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"Ownership Structure and the Operating Performance of Hungarian Firms."

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OWNERSHIP STRUCTURE AND THE OPERATING PERFORMANCE OF HUNGARIAN FIRMS[1]

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Abstract

This paper uses firm-level data on 162 large Hungarian enterprises to analyse the relationship between ownership structure and corporate performance in 1998 and 1999. Cross-sectional regressions are run for each of these years using the return on assets (ROA) as the measure of performance. Both after-tax profits and operating profits are used to produce the ROA variable. The signs of the regression coefficients and their significance levels are consistent across the different measures of profit, and also across the two years. The results of the regressions suggest that the presence of foreign ownership may positively affect performance while the existence of continuing State ownership has the opposite effect. Neither of these relationships, however, is statistically significant. Two variables have a significant impact on performance that is consistent across different constructions of the regression models: firm size and capital intensity. The smaller firms in the sample outperform the larger firms, which suggests that the greater monitoring and agency costs likely to be incurred by larger firms negatively impact their performance. The more capital intensive a firm (measured by the log of total assets to employees) the greater is its performance. This positive relationship suggests that high capital intensity may impose a barrier to entry and strengthen the competitive position of companies within their industries. The export intensity of a company (exports to sales revenue) is also positively and significantly related to performance, which suggests that the discipline of competing in foreign markets has a positive impact. However, the inclusion of an industry dummy variable to the regression equations results in the export intensity variable losing its significance.

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1. Introduction

Hungary is generally regarded as one of the most successful transition countries. By the end of 1998 the private sector accounted for some 80% of GDP, up from 20% in 1990, while approximately one-half of all foreign capital invested in Central Europe between 1990 and 1997 was absorbed by Hungary (World Bank, 2001). Its attractiveness to foreign investors is perhaps not surprising given that Hungary began the reform process well before 1989 and early on enjoyed close links with world financial and commercial markets as a result of the "goulash" socialism that emerged in the Kádár era.[1] The Hungarian economy, unlike many of the other Eastern European countries, began to be privatized well before 1989. Although most of the industrial assets of larger enterprises were state-owned, small firms could be privately owned and operated even in the 1960s. This facilitated an entrepreneurial culture and helped Hungarian enterprises to establish links with foreign enterprises, facilitating the transition to a market economy.

After the collapse of the old system the government initially promised mass voucher privatization but then abandoned the idea before it got underway. Prior to the commencement of the official privatization programme, managers were able to transfer ownership of many state firms to new private companies in what was termed 'spontaneous' privatization. As a consequence, cross-ownership is commonplace in Hungary, with one Hungarian company being a shareholder in another company in addition to shareholdings by private individuals. Under the privatization programme, managers and employees were entitled to buy shares at a 5 to 10 per cent discount. However, there were fewer than 100 instances where they bought a majority of a firm's shares (World Bank, 1999). Therefore, unlike other privatization programmes in Central Europe, there are very few instances of controlling stakes being held by insiders. The key characteristic of the post-1989 privatization programme in Hungary, which sets it apart from other transition countries, was its openness to foreign capital. A policy of selling firms to strategic investors on a case-by-case basis resulted in almost two thirds of assets privatized between 1991 and 1997 being purchased by foreign investors, generating around $6.4 billion in foreign exchange (Kaminski and Riboud 2000). Unsurprisingly, there is evidence that the performance of firms with foreign participation is superior to that of other Hungarian enterprises. Kaminski and Riboud (2000) report the results of a study showing that wholly or partially foreign-owned firms outperformed both locally-owned and

remaining state-owned firms in Hungary between 1992 and 1997 over a range of performance indicators.[2] These findings are reinforced by the work of King (1999) who found that foreign owned firms outperformed domestically owned private firms in Hungary in 1996 and 1997.

This study analyses the influence of ownership structure and other factors on the performance of Hungarian enterprises in the more recent period, 1998 and 1989. Using a database of 162 enterprises, the relative importance of ownership structure, in particular foreign ownership and continuing state ownership, is analyzed. The study builds on the work of related papers by Bishop, Filatotchev and Mickiewicz (2002) and Filatotchev and Mickiewicz (2001). Utilising the same dataset over a longer period, from 1994 to1999, Bishop et al. (2002) explore the determinants of equity shares held by foreign investors and by Hungarian institutional investors. They find evidence of an evolution towards more homogeneous equity structures where dominant categories of owners achieve controlling stakes. They also find that exporting firms attract foreign owners, who acquire controlling equity stakes, and that firm size is positively associated with the presence of foreign investors. These results are consistent with the theoretical framework outlined in Filatotchev and Mickiewicz (2001) who model the impact of ownership identity and ownership concentration on performance.

