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STRATEGIES FOR PROFIT:

– An Exploratory Study of a Behavioral Model of Swedish Firms –

Introduction

The traditional theory of the firm deals primarily with resource allocations by price systems. It emphasizes the one-way impact of external market structures on optimal firm strategies. Economists investigating the behavior of firms have focused mainly upon equilibrium phenomena, modifying only marginally the neo-classic framework of perfect capital markets, rational decisionsmaking modes and perfect information.

This study deviates from these main streams of inquiry in two ways:

(1) The focus is upon the impact on profit performance of short-term as well as long-term adjustments which firms make in response to fluctuating and discontinuous environments,

(2) As opposed to the influence of external market structures, the framework includes an explicit consideration of the impact of internal financial structures and management behavior, along with some consideration of how these external and internal variables may interact with each other, to affect profit performance.

The conceptual framework assumes a contingent model of firm behavior. The consequences for short-term profitability of size, along with alternative internal financial structures and internal managerial behaviors are all expected to be affected by changes in the external environment. The variables critical for short-term profit are expected to differ from those which may explain long-term average profitability. The latter hypothesis is based upon the assumption that firms tend to react only slowly to external changes because of their commitment to standard operating procedures (see e. g., Cyert and March, 1963, March and Simon 1958). The components of these constant strategies, which admittedly may be successful in the long-run, are expected to differ from those which might be better able to explain short-run profitability. Yet in changing environments, as Hedberg et al. (1975) have argued, short-term strategies are more important than long-term strategies. We wish to make a start at identifying some of the components of these short-term strategies which reflect a sensitivity to changing external environments.

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Some of the specific hypotheses which we investigate are the following:

(1) Short-term financial flexibility helps profitability during periods of market recovery, but at other times it is associated with relatively poor profit performance.

(2) In market downturns, firms which are able to reduce costs through more efficient management of resources and/or those which have in the past invested in improving their capital equipment, are likely to earn larger profits.

(3) Improved short-term efficiency tends to be more important in determining short-term profitability when markets are declining.

(4) Efficient use of capital (high leverage) helps profit performance particularly during periods of restrictive monetary policies.

(5) Generally, size inhibits adjustment in periods of adversity.

The analysis is divided into two main parts:

(1) A confirmation of the variable classification through an analysis of the patterning of variables in different years and across firms.

(2) An identification of variables associated with higher or lower profit performance in different years.

The second analysis does not purport to be a proper test of the postulated behavioral model. It does provide the necessary insight for hypothesis refinement. The use of discriminant analysis opens theis investigation to charges of "spurious correlations". Therefore, identified patterns were subjected to additional firm by firm investigation utilizing historical data. The paper concludes with a refinement of the model which will be subjected to further testing on other data.

The Study

The Sample

The main criteria for population selection were data availability in an industry that had suffered sharp market discontinuities. The selected population consisted of firms drawn from the Swedish Textile and Clothing Industry excluding those firms with less than fifty employees, and firms which constitute a part of a larger organization (e. g., firms connected with the Swedish Cooperative Organization). A sample of 80 firms was drawn from those included in a data bank assembled by Ericson (1975). The data bank contains accounting and other economic information for around 95% of all firms in the industry. Firms which were not active during 1973 were excluded from the data bank. The period for which data is available ranges from 1966–1972.

Operationalization of the Conceptual Framework

Financial structure is reflected in two major dimensions: a) financial flexibility and b) financial efficiency. Increased financial flexibility contributes to solvency and the provision of a resource base for managerial decisions (Donaldson, 1969). It provides the firm with a larger domain of activities to seize opportunities and cope with threats (Thompson, 1967). The dimension of financial efficiency relates to the effectiveness of capital use and is associated with capital turnover rates as well as financial leverage. The literature provides a wide array of indicators based upon accounting data to measure both financial flexibility and financial efficiency. (See e. g. Horrigan [1966] Altmann [1968], Pogue and Soldofsky [1969] and Pinches and Mingo [1973].

