



Agency costs, ownership structure and corporate governance mechanisms

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Received 17 September 1999; accepted 1 October 2001

Abstract

In this paper, we extend the work of Ang et al. [*J. Finance* 55 (1999) 81] to large firms. We find that managerial ownership is positively related to asset utilization but does not serve as a significant deterrent to excessive discretionary expenses. Outside block ownership may only have a limited effect on reducing agency costs. Furthermore, smaller boards serve the same role, but independent outsiders on a board do not appear to protect the firm from agency costs. Thus, this paper reports complementary evidence to Ang, Cole and Lin. In large publicly traded corporations, managerial ownership significantly alleviates principal–agent conflicts even in the presence of other agency deterrent mechanisms.

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JEL classification: G-3

Keywords: Management ownership; Agency costs; Corporate governance; Board of directors

1. Introduction

Ang et al. (1999) (henceforth ACL), provide evidence on corporate ownership structure and agency costs measured in terms of asset utilization and operating expenses. Their analysis of the Federal Reserve Board's National Survey of Small Business Finances (NSSBF) data on small businesses, relating absolute and relative measures of agency costs suggests that agency costs for outsider managed firms

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are higher relative to firms that are owner managed. In addition, they show that asset utilization efficiency and operating expenses for small businesses are, respectively, positively and negatively related to the managerial ownership stake in the firm.

In this paper, we extend ACL's analysis of the relationship between corporate ownership structure and agency costs to large publicly traded corporations, and we provide evidence complementing their findings. Given that exchange listed large firms are subject to continuous security market monitoring, the role of ownership structure in influencing agency costs may significantly differ from that in the small corporations in ACL's investigation. While ACL focus on managerial ownership and the number of non-manager owners, we investigate, in addition to managerial ownership, the role of outside block ownership in terms of their proportion of equity ownership. Since corporations may use alternate governance mechanism as substitutes (Agrawal and Knoeber, 1996), we control for the influence of the size and composition of the board of directors on the level of agency costs. Examining block ownership and controlling for board of director variables, not considered by ACL, are appropriate for our sample since it contains large publicly traded firms. In addition to analyzing the role of the board of directors in controlling agency related costs, this analysis provides an opportunity to understand if corporate ownership has a significant influence on the agency behavior of management in large corporate units after controlling for corporate governance mechanisms. Finally, we use two time-series observations in non-consecutive years per cross-section unit, to reduce the possibility of the results being time period specific.

There are some important differences between our analytic design and the ACL approach. Since we are dealing with large publicly traded corporations, we do not have a zero-agency-cost base case where a firm is fully owner managed. We, therefore, relate absolute levels of asset utilization efficiencies and operating expenses to firm ownership while controlling for governance characteristics. Further, we utilize a slightly different definition of operating expenses. As we aim to capture agency induced managerial expense as a measure of agency cost, we focus on a firm's selling, general, and administrative (SG&A) expenses instead of total operating expenses used by ACL. SG&A expense, representing the costs related to the management function and to the sale of products, includes managerial salaries, rents, insurance, utilities, supplies, and advertising costs. Higher levels of SG&A expenses are a close approximation of managerial pay and perquisite consumption in terms of higher salaries, large office complexes, and other organizational support facilities. These costs, to a large extent, reflect managerial discretionary expenses and may be a closer proxy for agency costs. Given that large corporations have greater access to the public debt market, they should rely less on bank financing and be less subject to bank monitoring than the small businesses in ACL. Therefore, we analyze the role of corporate leverage, rather than banking relationship in influencing the agency costs in large corporations.

Our findings provide support for ACL's findings, in that, higher managerial ownership significantly and positively influences the corporate asset utilization efficiency, and we find some limited evidence that it acts as a significant deterrent to excessive discretionary expenses. We find that in the case of large publicly traded firms, outside

block ownership does not help in achieving higher asset turnover nor in reducing discretionary expenses. In terms of board size and composition, we report that larger board size is associated with efficiency losses.²

The paper is structured as follows. Section 2 describes agency theoretic paradigm relating ownership and governance structures to corporate agency costs. In Section 3, we explain our methodological approach and data description. While Section 4 deals with the presentation and discussion of the results, we present our conclusions in Section 5.

2. Agency costs, ownership structure and board of directors

2.1. Managerial ownership and agency costs

Jensen (1993) 'convergence of interest' hypothesis suggests that managerial shareholdings help align the interests of shareholders and managers, and as the proportion of managerial equity ownership increases, so does corporate performance. However, Morck et al. (1988), McConnell and Servaes (1990, 1995), and Kole (1995) consider non-linearity in the relationship between inside ownership and corporate performance. Morck et al. (1988) report a positive relationship between managerial ownership and Tobin's Q for ownership levels between 0% and 5% and for levels beyond 25%, and a negative relationship over the 5–25% managerial ownership range. They argue that while the 'convergence of interest' hypothesis holds over smaller and larger ownership ranges, over the 5–25% managerial ownership range it is the 'entrenchment hypothesis' that may explain the negative relationship between corporate value and managerial ownership. Over this range, private benefits of agency driven decisions outweigh the costs to managers in terms of value loss from suboptimal choices.