2. Literature review

There exists a substantial literature on whether and how ownership structure affects corporate performance. Ownership structure can be examined along a number of dimensions: the influence of managerial (insider) ownership; the impact of ownership concentration in general and blockholders (typically institutional investors) in particular; and, more broadly, the identity of owners. The literature stems from the identification of agency-related conflicts within the firm, which can be traced to the work of Berle and Means (1932).

The influence of insider ownership on corporate performance is addressed by Jensen and Meckling, (1976). They argue that managers have incentives to pursue interests that are to the detriment of shareholders. By owning equity themselves, managers' interests converge with those of

[1] 1956-1988.

shareholders. Empirically, corporate performance is expected to be positively related to the level of insider ownership. However, increased managerial ownership can also insulate managers from the market for corporate control and serve to reduce corporate performance (Demsetz, 1983; Stulz, 1988). This approach has been characterized as the *managerial entrenchment hypothesis*, in direct contrast to Jensen and Meckling's *convergence-of-interests hypothesis*.

The impact of ownership concentration is addressed by Shleifer and Vishny (1986). They argue that when ownership is diffuse shareholders are not motivated to monitor management decisions closely because the ensuing benefit is too small to cover the monitoring costs. Under their *efficient monitoring hypothesis*, however, large equity stakes held by institutions (and other blockholders) create a greater incentive to monitor management. Greater ownership concentration will therefore enhance firm performance. However, Pound (1988) argues that large shareholders also face potential conflicts of interest in acting to discipline management. According to the *strategic alliance hypothesis*, institutions and managers find it mutually beneficial to cooperate on matters that jointly affect them.

Empirical evidence concerning the impact of ownership structure on corporate performance has mostly been limited to studies based on data from developed economies and has provided mixed results. Demsetz and Lehn (1985) failed to find evidence of a linear relationship between three measures of ownership concentration and measures of profitability, for a sample of 511 large US firms.[3] The studies that have followed on from Demsetz and Lehn (1985) focus mainly on the fraction of shares owned by management. Morck, Shleifer and Vishny (1988) examined the relationship between insider ownership and firm performance, measured using Tobin's *Q*, for 371 large US firms. To capture possible non-linearities they estimated a piecewise regression and found evidence of a non-monotonic relationship. The relationship is positive for management holdings of shares between 0% and 5% of outstanding shares, and for management holdings greater than 25%, reflecting the converging of managerial and shareholder interests. However, for management holdings between 5% and 25% the relationship is negative, reflecting managerial entrenchment. McConnell and Servaes (1990) also find evidence of a nonlinear relationship between insider

[2] Cash flow to assets, cash flow to sales, value added per employee, sales per firm, assets per firm.
[3] Demsetz and Lehn's (1985) measures of ownership structure are based on the fraction of shares owned by a firm's most significant shareholders, with most attention given to the fraction owned by the five largest shareholders.

ownership and performance, although their inflection points differ. A series of further studies have followed the same line of approach; chief among these are Hermalin and Weisbach (1988), Loderer and Martin (1997), Cho (1998), Himmelberg et al. (1999) and Holderness et al. (1999). All rely mainly on Tobin's *Q* as the measure of firm performance, although some also examine the accounting profit rate, and all focus on managerial shareholdings as the measure of ownership structure. Reviewing these studies as a whole, Demsetz and Villalonga (2001) conclude that they "do not give strong evidence by which to reject the belief that firm performance and managerial equity ownership are unrelated" (p. 211).

The impact of blockholdings and institutional holdings on Tobin's *Q* was also examined by McConnell and Servaes (1990) who found a positive relationship. Holderness and Sheehan (1988) find that for a sample of 114 US firms controlled by a majority shareholder with more than 50% of shares, both Tobin's *Q* and accounting profits are significantly lower for firms with individual majority owners than for firms with corporate majority owners. Boardman and Vining (1989) compare the performance of SOEs, mixed enterprises, and private corporations among the 500 largest non-US industrial firms, and find that mixed enterprises and SOEs perform substantially worse than similar private enterprises. Taken together, these empirical studies suggest that block holding by institutional investors is positively correlated with corporate performance, provided that such blockholders are not the state.

