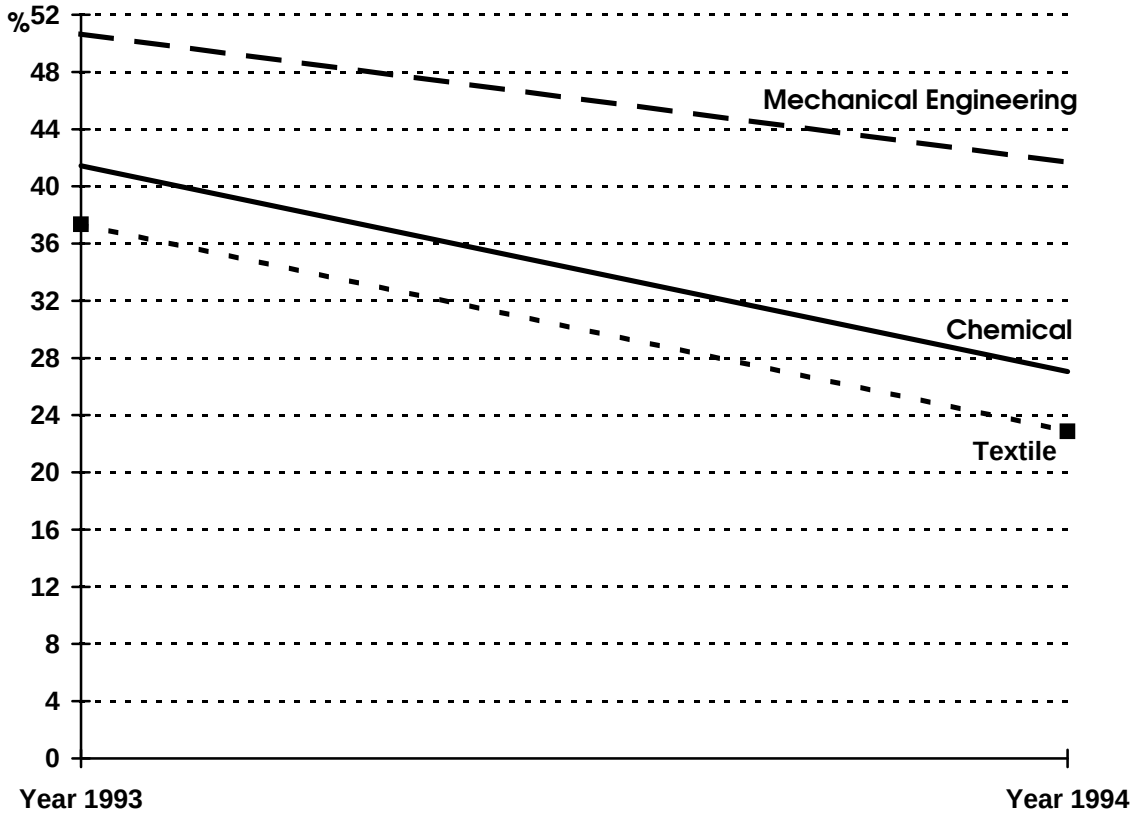

Figure 10: The Dynamics of Operating Cost Ratios in the Chemical, Mechanical Engineering and Textile Industries in 1993–1994