More recently, Short and Keasey (1999) also report a non-linear relation between managerial ownership and firm value for a sample of UK firms. McConnell and Servaes (1990, 1995), using a quadratic regression specification to relate managerial ownership to Tobin's Q , report an inverted U-shaped relationship. Their results indicate a positive relation up to 40–50% of managerial ownership and negative relation beyond that. Kole (1995), rationalizing the difference between Morck et al.'s and McConnell and Servaes's finding in terms of differences in their samples, suggests that for small firms, convergence of interest holds over a larger range of managerial ownership.

Kole's (1995) argument suggests that managerial ownership may impact large and small firms differently with respect to value. It is important to determine whether managerial ownership impacts agency costs differently across firm size. Since ACL examined the relationship between agency costs and managerial ownership for small firms, our results will shed light on the relationship for large firms.

² Similar to ACL's findings, we report the existence of economies of scale between firm size and SG&A expenses. Larger firms also seem to have better asset utilization than the smaller firms in our sample. We find no relationship between leverage and asset utilization efficiency for our large firms sample which is in contrast to ACL's finding of positive relationship between the two for small firms.

2.2. *Outside block ownership and agency costs*

Outside blockholders generally act as monitors and may be instrumental in generating superior corporate performance. For example, Holderness and Sheeham (1985), and Barclay and Holderness (1991) provide empirical evidence that there are increased management turnovers and stock performance gains following block share purchases. Shome and Singh (1995) and Allen and Phillips (2000) also report improved financial performance following block purchases. Bethel et al. (1998) provide further evidence that activist block purchases are followed by corporate restructuring, abnormal share price appreciation, and industry adjusted operating profitability gains. However, Cai et al. (2001) find that causality may go in the opposite direction. That is, good stock performance seems to attract institutional traders.

2.3. *Board size and composition as agency deterrent mechanism*

Researchers have emphasized the influence that board size and composition may have on board involvement in corporate affairs. The size and composition of the board may affect its ability to be an effective monitor and guide. Board size and composition may influence the impact of insiders and block ownership on corporate performance by acting as either a complement or substitute for ownership structure. Hence, we control for board size and composition. In this respect, resource dependence theory suggests that increased size and diversity may yield benefits by creating a network with the external environment and securing a broader resource base (Pfeffer, 1973; Pearce and Zahra, 1992).

Others argue that large boards are less effective than small boards (Shaw, 1981; Jewell and Reitz, 1981; Olson, 1982; Gladstein, 1984; Lipton and Lorsch, 1992; Jensen and Meckling, 1976). Empirical results in Yermack (1996) and Eisenberg et al. (1998) support the notion that firm performance is enhanced by smaller boards.

An important question concerns the agency conflict-resolving role of outsider board members. Fama (1980) and Fama and Jensen (1983) argue that board outsiders, by providing expert knowledge and monitoring services, add value to firms. Outside directors are supposed to be guardians of the shareholders' interests through monitoring. Empirical results support the argument that outside directors are more effective monitors and a critical disciplining device for managers (Coughlan and Schmidt, 1985; Hermalin and Weisbach, 1988).

While the existing empirical evidence relating board composition to performance is mixed,³ outside directors may contribute to the value of firms through their evaluation of strategic decisions (Brickley and James, 1987; Byrd and Hickman, 1992; Lee et al., 1992) and through their role in the dismissal of inefficient and poorly performing management (Weisbach, 1988). Thus, there exists evidence that board com-

³ For example, while Hermalin and Weisbach (1991) find no significant relationship between performance and outsiders' proportion on the board of directors, Baysinger and Butler (1985) find a positive relationship.

position may significantly influence corporate performance by reducing agency costs, and we control for its effects.

3. Data and methodological approach

3.1. Sample selection

We analyze a sample of NYSE, AMEX, and NASDAQ listed large US corporations having annual sales revenue of \$100m or more. We exclude the firms belonging to financial services industry (SIC 6000–6999) and regulated utilities (SIC 4900–4999). This yields a total of 1528 firms.

Given that the early 1990s witnessed a wave of corporate downscoping and down-scaling strategies, we chose to create a sample that is a balanced representation of the overall population of large corporations as dynamic entities adopting various scope adjustment strategies. We select a mix of firms representing adoption of both diversifying and refocusing strategies.⁴ We want to test the hypothesized relationships on a sample of large firms. However, large firms are, in general, found to be more diversified (Denis et al., 1997), and diversification has been shown to be value destroying (Berger and Ofek, 1996; Servaes, 1996; Denis et al., 1997). By selecting firms that are both diversified and focused, we have a sample that will not yield results overly influenced by a particular subgroup of firms, namely diversified firms. For this purpose we measure the changes in the level of corporate diversification over the two year window between the initial year of our sample period, 1992, and the final year of the sample period, 1994. Of the 1528 firms, 234 firms changed their number of business segments reported over these two years. Of the 1294 firms that chose to keep their number of segments constant over the two year period between 1992 and 1994, there were 431 diversified firms that remained diversified without changing the number of business segments. The remaining 863 firms were single segment firms in the year 1992 as well as in the year 1994. We focus on a randomly selected subgroup of these 863 focused firms for the purpose of analyzing agency and governance as related to the strategy of maintaining a status quo.