Several cross-country studies have investigated the relationship between ownership changes and firm performance. Megginson et al. (1994) compare the pre and post-privatization performance of 61 firms in 18 countries, out of which 6 were from developing countries and 12 from developed countries. Their study spanned 32 industries that experienced full or partial privatization through public share offerings during the period from 1961-1990. The results indicate that, for most firms in their sample, there was a significant increase among newly privatized firms in profitability and operating efficiency. In a follow-up study, D'Souza and Megginson (1999) follow the same methodology for a sample of 85 firms that were privatized through public share offerings for the period from 1990-1996, but this time from industrialized countries only (28 countries). The results confirm, mainly, their earlier findings. In another comprehensive study, Boubakri and Cosset (1998) examine the financial and operating performance of 79 privatized firms from 21 developing

countries during the period 1980-1992. They also document significant improvements, using unadjusted and market-adjusted measures, in profitability and operating efficiency.

A number of empirical studies have examined the effectiveness of ownership structure reform in improving the economic performance of recently privatized enterprises in formerly state-controlled economies. Barberies et al (1996) examine performance change in 452 Russian privatized firms and conclude that changes in ownership and management styles are likely lead to a value-maximizing restructuring. For 706 privatized firms in the Czech Republic, Claessens, Djankov and Pohl (1997) find that concentrated ownership structure, ownership by local investors and ownership by bank-sponsored investment privatization fund increase profitability and Tobin's Q. In contrast, Harper's (2001) study of 178 Czech firms that were in the first wave of voucher privatization found that efficiency and profitability decreased immediately following privatization.[4] Major's (1999) study of the relationship between privatization, restructuring and corporate performance in Hungary found that profitability indicators improved slowly but steadily in every ownership category between 1994 and 1997.[5] Further, the economic performance of the foreign companies as a group was usually better than the performance of the domestic private companies and the state-owned companies. There were, however, some exceptions. The profit margins of foreign companies lagged behind those of domestic private and the state-owned companies in the early nineties, only outperforming from the mid-nineties onwards. A possible explanation for this is the need of foreign investors to make sizable investments to restructure their acquired companies. However, Major (1999) points out that these changes also had to be made in most domestic private companies. It is also the case that foreign investors have usually been active in larger businesses where investments and restructuring may take more time and need larger expenditures.

In their study of all firms listed on the Shanghai Stock Exchange (SHSE) from 1991 to 1996, Qi et al (2000) found that firm performance is positively related to the proportion of shares held by legal persons (institutional/corporate investors) but negatively related to the proportion of shares owned

[4] This finding is based on nonparametric tests.

[5] Five ownership categories were identified: companies where the share of state ownership was less than 5 per cent. (Code 1). Companies with more than 5, but less than 25 per cent of state ownership (Code 2). Companies with more than 25, but less than 50 per cent of state ownership (Code 3). The next two groups consisted of companies with majority state ownership: companies where the state had a more han 50 but less than 75 per cent share (Code 4), and companies

by the state. In addition, they find little evidence in support of a positive correlation between corporate performance and the proportion of tradable shares owned by either domestic or foreign investors. In a study of the impact of foreign ownership on the performance of Indian firms, Chhibber and Majumar (1999) find that foreign ownership has a positive and significant influence on performance, but only when it crosses a certain threshold defined by the property rights regime (51% in this case).

A number of other empirical studies examining the impact of privatization on the performance of divested central and eastern European firms during the 1990s are summarized in Megginson and Netter (2001). Though employing differing empirical methodologies, they yield surprisingly consistent results, finding that private ownership is associated with better firm-level performance than is continued state ownership and that concentrated private ownership is associated with greater performance improvement than is diffuse ownership.

3. Variables and hypotheses

The determinants of performance are estimated by regressing profitability ratios on ownership structure variables while controlling for firm and industry characteristics. For each performance measure, different specifications of the following cross-sectional regression are estimated:

$$\text{Performance} = \alpha_0 + \beta_1 (\text{ownership structure variables}) + \beta_2 (\text{firm size}) + \beta_3 (\text{leverage variable}) + \beta_4 (\text{capital intensity variable}) + \beta_5 (\text{export intensity variable}) + \beta_6 (\text{industry dummy}) + \varepsilon$$

The following measurements are employed for the dependent and independent variables.

Dependent variables: profitability

Return on assets (ROA) = Net income to total assets (and also operating income to total assets)
Return on sales (ROS) = Net income to sales (and also operating income to sales)

Independent variables: ownership structure

Presence of foreign capital
FOR = Foreign-owned capital to total capital

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with more than 75 per cent state ownership (Code 5). Within each group a distinction was made between companies with or without foreign ownership.