On the basis of the literature we have selected the following indicators to measure the financial structure*:

Financial Flexibility

1. *Short run liquidity* (Horrigan)
   Current assets less Inventory/current debt (QA/CD)
   Current assets/current debt (CA/CD)
   Working capital/sales (WC/S)
   Working capital/total assets** (WC/TA)

2. *Long run solvency ratios* (Horrigan)
   Net worth/total debt (NW/TD)
   Net worth/long-term debt (NW/LD)
   Net worth/fixed assets (NW/FA)
   Net operating profit/interest (OP/IT).

Financial Efficiency

3. *Financial leverage* (Pinches and Mingo)
   Long term debt/net worth (LD/NW)
   Long term debt/total assets (LD/TA)

4. Short-term capital turnover (Horrigan)
   sales/accounts receivable (S/AR)
   sales/Inventory (S/IN)
   net worth/total assets (NW/TA).

5. *Long-term capital turnover* (Horrigan)
   sales/fixed assets (S/FA)
   sales/total assets (S/TA)
   sales/net worth (S/NW).

A second group of variables provides a description of the relative size and the level of labor use. We have the following indicators:

6. *Size* (Pinches and Mingo)
   Total Assets (TA)
   Working Capital (WC)
   Sales (S).

In addition two other size indicators were added: a variable measuring firm's relative share of the total assets of the industry (TA%), and its firm's market share*** (S%).

Labor intensity was measured, by using the following ratios:

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* *The classification is based upon consolidation of Horrigan's (1966) and Pinches and Mingo's (1973) schemes. The authors in parantheses indicate the source. Horrigan's clusters were based upon simple correlations, while Pinches and Mingo employed factor analysis to indicate dimensions.*

** *This variable was proposed by Altman (1968) and was not considered by Horrigan.*

*** *The market share indicator is crude as it relates to aggregate sales in several related markets, hence it cannot be interpreted as a measure of monopoly power.*

7. *Labor Intensity*
   Fixed Assets/Average number of employees (FA/EM)
   Personnel costs/Sales (WG/S), and
   Average employees/sales (EM/S).

The "inverse" of this factor can be thought of as a measure of the technological emphasis of the firm.

A third class of variables consists of indicators of management responses and styles (management efficiency, tendency to rationalize production through investment, cost-cutting, etc.). The specific variables chosen to represent management style are listed below:

8. *Management Style:*
   Investment/Total Assets (year ago) (IM1/TA)
   Investment/Total Assets (two years ago) (IM2/TA)
   External Service/Sales (ES/S)
   Percentage change in market share (PCHS%)
   Percentage change in sales (PCHS)
   Change in Sales/change in cost (CHS/CHCO)
   Cost/Sales (CO/S).

Confirmation of the Conceptual Framework and Analysis of Latent Dimensions

To permit an empirical as opposed to an a priori interpretation of the variable indicators, factor analysis was conducted. The patterning of the variables was compared with the a priori classification derived from the literature. In view of the possibility that the indicators may assume different dominant "meanings" as a function of changing environments, the analysis (factor analysis with varimax rotation) was conducted year by year. Table 1 provides a summary of the factor analysis. In the table the dominant interpretation assigned to the factor receiving the highest load (above a threshold load of 0.6) of the indicator is marked. For those indicators whose loading distributions are ambiguous, no interpretation is attempted.

The variables classified as indicators of short run liquidity (1), financial leverage (3), and size (6) all clustered as expected by the a priori conceptual framework. These clusters also displayed considerable stability of patterning over the seven year horizon. To the class depicting size, one additional variable, net worth to total assets, was added. Variables which a priori were classified as measuring management style also produced one relatively stable dimension, the increase of market share and sales (8a).

The other clusters were less stable and/or different from what had been predicted. The dimension of long-run solvency (2) disappeared as a single dimension and its indicators clustered with variables reflecting short run liquidity (1) and long term capital turnover (5). The dimension of short term capital turnover (4) also disappeared as a single stable dimension. It should be noted that one of its components, sales over inventory, clustered in a stable and negative pattern with personnel costs over sales, to produce a relatively clear dimension of managerial efficiency.