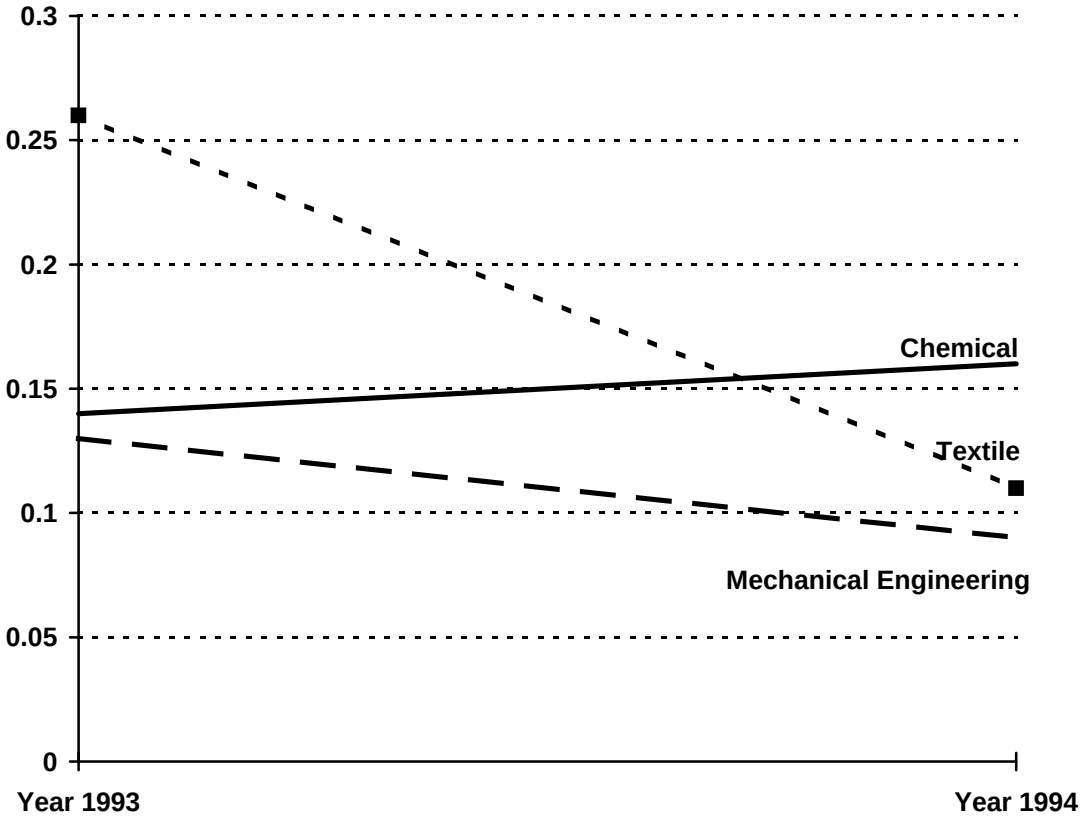

Figure 11: The Dynamics of Business Activity Coefficients in the Chemical, Mechanical Engineering and Textile Industries in 1993–1994

in the chemical industry can be described from this point of view as the most active — in this surveyed group the coefficient value increased from 0.14 in 1993 to 0.16 in 1994. However, this activeness could not compensate for the losses originating in the existing excessive capital assets.

Analysis based on average values only is not comprehensive enough. Therefore, we also investigated *the scale of differences between enterprises* using the data on current ratios and coefficients of business activity for the most numerous group of surveyed enterprises — those of the textile industry.

Figure 12 fleshes out, that the difference between minimal and maximal values is very sizable and for current ratios it is increasing during the years observed. This figure reflects comparisons between two enterprises: the joint-stock company "TAON", situated not far from Moscow, has the better results in all cases, and the lower results are demonstrated by the joint-stock company "Borovchanka" from Kaluzhskaya oblast.

Both companies were founded in the middle of the 30s and both produce knit-wear. They are also rather close in size: in 1993 the number of employees in "TAON" was 212 and in "Borovchanka" — 389. The volumes of sales in 1993 were nearly the same: for "TAON" — 1,320 million rubles and for "Borovchanka" — 1,299 million rubles. So what are the reasons for such a serious difference in the financial results of these companies?