Of the 234 firms that changed their business scope, there were 53 firms that were initially diversified and adopted further diversification. We name this group as G1. Further, there are 136 firms that were initially diversified but chose to refocus. We randomly selected every third firm from this group and categorize these 46 firms as G3. We found business diversification information on 45 firms that were focused in 1992 but became diversified by the year 1994. We name this set of firms as G4. Finally, we randomly—every 15th firm—selected 58 firms from a total of 863 initially focused firms that opted for status quo. That is, in 1994 also these firms

⁴ We find that in our sample focused and diversified firms have different characteristics. Focused firms have larger asset turnover and SG&A expense ratios. Focused firms tend to have fewer board seats but a larger ratio of inside directors than diversified firms. An appendix table with these tests is available from the authors upon request.

Table 1
Sample selection criteria

Step	Criterion	Number		
Step 1:	All NYSE/AMEX/NASDAQ firms with sales = \$100m	1528		
	A. Firms not changing number of business segments	1294		
	Focused firms remaining focused	863		
	Diversified firms remaining diversified	431		
	B. Firms reporting change in number of business segments	234		
Step 2:	Subgroup formation based on business diversification/focus			
Group	Initial	Random selection	Accounting information	Accounting and proxy information
G1	53	NA	32	32
G2	863	58 ^a	50	50
G3	136	46 ^b	43	41
G4	45	NA	25	23
Total	1097	NA	150	146

^a Every 15th firm selected.

^b Every 3rd firm selected.

remained single segment firms as they were in 1992. We group them together in G2. For our purpose a diversified firm is the one that has business operations spread over two or more SIC codes. A firm that reports single SIC segment is categorized as a focused firm. Our sample, therefore, includes not only diversified and focused firms, but also those firms that changed their business scope by either diversifying or refocusing.

We then collect our accounting data from COMPUSTAT. At this stage we lost some sample firms due to non-availability of required accounting information for the years 1992 and 1994. The groupwise breakdown of sample firms at this stage was as follows. The Group G1 had 32 firms, Group G2 had 50 firms, Group G3 had 43 firms and Group G4 had 25 firms. Therefore, the total sample size at this stage was 150 firms.

The next step involved gathering ownership and board characteristic information from proxy statements. We collected proxy information for both 1992 and 1994 from Lexis–Nexis database. Non-availability of the complete proxy data for the two sample years resulted in elimination of four additional firms. The final groupwise numbers of sample firms in G1, G2, G3 and G4, respectively, is 32, 50, 41, 23. Table 1 summarizes our sample selection procedure.

Finally, for an additional 28 firms we could not find data on SG&A expense. So, the final sample size for each year gets reduced to 118 firms, yielding a total of 236 data points over the two-year period.

3.2. Agency costs

Following ACL, our first measure for agency cost is the ratio of annual sales to total assets, a measure of asset utilization. This ratio measures management's

ability to employ assets efficiently. A high asset turnover ratio shows a large amount of sales and ultimately cash flow that are generated for a given level of assets. A low ratio would indicate that management is using assets in non-cash flow generating and probably value destroying ventures. While a higher asset turnover may be identified with efficient asset management practices and hence shareholders value creation, a lower sales to asset ratio reflects asset deployment for unproductive purposes. Therefore firms with considerable agency conflict will have lower asset turnover ratios relative to those having less agency conflict.

Our second measure of agency costs is slightly different from that used by ACL. Rather than utilizing ACL's ratio of operating expense to sales, we use SG&A expense scaled by total sales as our measure for managerial agency induced excessive pay and perquisite consumption. This accounting item includes salaries which are an important element of total benefits flowing to firm management. In addition, SG&A expenses may reflect managerial discretion in spending company resources. To the extent SG&A expenses include rents, utilities, lease payments, and supplies it directly reflects expenses on office buildings, furnishings, automobiles, and other similar facilities. Further, management may also use advertising and selling expenses to camouflage expenditures on perquisites. Therefore, higher agency conflict would be reflected in higher managerial discretionary expense on SG&A expenses.

3.3. Ownership structure

While the extent of managerial ownership of firm's equity indicates the degree of the congruence of management and shareholders' interest, the proportion of the outside blockholders' stake reflects the degree of external monitoring of managerial decisions. We use the log of percentage of total equity held by the executives and the board members of a firm as a measure of inside ownership. It is customary to use the log form on variables that are characterized by large variance and non-negative numbers. In addition to these considerations, given the ease of economic interpretation of coefficients of log-transformed variables, we use inside ownership proportion in log form. Firms with a large inside equity ownership stake should have lower agency conflict and lower agency costs. The lower agency costs should be reflected in relatively higher asset turnover and a relatively low discretionary expenses to sales ratio.

We use the proportion of equity held by outside blockholders as a proxy for the incentive and capability of outside equity holders to monitor managers. For this purpose, an outside block equity holder is a stockholder having 5% or more of the firm's equity and not linked to firm management in either business or family relationships. A larger blockholder equity stake would indicate greater incentives and capability with outside blockholders to monitor management. Thus, we expect a positive relation between the proportion of outside block ownership and asset utilization efficiency. Similarly, a higher outside ownership proportion acts as a deterrent to

management's wasteful expenses and hence should relate negatively to SG&A expenditures.

3.4. Control variables

We measure board size by determining the number of board members. We measure board composition by classifying board members as insiders, affiliated outsiders, and independent outsiders as in Byrd and Hickman (1992).