Long-term capital turnover (5) had consisted of sales over fixed assets and sales over total assets. But sales over net worth did not load consistently as expected. In its place, fixed assets per employee loaded consistently but negatively on the factor. This implies that sales per assets are higher, so fixed assets in relation to the number of employees are lower. This empirically derived factor might be better termed "lack of organizational slack" (Cyert and March, 1963).

The a priori dimension of labor intensity also disappeared as a single stable dimension. As has been discussed, fixed assets per employee loaded consistently on to the newly defined factor,

Table 1
Patterning of indicators

	66	67	68	69	70	71	72	66–72
1. Short run liquidity								
QA/CD	1	1	1	1	1	1	1	1
CA/CD	1	1	1	1	1	1	1	1
WC/S	1	1	1	1	1	1	1	1
WC/TA	1	1	1	1	1	1	1	1
2. Long run solvency								
NW/TD	2		7	7	2	2	2	
NW/LD	2		2		2	2	2	2
NW/FA	5	1	1	1	5	5	5	5
OP/IT		2	2	2				
3. Financial leverage								
LD/TA	3	3	3	3	−2	3	3	3
LD/NW	3	3	3	3	3	3	3	3
4. Short term capital turnover								
S/AR	3		5			1		4
S/IN	4	4	4	4	4	4	4	4
NW/TA	6	6	6	6	6	6	6	6
5. Long term capital turnover								
S/FA	5	5	1	5	5	5	5	5
S/TA	5	5	5	5	5	5	5	5
S/NW	3	3	5	5	3	3	3	3
6. Size								
TA	6	6	6	6	6	6	6	6
WC	6	6	6	6	6	6	6	6
S	6	6	6	6	6	6	6	6
TA%	6	6	6	6	6	6	6	6
S%	6	6	6	6	6	6	6	6
7. Labor intensity								
FA/EM	−5			7		−5	−5	−5
WG/S	−4	−4	7	−4	−4	−4	2	−4
EM/S	−7			−5	−7	−7	−7	−7
8. Management style								
IM1/TA	6	7	8a	2	8b	7	8b	8a
IM2/TA		6	3	8c	5	8b		
ES/S	8b	5	8c			4	8b	8b
PCHS%	8a	8a	8a	8a	8a	8a	8a	8a
PCHS	8a	8a	8a	8a	8a	8a	8a	8a
CHS/CHCO								
CO/S	7	2	8a	2			8c	
Number of Factors	9	10	10	10	11	11	10	11
Percentage of variance explained	84.2	85.0	87.0	83.9	86.0	85.4	83.2	79.2

Empty cells indicate either ambiguity in loading (loading under the cut-off point) or formation of a single variable dimension. The number in the cell corresponds to the factor on which the item is loaded. The factors have the following meanings:
1 = short term liquidity, 2 = long run solvency, 3 = financial leverage, 4 = short term capital turnover, 5 = long term capital turnover, 6 = size, 7 = labor intensity, 8 = management style.

lack of organizational slack (5). Personnel costs over sales became part of the new factor called management efficiency (4). The number of employees over to sales did not display a consistent pattern of association with other indicators during the seven years.

As a result of the factor analysis, then, we have the following six empirically derived factors:

1. Short-run Liquidity
   (QA/CD, CA/CD, WC/S, WC/TA)

2. Financial Leverage
   (LD/TA, LD/NW)

3. Size
   (TA, WC, S, TA%, S%, NW/TA)

4. Lack of Organizational Slack
   (S/FA, S/TA, -FA/EM)

5. Managerial Efficiency
   (S/IN, -WG/S)

6. Increased Market Share
   (PCHS%, PCHS).

Of the remaining indicators, one measure of long-run solvency (NW/LD) and one measure of labor intensity (EM/S) remained isolated and therefore probably do have the meaning assigned to them a priori. The remaining indicators loaded inconsistently on various factors.

Profit Performance

The second step of the analysis identifies the associations between the various indicators and above- and below-average profit performance. Two profit indicators were considered:

(1) operating profit/total assets

(2) net profit/net worth.