Presence of Government ownership
STAT = Government capital to total capital

Presence of insider ownership
INS = Management and employee owned capital to total capital

Presence of enterprise ownership
ENT = Ownership by other enterprises to total capital

Control variables:

Firm size
LNASSTS = Log of total assets
LNSLS = Log of total sales

Capital intensity
CINT = Log of total assets to employees

Degree of financial leverage
DFL = Operating income elasticity of net income[6]

Industry
IND = classification into one of four aggregates of NACE sectors

The companies in the sample are spread among 20 different sectors of manufacturing industry, identified by two digit NACE codes.[7] To achieve a reasonable number of observations for industry dummy variables it was necessary to aggregate the NACE sectors. Four aggregate industry groups were formed, as shown below:

IND1 = food products, beverages and tobacco
(NACE codes 15, 16)
IND2 = Textiles, leather, wood, pulp and paper
(NACE codes 17, 19, 20, 21, 22, 36)
IND3 = Coke, Chemical, Rubber, plastics, ceramics
(NACE codes 23, 24, 25,26)
IND4 = Metals, machinery, electrical equipment, recycling, transport
(NACE codes 27, 28, 29, 30, 31, 32, 37)

These four groups were used as the basis for a single industry dummy variable.[8]

[6] The percentage change in Net Income divided by the percentage change in Operating Income.
[7] Nomenclature generale des Activities economiques dans les Communautes Europeennes.
[8] The use of each of these four categories as separate dummy variables was precluded by the existence of an exact collinearity problem with the intercept term.

Three ratios are typically used to measure firm performance: return on assets (ROA) and return on sales (ROS).[9] A possible concern with the use of accounting measures is that they are subject to discretionary reporting choices that can reduce comparability across firms. The focus in this paper will be on the ROA measure as it is commonly used in other studies and aids comparison.[10]

The composition of shareholders

Figure 1 clearly illustrates one of the distinctive features of privatization in Hungary, compared to most other CEE countries, namely the importance of foreign investors in acquiring state-owned property. Among the sample of 162 firms, the amount of capital owned by the State fell from 37.45% in 1994 to 5.2% 1999, whereas foreign ownership increased from 44.43% in 1994 to 72.98% in 1999.[11] Another distinctive feature of Hungarian privatization is the relatively small role of the private investor, due to the avoidance by successive Hungarian governments of an extensive free distribution of state-owned property. In addition, it is apparent from Figure 1 that management and employees have little influence as shareholders.

Foreign ownership

The presence of foreign investors is expected to boost firm performance for a number of reasons. First, they add to the pressure on managers by providing additional monitoring. Second, they are able to provide new capital and managerial expertise. Third, they assist in integrating local firms into international markets, resulting in a lower cost of capital (Bekaert and Harvey, 2000; Henry 2000).

Government ownership

A priori there is no clear indication of how continuing government ownership will impact performance. On the one hand, government shareholdings may be expected to create agency costs and negatively impact firm performance. However, some government ownership may benefit the

[9] Unlike many of the studies that have investigated the the effect of ownership structure on firm performance, we do not employ Tobin's Q. It may be argued that, as a market-based measure of performance, Tobin's Q is superior to backward-looking accounting measures. However, as Demsetz and Villalonga (2001) point out, Tobin's Q also suffers from a number of measurement problems that are, arguably, more severe than those which pertain to accounting measures (pp 213-214).

[10] The use of ROS measures produced very similar results, so only the ROA results are reported here.

firm, either by enabling it to clear bureaucratic obstacles and generate business, or by signaling that the government believes that the firm is one of its 'crown jewels' (Chau et al, 1999).

Control variables

The following variables were used as controls.

Firm Size

Firm size has an ambiguous effect a priori on firm performance. On the one hand, monitoring and agency costs are likely to be greater in larger firms, resulting in a negative impact on performance. Also, because larger firms tend to be more diversified, lower risk premiums could induce a negative impact on performance. On the other hand, large firms might enjoy economies of scale and scope (Baumol, 1959) implying a positive relationship between firm size and performance. The log of firm assets and the log of firm sales are used to measure size.[12]

Capital intensity

Capital intensity may help to identify overinvestment (Lehmann and Weigand, 2000). If decreasing economies of scale prevail, profitability should be negatively related to capital intensity. However, the opposite may be true if high capital intensity is a barrier to entry. Capital intensity is measured as the log of total assets to employees.

Degree of financial leverage

The presence of debt in a firm's capital structure reduces free cash flow to managers and imposes discipline, as well as encouraging monitoring by creditors. Financial leverage should therefore reduce agency problems and have a positive impact on performance. This variable is measured by calculating the operating income elasticity of net income. Colombo (2001) shows that the use of debt is greater among larger Hungarian firms, so it is important to take account of this variable.