The first important point is the type of capital assets. "TAON" is equipped by more new and modern machinery: the average period after installation — 5 years in compar-

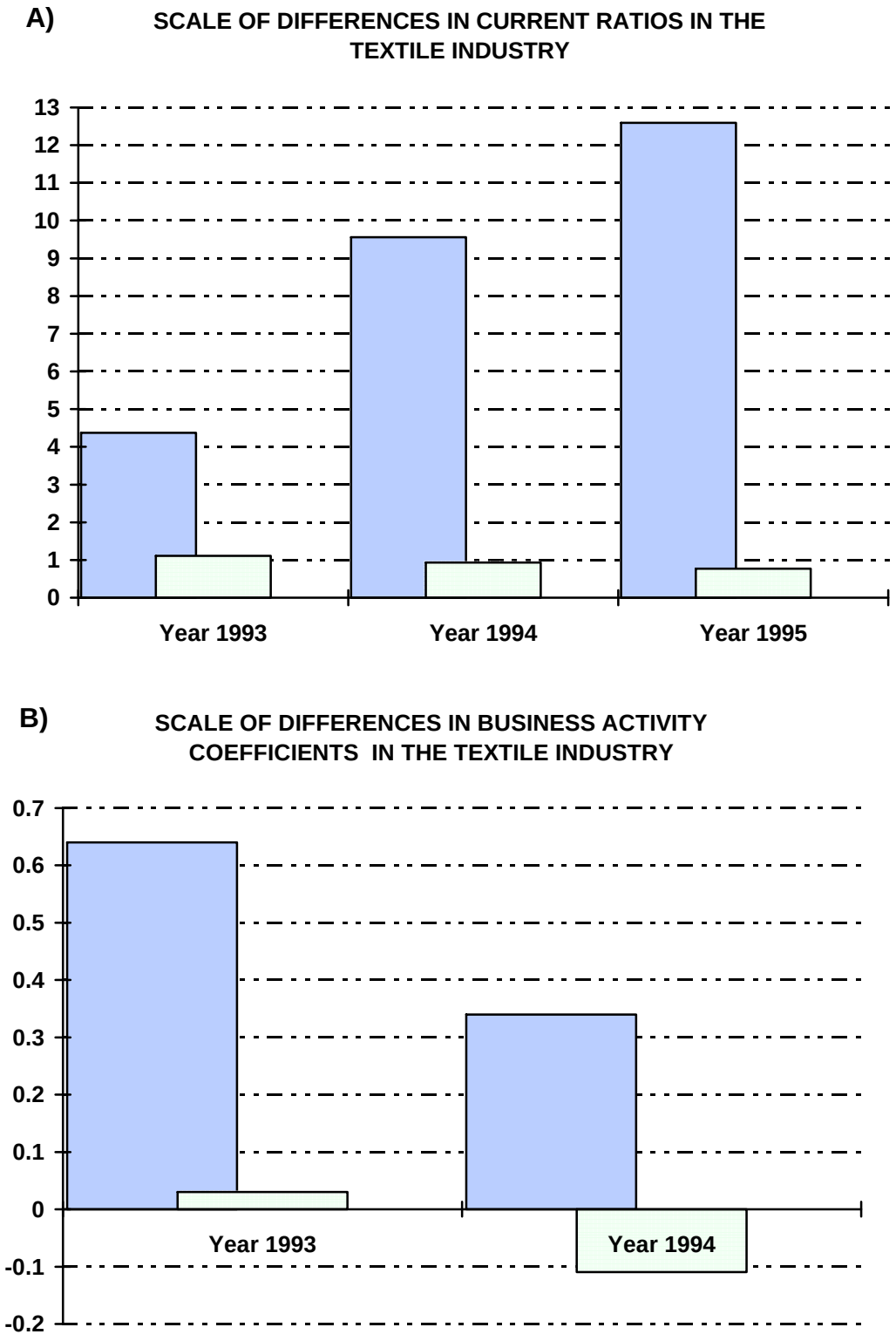

Figure 12: The Scale of Differences in Business Indicators for Enterprises in the Textile Industry

ison with 10 years for "Borovchanka". Moreover, "TAON" has 15% share of imported equipment and "Borovchanka" has only domestic.

But not only technical aspects matter. Sales policy appeared to be quite important. "TAON" has more significant achievements in the search for customers. During 1994, this company signed 170 contracts including 90 with new customers. At the same time, "Borovchanka" signed 80 contracts and only 30 with new customers. The managers of "TAON" took part in inter-regional wholesale exhibitions. The managers of "Borovchanka" did not use this instrument — they relied more on personal ties with customers.