The first indicator was suggested by Horrigan (1966). It focuses upon operating returns on invested assets, independent of the efficiency of financial management. The second indicator takes financial management into account. It measures net equity returns. Pearson correlations between the two profit indicators were significant but not highly positive ($r^2 = 0.3\ \alpha \leq 0.01$). As in the subsequent analysis only the relative position with respect to the average of each indicator is important, we tested group-overlaps in classification based upon each indicator. The test indicated 70% overlap among the two classifications. This was considered a satisfactory amount of agreement, and the analysis presented below is based upon the first indicator of profit.

It was expected that the financial and economic environments in which a business firm operates would determine to a large extent the types of association between the various indicators and short-term profitability. Therefore, we first present a brief description of the environment of the indrustry based on several general environmental indicators and some specific industry performance averages, for the seven year period, 1967 to 1973, of our study*

From a financial point of view the Swedish environment for 1967 and 1971 was marked by a relaxation of monetary policies to encourage growth. 1969 and 1970 were marked by more stringent control of the money supply and increased taxes. On the labor front, the years 1966 to 1968 and 1971 and 1972 were noteworthy for a general reduction in employment. From 1966 to 1968,

* The general environmental indicators are based upon I.M.F. time series. The performance of the industry investigated is based upon sample averages.

there was relative price stability. 1972 was a year characterized by a reduction of employment combined with inflationary pressures i. e. stagflation.

As far as the performance of the industry itself was concerned, it seems that textile and clothing firms are sensitive to the general level of industrial activity. After a surge of sales and profits in 1967, a sharp decline in sales for the industry resulted in a number of firms closing and a 16% drop in profits in 1968. Sales recovered in 1969, but an even greater acceleration of costs kept profits falling. This trend continued until 1972 when costs increases came under control although sales trends reversed. In 1972 profits increased by more than 30%.

To identify those indicators which provide the highest discrimination value between above and below average profit performers during this seven year period, a step-wise discriminant function analysis was employed with $F = 1$ as the default value. The results for a year by year analysis are presented in Table 2 where we employ the empirically derived factor subclassifications. To obtain a long term association of managerial, state and financial variables with performance, we have used the averages of the various indicators as discriminating variables to predict classifications of above- and below-average profit performance over the total period and the result is reported in the last column of Table 2.

The relative position of firms for most indicators except profits did not vary significantly in spite of the wide fluctuations in the economic environment, thus confirming the assumption that they tend to preserve their standard operating procedures. This permits a more credible inference as to the directions of causalitiy concerning whether a particular managerial phenomenon is a symptom of profit position or is a cause of that position. That is, in view of the wide fluctuations of profits and the relatively stable pattern of firms' responses, some directional interpretation of associations is possible.

We first examine those indicators associated with long-term profitability in the last column in Table 2. The results suggest that size (S) high labor intensity (EM/S), and high costs relative to sales (CO/S) are all related to low profitability. Efficient use of inventory relative to sales (S/IN), and higher investment rates (IM 1/TA) are associated with above-average profits. While it is inappropriate to infer causality for the analysis of long-run average profit performance, the associations are in line with behavioral theories of the firm, which predict that given a fixed production portfolio, size inhibits the ability for realignment and fosters sluggish behavior. Rationalization of production processes through investment is, in line with economic theory point of view, an appropriate strategy to combat accelerating costs and declining total industry sales.

The year-by-year discriminant analysis confirms that the variables which account for differences in profit performance vary as a function of changes in the environment and frequently differ from the variables associated with long-term profitability. In particular instances, attributes which had a positive influence upon profit under certain conditions had a detrimental impact under others. The general pattern of results supports our hypothesis that internal financial structures and managerial behavior does have an impact upon the short-run ability of a firm to achieve profits. This suggests that for short-run economic analysis, the neoclassical reliance on external market structures to explain performance may be too restrictive.

The overall meaning of the year-by-year discriminant coefficients is more difficult to interpret. It would seem that high costs relative to sales are associated with lower profits in the short-term as well as the long-term. Similarly, higher investment in new equipment is associated with higher profits. Otherwise, the associations seem to vary from year to year. They may to some extent, be explained by the environmental changes occuring in Sweden and in the textile and clothing industry.