[11] Major (1999) points out that foreign investors tended to acquire stakes in the larger state-owned enterprises.
[12] As the results are unaffected by the choice of measurement only the results for log of firm assets are reported.

Export intensity

Participation in international trade is likely to exercise discipline on a firm by requiring it to be competitive in the wider global market (Chhibber and Majumar, 1999) Thus, the larger a firm's proportion of exports to sales, the greater we would expect its performance to be.

Industry membership

The final control variable included is industry membership. A number of papers examine the relationship between industry membership and performance, with industry effects typically predicting somewhere between 17 and 20% of financial performance (Schmalansee, 1985; Wernerfelt and Montgomery, 1988; Rumelt, 1991; and Powell, 1996). It is argued that firms are constrained to a certain degree, particularly in the short run, by opportunities available to the industry as a whole. Firms have different opportunities to build and define their competitive space (Hamel and Prahalad, 1994). For example, firms in industries where there are growth opportunities, where there is a high level of concentration, or where markets are stable should have higher profits than industries that are in decline.

4. Results

The results of the cross-sectional regressions for 1999 and 1998 are reported in Table 1 (performance based on after-tax profits) and in Table 2 (performance based on operating profits). Three different models are reported in each table for 1999 and 1998. Additional control variables are added in each of models 2 and 3. One of the independent variables (ownership by other enterprises to total capital) was deleted from all of the models as it was found to exhibit strong colinearity with another of the independent variables (presence of foreign ownership).

The sign of the coefficients on the foreign ownership variable are positive in every model, suggesting that the presence of foreign ownership enhances performance. However, it is only significant in one case (model 1 for 1999 using after-tax profits) so no strong conclusion can be drawn. The sign of the coefficients on the State ownership variable are negative in every model. This would suggest that continuing State equity participation has a detrimental impact on performance. However, as the coefficients are not significant in any of the models no such inference may be drawn. Clear conclusions can, however, be reached concerning two of the control variables: firm size and capital intensity. The firm size variable has a consistently negative impact on performance and, with the exception of one case (model 1 for 1999 using after-tax profits) it is always significant at the 5% level. Capital intensity, on the other hand, has a positive impact on performance, and is significant in every single model, and at a stronger level than firm size. The export intensity variable has a positive and significant impact on performance when it is entered in model 2 in each case, but when the industry dummy variable is added in model 3 it loses its significance.

The regression results are generally robust over the two years studied and also across the two methods of measuring ROA (after-tax profits or operating profits).

5. Conclusion

This paper uses firm-level data on 162 large Hungarian enterprises in 1998 and 1999 to analyze the relationship between ownership structure and corporate performance. Although the signs of the regressions coefficients suggest that the presence of foreign ownership may improve performance while the existence of continuing State ownership has the opposite effect, neither of these relationships are statistically significant. Two variables, however, are found to have a significant impact on performance, consistent across the different regression models reported in the study: firm size and capital intensity. The smaller firms in the sample outperform the larger firms. This lends support to the notion that the greater monitoring and agency costs likely to be incurred by larger firms drag down their performance. The firms in the sample which are more capital intensive perform better than those which are less capital intensive. This supports the idea that high capital intensity may impose a barrier to entry and serve to enhance a company's competitive position within its industry.

The degree of financial leverage variable has a negative impact on performance. This suggests that bank debt does not provide monitoring pressure sufficient to reduce agency costs. However, the result is not significant, so no clear conclusion can be drawn. Finally, the export intensity of the companies in the sample is positively and significantly related to performance, suggesting that the discipline of competing in global markets has a positive effect. However, this relationship loses its significance when the industry dummies are added to the regression equations.

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FIGURE 1

EVOLUTION OF OWNERSHIP STRUCTURE

Ownership category	1994 %	1995 %	1996 %	1997 %	1998 %	1999 %
State	37.45	25.90	17.10	8.53	5.36	5.20
Local Government	1.82	0.95	0.83	1.01	0.92	0.55
Private persons	2.33	3.49	4.17	3.81	4.82	2.07
Enterprises	11.54	11.74	10.44	10.96	13.03	14.10
Mgmt./employees	0.66	0.71	0.63	0.80	0.72	0.64
Foreign	44.43	56.57	64.55	71.59	73.27	72.98
Co-operatives	0.09	0.07	0.09	0.02	0.02	0.04
Other	1.67	0.57	2.20	3.29	1.86	4.42
Total	100.00	100.00	100.00	100.00	100.00	100.00