Following ACL, we control for firm size as well as firm leverage. While there is a case for economies of scale for SG&A expenses, variations in asset utilization may not be easily rationalized in terms of firm size. However, firm size may also capture business diversification in the case of large firms, so asset utilization may improve with size due to scope economies and synergy across different business lines. It is plausible to argue that firms are able to generate higher sales revenue across different businesses without having to duplicate the asset base for each business segment. We measure firm size in terms of natural log of annual sales revenue.

We use leverage as a control variable and measure it with each firm's debt to asset ratio. Leverage may be related to agency costs in large firms. If higher leverage is used as a bonding device and the fixed committed debt repayments constrain management's access to cash (Grossman and Hart, 1982; Jensen, 1986), we may find that the debt level actually relates negatively to agency costs. Since leverage ratios vary by industry, leverage may be a proxy for industry membership.

We also control for industry membership. Our 118 firms operate in 32 industries using two digit SIC codes. We include a dummy variable for each two digit SIC code for which there are at least two firms. This provides 17 industry variables in our multiple regression models.

3.5. Sample characteristics

In Table 2 we present descriptive statistics for our pooled sample as well as for the two sample years. A comparison of the agency cost statistics in our sample with those in the ACL sample reveals that our large firms, on average, have lower asset utilization efficiency than the small firms in ACL's sample. While they report an average asset turnover ratio of 4.76, our pooled sample mean is 1.43 and median is 1.24. Although not directly comparable, they report mean (median) percentage of operating expense to sales at 46.9 (42.0), while our pooled sample firms' mean (median) SG&A expense to sales percentage is 27.9% (19.5%).

The pooled mean (median) insider ownership is 15.62% (5.34%) indicating skewness, but outside block ownership is more evenly distributed with a mean (median) of 15.05% (11.02%). The average board is composed of 9.27 members, the proportion of independent outsiders is 58% and proportion of insiders on the boards is approximately 24%, for the pooled sample. The size distribution of our sample firm is also skewed as evidenced by the large differences between mean and median sales and total assets for both the sample years.

Table 2
Sample descriptive statistics

Variable	1992			1994			Pooled		
	Mean	S.E. Mean	Me- dian	Mean	S.E. Mean	Me- dian	Mean	S.E. Mean	Me- dian
Assets turnover	1.4640	0.0860	1.2400	1.3953	0.07430	1.2550	1.4296	0.0560	1.2400
SG&A expense ratio	0.2925	0.0430	0.1900	0.2658	0.0310	0.2000	0.2792	0.0270	0.1950
Inside ownership %	16.1923	2.0450	6.3500	15.0487	2.0009	5.3000	15.6205	1.4280	5.3400
Outside block ownership %	14.8804	1.5471	10.3500	15.2246	1.4683	11.8100	15.0520	1.0643	11.0200
Board size	9.2627	0.2687	9.0000	9.2966	0.2534	9.0000	9.2797	0.1843	9.0000
Ratio of independent outsiders	0.5681	0.0180	0.6000	0.5958	0.0190	0.6100	0.5819	0.0130	0.6000
Ratio of insiders	0.2524	0.0140	0.2050	0.2292	0.0120	0.2000	0.2408	0.0930	0.2000
Total sales (\$ millions)	2061.82	340.26	599.49	2145.33	320.26	710.30	2103.57	233.15	685.38
Total assets (\$ millions)	1946.86	381.45	464.13	2122.90	359.44	572.33	2034.88	261.56	523.04

The sample size is 118 firms for each of the two sample years, 1992 and 1994 and is 236 for the pooled results. The proportion of inside ownership is defined as percentage of equity stock held by the management and members of the board of directors. Outside block ownership is defined as percentage of total stock held by non-managerial and non-board members having 5% or more equity in firm. Independent outsiders are the members of the board that are neither on the management nor linked to the firm through any business or family relationship. Insiders on the board refer to company executives serving on the board of directors. Asset turnover is measured as ratio of annual sales to total assets. SG&A expense ratio is measured as the ratio of SG&A expense to total sales revenue.

4. Results and discussion

4.1. Univariate framework

In Table 3, we report univariate mean comparison test results of the sample firm subgroups categorized on the basis of above and below median values for ownership structure and board composition variables. Panel A presents the pooled results for 1992 and 1994. The table shows that firms with high inside ownership are more efficient in their asset utilization and have lower managerial discretionary expenditures relative to firms with below median inside ownership. Firms with above average inside ownership have asset turnovers of 1.58 and those with below inside ownership have asset turnover of 1.28. These differences are statistically significant at the 0.01 level and are in the hypothesized direction. Panel B shows the asset turnover results for 1992 and 1994. For 1994 the difference for the asset turnovers remain statistically significant between the two inside ownership categories, but the difference is insignificant in 1992 despite having the predicted nominal direction.

In Panel A we also show the pooled SG&A expense averages for firms with above and below median inside ownership. The means for these groups are significantly different when we use non-parametric tests, but the difference is not in the predicted direction. Firms with above (below) median inside ownership have a mean SG&A ratio of 0.28 (0.27). Thus, inside ownership does not seem to protect the firms from excessive SG&A expenses in the pooled sample.