It will be recalled that during the period 1966 to 1968, the industry experienced first an increase and then a severe down-turn in sales. Two of the three variables associated with the factor, lack of organizational slack, were associated with better than average profit performance during this period, particularly during the early upswing before the downturn. That is, as sales relative to fixed assets, and fixed assets relative to employee were both high indicating little organizational slack in the firm, profit performance tended to be above-average during this brief upswing. This

Table 2

Discriminant analysis of indicators which distinguish between above- and below-average profit firms for each year and for the total period

	66	67	68	69	70	71	72	Total
1. Short-run liquidity								
QA/CD		+.74				−.62		
CA/CD		−.60						
WC/S			−.52	−.53				
WC/TA								
2. Financial Leverage								
LD/TA			+.86		−.32			
LD/NW		−.33	−.50					
3. Size								
TA	+.97							
WC						+1.96	−.45	
S	−1.21							−.31
TA%						−.60		
S%								
NW/TA		−.75						
4. Lack of Organizational Slack								
S/FA	+.35				+.40			
S/TA								
-FA/EM		−.27					+.43	
5. Managerial Efficiency								
S/IN					+.38			+.27
-WG/S				−.21			−.21	
6. Increased Market Share								
PCHS%					+.24			
PCHS		−.33		+.29				
8. Sundry								
NW/LD	−.40							
EM/S	−.47	−.37	−.39					−.45
NW/TD		+.39		−.17				
NW/FA			+.33					
OP/IT	+.55	+.31	+.51					
S/AR			+.20		−.31	.25		
S/NW				−.34				
IM1/TA	+.57	+.53		+.26	+.41			+.48
IM2/TA			+.33		+.41	+.44	+.56	
ES/S		+.28				−.54		
CHS/CHCO		−.26	+.14				+.17	
CO/S	−.25		−.46	−.63		−.62	−.35	−.56
Percentage of correct classification	84%	87%	91%	81%	72%	80%	81%	84%

(NB: Signs are standardized to reflect positive or negative classification prediction with respect to profitability.)

suggests that during an upswing of sales, organizational slack associated with the utilization of organizational assets hinders rather than helps profit performance, indicating that not all the opportunities are being exploited. This tends to be confirmed by the negative coefficient consistently associated with more employees to sales, during the same period.

1968 was a year of sales and profit crisis. The difficulties remained to a greater or lesser extent through 1970. During this period, too much short-run liquidity, as indicated by high and possibly idle working capital relative to sales, was associated with below-average profit. Firms did better when they emphasized management efficiency, by reducing personnel costs relative to sales and by reducing inventory relative to sales. Similarly, those who were able to increase their market share also had above average profits. Generally, the discriminant analysis suggests that an aggressive management approach towards improved efficiency, along with the elimination of excess working capital were all factors associated with improved profit performance.

By the end of 1971, recovery seemed to have started for the industry, as profits were able to increase substantially in 1972. One of the variables measuring managerial efficiency is associated with greater profitability, but more organizizational slack is associated with lower profits. The two variables consistently associated with profit in the long-term and short-term, that is increased investment and lower costs relative to sales, continue to be consistently associated with higher profit during this period.

Conclusion

Reviewing the results in light of the hypotheses stated in the beginning of this paper, we conclude:

(1) Cost reduction brought about by investment towards the rationalization of production, and reduced costs relative to sales are important determinants of profit in both the short and the long run.

(2) Otherwise, the strategy attributes which explain short-term performance are different from those explaining long-term performance.

(3) It is unclear how short-term financial flexibility and financial leverage are related to profitability.

(4) A reduction in organizational slack to meet up upswing in sales of a short duration tends to be associated with higher profitability.

(5) During a longer period of recovery, greater managerial efficiency is associated with greater profitability.

(6) With a relatively unchanging external economic environment, the relation between organizational slack and managerial efficiency to profitability is unclear.

(7) The evidence concerning the impact of size upon profit is ambiguous.

As we have previously stated, this study is only an exploratory investigation for hypothesis refinement. The results indicate however, that behavioral models of the firm may improve our understanding of short-term industrial performance, by including relevant features which are excluded from the neo-classical analytic framework.

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