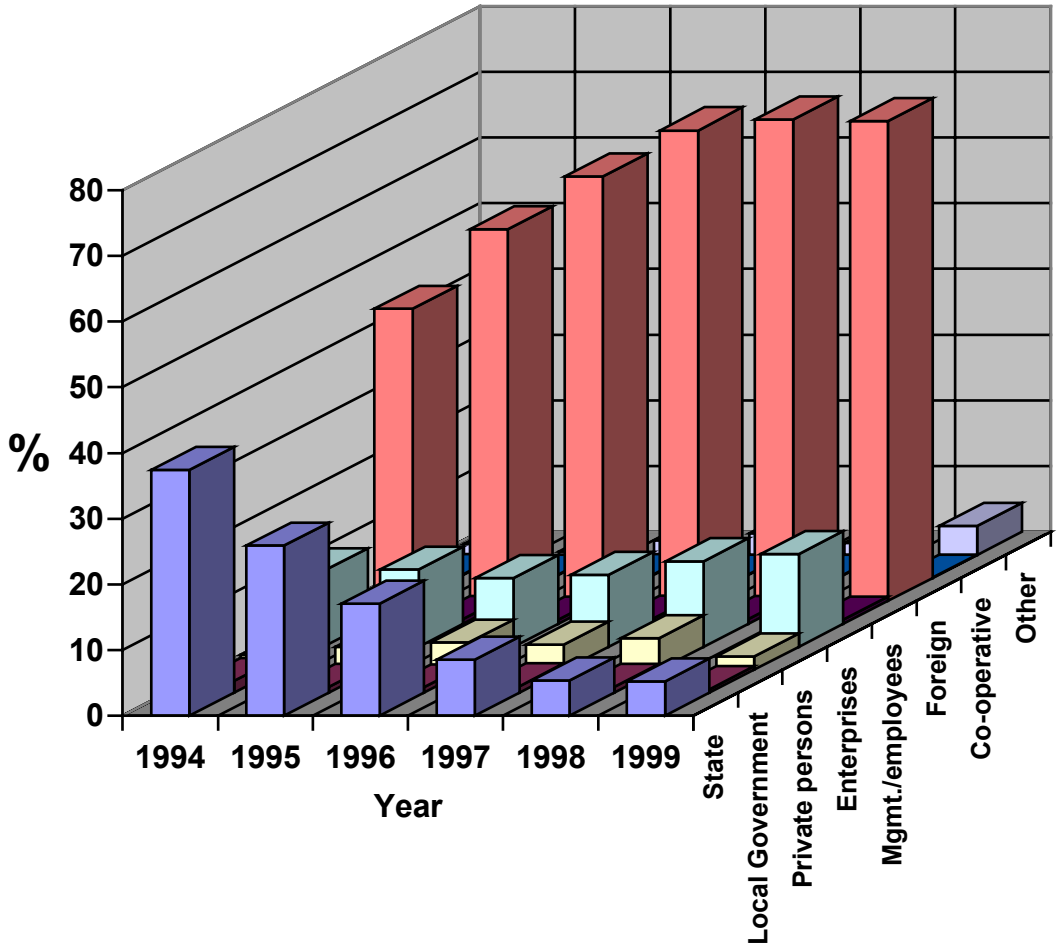

TABLE 1

CROSS-SECTION ESTIMATES (LEAST SQUARES)
DEPENDENT VARIABLE ROA 1999

(based on after-tax profits)

Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.166672	0.100722	1.654775	0.1000
FOR99	0.057999	0.029230	1.984231	**0.0490**
STAT99	-0.024511	0.089344	-0.274346	0.7842
INS99	0.161711	0.186303	0.868001	0.3867
LNASST99	-0.024083	0.012242	-1.967302	0.0509
DFL99	-0.001143	0.000789	-1.448881	0.1494
CINT99	0.036935	0.015320	2.410920	**0.0171**

R-squared	0.087694	Mean dependent var	0.085881
Adjusted R-squared	0.052379	S.D. dependent var	0.135132
Log likelihood	102.3115	F-statistic	2.483200
Durbin-Watson stat	1.626923	Prob(F-statistic)	0.025403

Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.192191	0.100343	1.915334	0.0573
FOR99	0.042208	0.029859	1.413575	0.1595
STAT99	-0.039275	0.088637	-0.443097	0.6583
INS99	0.143553	0.184454	0.778259	0.4376
LNASST99	-0.030800	0.012517	-2.460615	**0.0150**
DFL99	-0.001389	0.000789	-1.760357	0.0803
CINT99	0.044162	0.015533	2.843185	**0.0051**
EXP99	0.071326	0.033752	2.113241	**0.0362**