It is worth mentioning that although "TAON" is the joint-stock company of the "closed type" and "Borovchanka" is an open joint-stock company, in fact the latter is more under the control of a narrow group of top managers. In "TAON", the top managers own 17% of the shares and in "Borovchanka" — 51%. In "TAON" shares were distributed between employees free of charge, in "Borovchanka" — 25% of the shares, envisioned for employees, were sold. So not in all cases do those procedures of privatization that are commonly considered as the most advanced guarantee success in business activity.

It is significant that "TAON" does not have any problems with arrears whereby "Borovchanka" owes salary payments to employees.

The more stable financial position allowed "TAON" to invest in capital assets 4.49 times more than "Borovchanka" did. All investments were financed by "TAON" from its own profits while "Borovchanka" used external sources.

Analysis revealed, that "TAON" did not use loans for increasing its working capital unlike "Borovchanka", which borrowed at a rate of 190% per year. Generally speaking, credits are certainly very important for enterprise development. But in present day Russia, only a company that is capable of operating without such irrationally expensive credits can facilitate its financial situation. This is a commonly recognized fact.

The undertaken comparison gives us the opportunity to assume that even in the textile industry, which is currently in the most difficult economic situation, the financial state of the enterprises might be improved, and this possible improvement depends to a great extent on the capabilities and qualifications of their top managers.

4 Final Remarks

The in-depth analysis of the enterprises in the chemical, mechanical engineering and textile industries provides certain reasons to believe that Russian managers have really begun to adapt their business to the new economic conditions. Such adaptation is a difficult and sometimes painful process. The decline in total demand, the appearance of a large number of competitive foreign products in the domestic market, galloping inflation and the remaining necessity of investments in the social sphere (workers' housing, summer camps, hospitals, etc.) have predetermined the overall crisis in the surveyed industries (especially in the textile industry).

Under the influence of these factors further stratification of the Russian industries into successful companies and "companies-close-to-bankruptcy" continues. If the process of declaring enterprises bankrupt really starts, it can cause serious social problems, especially because of the fact that many textile companies are located in small towns, where they are often the only place to work. It is not less serious, that in these towns such companies also support and finance the municipal social infrastructure (housing, road maintenance, central heating, etc.).

It seems obvious that the crucial factors for the successful adaptation of some companies to the requirements of an emerging Russian market economy originate in the individual efforts of each particular company, in the correct assessment by enterprise managers of the business environment and of their companies' production and human resources. Successful adaptation is the result of optimal managerial solutions of various business problems. But making an optimal choice in the conditions of uncertainty is not an easy job. This is why a clear-cut and stable state economic policy remains the principal condition for the survival and progress of Russian industrial companies.

References

Alfandari, G., Fan, Q. and Freinkman, L. (1995) Government Financial Transfers to Industrial Enterprises and Restructuring. Paper presented at the Joint Conference of the World Bank and the Ministry of Economy of the Russian Federation "Russia: Economic Policy and Enterprise Restructuring", 12–13 June 1995, St. Petersburg, Russia.

Boycko, M. and Shleifer, A. (1994) What's Next? Strategies for Enterprise Restructuring in Russia. *Transition*, Volume 5, Number 9, November–December.

Halligan, L. and Teplukhin, P. (1995) Investment Disincentives in Russia. Paper presented at the Joint Conference of the World Bank and the Ministry of Economy of the Russian Federation "Russia: Economic Policy and Enterprise Restructuring", 12–13 June 1995, St. Petersburg, Russia.

Russian Industry: A Portait in the Interior of Crisis (1995) Moscow, Russia: Expert Institute.

Schaffer, M., Fan, Q. and Lee, U. (1995) Bank-Enterprise Relations and Credit Allocation in Russia. Paper presented at the Joint Conference of the World Bank and the Ministry of Economy of the Russian Federation "Russia: Economic Policy and Enterprise Restructuring", 12–13 June 1995, St. Petersburg, Russia.