Table 3
 Mean comparison of agency cost measures—analyzing high (above median) versus low (below median) ownership and board characteristics
 Panel A: Asset turnover and SG&A expense ratio-pooled sample

Ownership and board characteristic	Pooled asset turnover						Pooled SG&A expense ratio					
	Asset turnover mean of above variable median	Asset turnover mean of below variable median	Mean comparison <i>t</i> -stat	Mean comparison Mann–Whitney significance	Asset turnover median of above variable median	Asset turnover median of below variable median	SG&A expense ratio mean of above variable median	SG&A expense ratio mean of below variable median	Mean comparison <i>t</i> -stat	Mean comparison Mann–Whitney significance	SG&A expense ratio median of above variable median	SG&A expense ratio median of below variable median
Inside ownership	1.58 (0.09)	1.28 (0.06)	2.68***	0.007***	1.38	1.19	0.28 (0.03)	0.27 (0.04)	0.05	0.003***	0.22	0.16
Outside block ownership	1.44 (0.07)	1.41 (0.08)	0.224	0.345	1.33	1.20	0.31 (0.04)	0.24 (0.02)	1.36	0.812	0.19	0.19
Board size	1.33 (0.06)	1.55 (0.10)	1.89*	0.131	1.20	1.38	0.25 (0.02)	0.31 (0.05)	1.08	0.380	0.18	0.20
Proportion of insiders	1.53 (0.08)	1.27 (0.06)	2.29**	0.095*	1.32	1.19	0.25 (0.03)	0.31 (0.04)	0.993	0.550	0.19	0.19
Proportion of independent outsiders	1.37 (0.91)	1.49 (0.15)	1.10	0.900	1.23	1.29	0.25 (0.08)	0.30 (0.13)	0.795	0.853	0.19	0.30

Panel B: Asset turnover-yearwise

	1992						1994					
	Asset turnover mean of above variable median	Asset turnover mean of below variable median	Mean comparison <i>t</i> -stat	Mean comparison Mann-Whitney Significance	Asset turnover median of above variable median	Asset turnover median of below variable median	Asset turnover mean of above variable median	Asset turnover mean of below variable median	Mean comparison <i>t</i> -stat	Mean comparison Mann-Whitney significance	Asset turnover median of above variable median	Asset turnover median of below variable median
Inside ownership	1.59 (0.13)	1.33 (0.10)	1.52	0.119	1.38	1.20	1.56 (0.11)	1.23 (0.08)	2.33**	0.022**	1.38	1.16
Outside block ownership	1.42 (0.10)	1.50 (0.13)	0.47	0.987	1.23	1.25	1.46 (0.11)	1.32 (0.09)	0.91	0.201	1.38	1.15
Board size	1.38 (0.096)	1.56 (0.15)	1.05	0.47	1.21	1.31	1.29 (0.77)	1.53 (0.13)	1.64*	0.189	1.18	1.38
Proportion of insiders	1.59 (0.13)	1.26 (0.07)	1.92*	0.166	1.33	1.19	1.47 (0.10)	1.29 (0.09)	1.23	0.319	1.33	1.19
Proportion of independent outsiders	1.39 (0.91)	1.53 (0.15)	0.77	0.998	1.22	1.29	1.34 (0.08)	1.45 (0.13)	0.74	0.888	1.22	1.29

Table 3 (continued)
Panel C: SG&A expense ratio-yearwise

SG&A ex- pense ratio	1992						1994					
	SG&A ex- pense ratio mean of above vari- able median	SG&A expense ratio mean of below variable median	Mean compari- son <i>t</i> -stat	Mean compari- son Mann– Whitney signifi- cance	SG&A ex- pense ratio median of above variable median	SG&A ex- pense ratio median of below variable median	SG&A expense ratio mean of above variable median	SG&A ex- pense ra- tio mean of below variable median	Mean compari- son <i>t</i> -stat	Mean compari- son Mann– Whitney signifi- cance	SG&A ex- pense ratio median of above variable median	SG&A ex- pense ratio median of below variable median
Inside owner- ship	0.30 (0.06)	0.28 (0.06)	0.21	0.12	0.18	0.19	0.25 (0.02)	0.27 (0.05)	2.95***	0.52	0.22	0.15
Outside block ownership	0.32 (0.07)	0.25 (0.04)	0.75	0.68	0.19	0.18	0.30 (0.05)	0.22 (0.01)	1.27	0.93	0.19	0.19
Board size	0.24 (0.04)	0.34 (0.08)	1.125	0.38	0.18	0.19	0.25 (0.04)	0.27 (0.05)	0.24	0.71	0.19	0.20
Proportion of insiders	0.26 (0.05)	0.32 (0.07)	0.66	0.81	0.18	0.19	0.24 (0.03)	0.29 (0.05)	0.81	0.52	0.20	0.19
Proportion of independ- ent outsiders	0.26 (0.04)	0.32 (0.07)	0.67	0.98	0.18	0.19	0.25 (0.03)	0.27 (0.05)	0.38	0.79	0.19	0.20

The sample size is 118 firms for each of the two sample years, 1992 and 1994 and is 236 for the pooled results. The statistical significance of mean difference for asset turnover ratios and SG&A expenses between above and below median value for each variable is analyzed in terms of standard *t*-test. Figures in the parenthesis below the mean values are the standard errors. We also report the non-parametric Mann–Whitney test-statistics. The proportion of inside ownership is defined as percentage of equity stock held by the management and members of the board of directors. Outside block ownership is defined as percentage of total stock held by non-managerial and non-board members having 5% or more equity in firm. Independent outsiders are the members of the board that are neither on the management nor linked to the firm through any business or family relationship. Insiders on the board refer to company executives serving on the board of directors. Asset turnover is measured as ratio of annual sales to total assets. SG&A expense ratio is measured as the ratio of SG&A expense to total sales revenue.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

Panel C of Table 3 shows the SG&A expense ratios for 1992 and 1994 separately. Here, we find that inside ownership is unrelated to SG&A expenses in 1992. However, in 1994, the mean SG&A ratio is 0.25 for firms with above median inside ownership and is 0.27 for below median inside ownership. The difference is significant at 0.01 and in the predicted direction.