R-squared	0.113404	Mean dependent var	0.085881
Adjusted R-squared	0.073105	S.D. dependent var	0.135132
Log likelihood	104.6270	F-statistic	2.814020
Durbin-Watson stat	1.691223	Prob(F-statistic)	0.008727

Model 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.182914	0.099834	1.832180	0.0689
FOR99	0.044665	0.029699	1.503963	0.1347
STAT99	-0.063954	0.089198	-0.716991	0.4745
INS99	0.153776	0.183350	0.838699	0.4029
LNASST99	-0.032341	0.012468	-2.594036	**0.0104**
DFL99	-0.001424	0.000784	-1.815988	0.0713
CINT99	0.042044	0.015480	2.716078	**0.0074**
EXP99	0.030690	0.040878	0.750767	0.4539
IND	0.017887	0.010291	1.738160	0.0842

R-squared	0.130572	Mean dependent var	0.085881
Adjusted R-squared	0.085112	S.D. dependent var	0.135132
Log likelihood	106.2108	F-statistic	2.872234
Durbin-Watson stat	1.699621	Prob(F-statistic)	0.005260

Significance at the 5% level shown in bold (final column)

TABLE 1 Contd.

CROSS-SECTION ESTIMATES (LEAST SQUARES)
DEPENDENT VARIABLE ROA 1998
(based on after-tax profits)

Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.221171	0.105463	2.097150	0.0376
FOR98	0.040082	0.031983	1.253225	0.2120
STAT98	-0.056754	0.121485	-0.467170	0.6410
INS98	-0.028032	0.176366	-0.158943	0.8739
LNASST98	-0.028872	0.012737	-2.266791	**0.0248**
DFL98	-0.000525	0.000879	-0.597042	0.5514
CINT98	0.040129	0.015281	2.626155	**0.0095**

R-squared	0.083460	Mean dependent var	0.088101
Adjusted R-squared	0.047981	S.D. dependent var	0.142589
Log likelihood	93.23431	F-statistic	2.352366
Durbin-Watson stat	1.820233	Prob(F-statistic)	0.033417

Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.242134	0.105021	2.305580	0.0225
FOR98	0.024297	0.032676	0.743576	0.4583
STAT98	-0.069781	0.120539	-0.578907	0.5635
INS98	-0.043506	0.174906	-0.248741	0.8039
LNASST98	-0.034948	0.012987	-2.690965	**0.0079**
DFL98	-0.000468	0.000872	-0.536703	0.5922
CINT98	0.046959	0.015528	3.024233	**0.0029**
EXP98	0.070321	0.035543	1.978453	**0.0497**

R-squared	0.106178	Mean dependent var	0.088101
Adjusted R-squared	0.065550	S.D. dependent var	0.142589
Log likelihood	95.26739	F-statistic	2.613406
Durbin-Watson stat	1.859447	Prob(F-statistic)	0.014105

Model 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.233921	0.105684	2.213401	0.0284
FOR98	0.025168	0.032737	0.768801	0.4432
STAT98	-0.081910	0.121696	-0.673072	0.5019
INS98	-0.036506	0.175361	-0.208178	0.8354
LNASST98	-0.035350	0.013014	-2.716249	**0.0074**
DFL98	-0.000468	0.000873	-0.536227	0.5926
CINT98	0.046271	0.015573	2.971299	**0.0034**
EXP98	0.052013	0.042661	1.219218	0.2246
IND	0.008301	0.010667	0.778231	0.4376

R-squared	0.109702	Mean dependent var	0.088101
Adjusted R-squared	0.063151	S.D. dependent var	0.142589
Log likelihood	95.58739	F-statistic	2.356580
Durbin-Watson stat	1.867871	Prob(F-statistic)	0.020331

Significance at the 5% level shown in bold (final column)

TABLE 2

CROSS-SECTION ESTIMATES (LEAST SQUARES)
DEPENDENT VARIABLE ROA 1999
(based on operating profits)

Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.292229	0.097922	2.984312	0.0033
FOR99	0.042406	0.028417	1.492260	0.1377
STAT99	-0.036647	0.086860	-0.421907	0.6737
INS99	0.219410	0.181124	1.211384	0.2276
LNASST99	-0.036858	0.011901	-3.096986	**0.0023**
DFL99	6.16E-05	0.000767	0.080266	0.9361
CINT99	0.041785	0.014894	2.805475	**0.0057**