Overall, these univariate tests provide some evidence that inside ownership helps to align the interests of shareholders and managers. These results are, in general, consistent with ACL.

We also compare the asset turnover ratios and SG&A expense ratios for firms with above median to below median outside block ownership. The asset turnover for the pooled sample, as well as for 1994, is nominally larger for firms with above average block ownership. This difference is consistent with our expectation but is insignificant. For the pooled sample, SG&A expense ratio is higher for firms with above median outside block ownership, a result inconsistent with expectations but insignificant. Also, in both individual years, firms with above median block ownership have nominally larger SG&A expense ratios, but these results are statistically insignificant.

We also conduct similar tests using board of director control variables instead of ownership variables. Based on the findings in Yermack (1996) we would expect firms with smaller boards to have larger asset turnover ratios and smaller SG&A expense ratios. Our pooled results for asset turnover support this expectation. The asset turnover is larger for firms with below median board sizes and this difference is significant at the 0.10 level for the pooled sample. For 1992, the board size results are nominally consistent with the pooled data but statistically insignificant, but the 1994 results are statistically significant at the 0.10 level and show that firms with below median board sizes have larger asset turnover ratios. We do not find a significant relation between SG&A expense ratios and board size.

Firms with above average proportion of insiders on the board in our pooled sample have larger asset turnovers (1.53) than those with a below average proportion of insiders (1.27), and this difference is significant at the 0.05 level. This difference is significant at the 0.10 level for 1992 but insignificant in 1994. However, firms with above average proportions of inside board membership do not have significantly different SG&A ratios than those with below average proportion of board insiders.

Overall, our univariate results provide some evidence that higher inside ownership seems to achieve alignment of interests of the shareholders and the management. The relation between agency cost and ownership/governance variables is stronger for the asset turnover ratio than for the SG&A expense ratio. In the next section we add control variables to the analysis.

4.2. Multivariate framework

We relate ownership structure to agency cost measures in a multivariate analysis that permits controlling for other governance and structural variations across sample firms. It also allows us to investigate how effective are board mechanisms in enhancing asset utilization efficiency and in controlling managerial discretionary expenses.

Table 4
Multivariate regression analysis relating ownership and governance structure to asset utilization efficiency

Regression	Constant	Inside ownership	Outside block ownership	Board size	Ratio of independent outsiders	Ratio of board insiders	Firm size	Leverage	\bar{R}^2	M-stat (probability)
<i>Panel A: Pooled regression-random effects model</i>										
Without controlling for industry										
1	0.4718 (1.24)	0.1417 (2.91)**	0.0014 (0.61)	–	–	–	0.1284 (2.70)*	–0.0067 (3.17)***	0.08	0.5113
2	0.4193 (1.10)	0.1329 (2.72)***	0.0014 (0.62)	–	–	0.3724 (1.46)	0.1244 (2.62)**	–0.0065 (3.09)***	0.09	0.4410
3	0.5851 (1.51)	0.1362 (2.80)***	0.0015 (0.62)	–	0.2941 (1.54)	–	0.1384 (2.89)***	–0.0067 (3.18)***	0.09	0.6387
4	0.6881 (1.77)*	0.1282 (2.64)***	0.0017 (0.72)	–0.0450 (2.28)**	–	–	0.1593 (3.25)***	–0.0060 (2.85)***	0.10	0.3915
With industry controls										
5	0.3302 (0.68)	0.1144 (2.35)***	0.0008 (0.34)	–	–	–	0.1000 (2.12)**	–0.0056 (2.70)***	0.24	0.6075
6	0.2797 (0.57)	0.1094 (2.24)**	0.0008 (0.35)	–	–	0.2737 (1.08)	0.0979 (2.08)**	–0.0054 (3.63)***	0.24	0.7351
7	0.3863 (0.79)	0.1120 (2.30)**	0.0009 (0.38)	–	–0.2245 (1.17)	–	0.1080 (2.27)**	–0.0055 (2.70)***	0.24	0.6712
8	0.4966 (1.03)*	0.1070 (2.22)**	0.0011 (0.49)	–0.0437 (2.21)**	–	–	0.1298 (2.67)***	–0.0050 (2.45)***	0.26	0.4912

Panel B: Pooled regression-fixed effects model

										F-Stat (probability)
9	0.9176 (1.38)	0.1329 (1.67)*	-0.0002 (-0.09)	-	-	-	0.1285 (1.67)*	-0.0057 (-2.03)**	0.95	0.0001
10	0.9088 (1.37)	0.1198 (1.50)	-0.0002 (0.09)	-	-	0.3517 (1.23)	0.1327 (1.73)*	-0.0053 (1.89)*	0.95	0.0001
11	0.9237 (1.39)	0.1389 (1.76)*	0.000 (0.02)	-	-0.3398 (1.53)	-	0.1625 (2.04)**	-0.0053 (1.88)*	0.95	0.0001
12	0.9946 (1.44)	0.1326 (1.66)*	0.1345 (0.01)	-0.0117 (0.44)	-	-	0.1345 (1.72)*	-0.0054 (1.86)*	0.95	0.0001

The dependent variable, ratio of total annual sales to total assets, is the proxy for agency cost. The test variables are: (1) inside ownership defined as the ratio of equity owned by management and the board members to total equity, (2) proportion of total equity owned by outside block holders (having equity stake greater than or equal to 5% of total equity). The control variables include size of the board of directors, ratio of independent outsiders on the board, the ratio of insiders (company executives) on the board, leverage defined as ratio of debt to total assets, and firm size defined as the log of annual sales. The sample size is 118 firms for each sample year and becomes 236 in the pooled sample. We also control for industry effects using the two digit SIC code. We include a dummy variable for each of the 17 cases in which there are two or more firms in a two digit SIC code but do not show the coefficients to preserve space in the tables. The regressions pertain to pooled sample observations over the two years, namely 1992 and 1994.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

4.2.1. Agency in terms of asset turnover

In Table 4 we present the results of our pooled multivariate regression analysis relating asset turnover to ownership structure and internal governance mechanisms. The dependent variable in Table 4 is the asset turnover ratio. Models 1–4 are random effect models with various combinations of independent variables but not controlling for industry membership. In each of the four regressions the coefficients for inside ownership are positive and significant as predicted. The coefficients for outside block ownership are always statistically insignificant. Thus, these results support our univariate findings suggesting that firms with greater inside ownership have better asset utilization ratios.

The results lend support to the evidence in Ang et al. that larger inside ownership aligns the interests of shareholders and management and appears to lower agency costs.

The coefficients for the control variables for firm size and leverage are, respectively, positive and negative and are significantly related to the asset turnover ratio. Thus, the results indicate that larger firms are more efficient in their asset utilization and that higher leverage adversely affects firm efficiency. The coefficients for the control variable for board size are negative and significant. Thus, consistent with Yermack's (1996) results, we report that larger boards are detrimental to shareholders' interest since they are associated with reduced asset utilization efficiency. The coefficients for director composition are also statistically insignificant. Thus board composition does not appear to reduce agency costs.⁵

Regressions 5–8 present the same test but now include 17 dummy variables for industry membership. For any industry in which there is at least two firms with the same two digit SIC code, we create a dummy variable taking the value one for same industry membership and taking the value zero otherwise.

The industry controlled results in regressions 5–8 are qualitatively similar to those without the industry control variables. The coefficient for inside ownership is positive and significant in all four models after adding the industry control variables.

Similarly, while firm size is positively related to asset turnover, board size and leverage are negatively related to the asset turnover ratio.

Panel B of Table 4 contains the results for the fixed effects pooled regression model. We are unable to control for industry membership in the fixed effect model because industry dummy variables for a firm can be perfectly collinear with a fixed effect for that firm (Green, 2000).

Models 9–12 with the fixed effect model generally show results that are qualitatively consistent with our earlier findings. The coefficient for inside ownership is positive and statistically significant but now at only the 0.10 level in three of the four regressions. The coefficients for firm size and leverage retain their signs but their levels of significance drop below that in the earlier regressions.

⁵ There have been guidelines proposed that corporate boards need to be composed of a majority of independent outsiders. To see if this distinction mattered we created a dummy variable that takes the value 1 if the board has greater than 50% outsiders and re-ran our results. This variable is unrelated to either asset turnover or SG&A expenses.

Overall, our analysis relating inside ownership and agency costs measured in terms of asset utilization efficiency suggest, that, even after controlling for outside block holdings and board size and composition differences, inside ownership significantly explains the asset efficiency variations across large American corporations. More specifically, consistent with the agency hypothesis, higher inside ownership seems to better align management and shareholders' interests and is positively related with a higher level of asset utilization efficiency reflecting lower agency costs. While small board size significantly positively influences asset utilization efficiency, board composition seems inconsequential.

4.2.2. Agency in terms of discretionary SG&A expense

Following ACL's research design, our second proxy measure of agency cost is in terms of managerial discretionary expenses as measured by SG&A expenses to sales ratio. We expect a significantly negative association between inside ownership and SG&A expense ratio.⁶

In Table 5 we present the results of our analysis relating SG&A expense to ownership structure, controlling for other firm specific financial and governance characteristics. We constructed Panel A and Panel B in a similar manner as in Table 4. In models 1 through 4 we introduce test and the control variables to identify the effects of these variables on the SG&A ratio using the pooled regression random effects model without the industry control variables. In models 5–8 we add industry control variables to the random effects model, and in Panel B we report the fixed effects model results.

Inside ownership has a statistically insignificant coefficient in all 12 models. After controlling for block ownership, board variables, firm size and leverage we find no relation between inside ownership and the SG&A ratio. Firm size has a negative coefficient in all models suggesting that larger firms have relatively smaller SG&A ratios.