R-squared	0.101912	Mean dependent var	0.096382
Adjusted R-squared	0.067147	S.D. dependent var	0.132411
Log likelihood	106.8789	F-statistic	2.931479
Durbin-Watson stat	1.663740	Prob(F-statistic)	0.009763

Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.314870	0.097790	3.219853	0.0016
FOR99	0.028396	0.029099	0.975834	0.3307
STAT99	-0.049745	0.086381	-0.575880	0.5655
INS99	0.203301	0.179761	1.130950	0.2598
LNASST99	-0.042818	0.012199	-3.510003	**0.0006**
DFL99	-0.000156	0.000769	-0.203371	0.8391
CINT99	0.048197	0.015137	3.183953	**0.0018**
EXP99	0.063282	0.032893	1.923848	0.0562

R-squared	0.122990	Mean dependent var	0.096382
Adjusted R-squared	0.083126	S.D. dependent var	0.132411
Log likelihood	108.8026	F-statistic	3.085227
Durbin-Watson stat	1.713692	Prob(F-statistic)	0.004526

Model 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.310466	0.098024	3.167252	0.0019
FOR99	0.029563	0.029160	1.013810	0.3123
STAT99	-0.061461	0.087581	-0.701769	0.4839
INS99	0.208153	0.180025	1.156246	0.2494
LNASST99	-0.043550	0.012242	-3.557536	**0.0005**
DFL99	-0.000173	0.000770	-0.224724	0.8225
CINT99	0.047191	0.015199	3.104891	**0.0023**
EXP99	0.043990	0.040137	1.096009	0.2748
IND	0.008491	0.010104	0.840396	0.4020

R-squared	0.127020	Mean dependent var	0.096382
Adjusted R-squared	0.081374	S.D. dependent var	0.132411
Log likelihood	109.1756	F-statistic	2.782707
Durbin-Watson stat	1.716043	Prob(F-statistic)	0.006673

Significance at the 5% level shown in bold (final column)

TABLE 2 Contd.

CROSS-SECTION ESTIMATES (LEAST SQUARES)
DEPENDENT VARIABLE ROA 1998
(based on operating profits)

Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.298436	0.098149	3.040642	0.0028
FOR98	0.023166	0.029765	0.778301	0.4376
STAT98	-0.028768	0.113060	-0.254449	0.7995
INS98	0.058181	0.164135	0.354468	0.7235
LNASST98	-0.030164	0.011854	-2.544685	**0.0119**
DFL98	-0.000141	0.000818	-0.172473	0.8633
CINT98	0.028561	0.014221	2.008346	**0.0463**

R-squared	0.056368	Mean dependent var	0.114305
Adjusted R-squared	0.019840	S.D. dependent var	0.130782
Log likelihood	104.8775	F-statistic	1.543146
Durbin-Watson stat	1.702392	Prob(F-statistic)	0.167602

Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.321666	0.097218	3.308727	0.0012
FOR98	0.005674	0.030248	0.187579	0.8515
STAT98	-0.043203	0.111582	-0.387189	0.6992
INS98	0.041033	0.161910	0.253432	0.8003
LNASST98	-0.036897	0.012022	-3.069078	**0.0025**
DFL98	-7.78E-05	0.000807	-0.096400	0.9233
CINT98	0.036129	0.014374	2.513520	**0.0130**
EXP98	0.077926	0.032902	2.368409	**0.0191**

R-squared	0.089531	Mean dependent var	0.114305
Adjusted R-squared	0.048146	S.D. dependent var	0.130782
Log likelihood	107.7754	F-statistic	2.163369
Durbin-Watson stat	1.753468	Prob(F-statistic)	0.040384

Model 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.315154	0.097883	3.219710	0.0016
FOR98	0.006365	0.030320	0.209912	0.8340
STAT98	-0.052820	0.112713	-0.468628	0.6400
INS98	0.046583	0.162417	0.286813	0.7746
LNASST98	-0.037215	0.012053	-3.087528	**0.0024**
DFL98	-7.79E-05	0.000808	-0.096407	0.9233
CINT98	0.035583	0.014423	2.467103	**0.0147**
EXP98	0.063411	0.039512	1.604843	0.1106
IND	0.006582	0.009880	0.666211	0.5063

R-squared	0.092164	Mean dependent var	0.114305
Adjusted R-squared	0.044696	S.D. dependent var	0.130782
Log likelihood	108.0100	F-statistic	1.941591
Durbin-Watson stat	1.767802	Prob(F-statistic)	0.057607

Significance at the 5% level shown in bold (final column)

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