4.2.3. Economic significance

Our model can be categorized as a Lin-log model, in which the test variable (inside ownership) coefficient directly yields a measure of absolute change in the expected value of dependent variable (Gujarati, 1998), (asset turnover and SG&A to sales ratio) for a given proportionate change in the test variable. Therefore, we can interpret the inside ownership coefficients in terms of their economic significance in generating asset utilization efficiency gains and SG&A expense savings. For example, the coefficient of inside ownership is 0.128 (Table 4, Panel A, Model 4) and implies that for a 1% increase in inside ownership there will be 0.01×0.128 increase in

⁶ One possibility is that larger SG&A expenses may indicate larger growth opportunities. In addition to our other control variables, we added each firms' market to book ratio to control for anticipated growth. This variable did not change our conclusions or findings. Firm size and inside ownership are statistically significant. We also re-ran this test including the industry dummy variables. Firm size and inside ownership retain their significance.

Table 5
Multivariate regression analysis relating ownership and governance structure to the ratio of SG&A expenses to sales revenue

Regression	Constant	Inside ownership	Outside block ownership	Board size	Ratio of independent outsiders	Ratio of board insiders	Firm size	Leverage	\bar{R}^2	M -stat (probability)
<i>Panel A: Pooled regression-random effects model</i>										
Without controlling for industry										
1	0.7448	-0.0037 (4.26)***	-0.0007 (0.17)	- (0.74)	-	-	-0.0640	-0.0007 (2.93)***	0.04 (0.80)	0.3948
2	0.7426 (4.22)***	-0.0041 (0.18)	-0.0007 (0.74)	-	-	0.0120 (0.11)	-0.0641 (2.93)***	-0.0007 (0.79)	0.04	0.5180
3	0.7580 (4.28)***	-0.0044 (0.20)	-0.0007 (0.72)	-	-0.0425 (0.50)	- (2.80)***	-0.0627 (0.80)	-0.0007	0.04	0.5190
4	0.7093 (3.94)***	-0.0016 (0.07)	-0.0008 (0.79)	0.0073 (0.82)	-	-	-0.0689 (3.04)***	-0.0009 (0.93)	0.04	0.4585
With industry controls										
5	0.6833 (2.83)***	-0.0113 (0.48)	-0.0010 (0.95)	-	-	-	-0.0591 (2.60)***	-0.0008 (0.91)	0.12	0.4401
6	0.6758	-0.0122 (2.78)***	-0.0010 (0.51)	- (0.94)	-	0.0336	-0.0591 (0.30)	-0.0008 (2.59)***	0.12 (0.89)	0.4797
7	0.6885 (2.85)***	-0.0117 (0.49)	-0.0009 (0.92)	-	-0.0377 (0.44)	-	-0.0572 (2.47)**	-0.0008 (0.90)	0.12	0.5473
8	0.6466 (2.65)***	-0.0099 (0.42)	-0.0011 (1.04)	0.0098 (1.05)	-	-	-0.0656 (2.78)***	-0.0010 (1.06)	0.12	0.4839

Panel B: Pooled regression-fixed effects model

										F-stat (probability)
9	0.5530 (1.95)*	0.0221 (0.66)	-0.0010 (0.93)	-	-	-	-0.0756 (2.32)**	-0.0018 (1.55)**	0.96	0.0001
10	0.5532 (1.94)*	0.0224 (0.66)	-0.0010 (0.92)	-	-	-0.0080 (0.92)	-0.0757 (2.31)**	-0.0018 (1.54)	0.96	0.0001
11	0.5542 (1.95)*	0.0232 (0.69)	-0.0010 (0.87)	-	-0.0633 (0.67)	-	0.0693 (2.03)**	-0.0017 (1.47)	0.96	0.0001
12	0.4800 (1.64)	0.0223 (0.66)	-0.0012 (1.09)	0.0111 (0.98)	-	-	-0.0813 (2.45)***	-0.0021 (1.74)*	0.96	0.0001

The dependent variable, ratio of the SG&A expense to sales revenue, is the proxy for agency cost. The test variables are: (1) inside ownership defined as the ratio of equity owned by management and the board members to total equity, (2) proportion of total equity owned by outside block holders (having equity stake greater than or equal to 5% of total equity). The control variables include size of the board of directors, ratio of independent outsiders on the board, the ratio of insiders (company executives) on the board, leverage defined as ratio of debt to total assets, and firm size defined as the log of annual sales. The sample size is 118 firms for each sample year and becomes 236 in the pooled sample. We also control for industry effects using the two digit SIC code. We include a dummy variable for each of the 17 cases in which there are two or more firms in a two digit SIC code but do not show the coefficients to preserve space in the tables. The regressions pertain to pooled sample observations over the two years, namely 1992 and 1994.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

the sales to assets ratio. Thus for an average firm with median asset size of \$523.4m, the resulting change in sales revenue will be $(0.01 \times 0.128 \times 523.4)$ 0.67m.

In sum, the results imply that for an average size firm with median assets size of \$523.4m a 1% increase in insider ownership may be associated with a \$0.67m gain in sales revenue, without expanding the existing asset base. In terms of savings on SG&A expenses, given the estimated coefficient value of 0.0016 (Table 5, Panel A, Model 4), for a firm with median sales revenue of \$685.38, a 1% increase in inside ownership may be associated with an SG&A expense reduction of $(0.01 \times 0.0016 \times 685.35)$ \$0.011m. These increased cash inflows will eventually get reflected in higher earnings per share and hence higher share price and market value of the firms.

4.2.4. Orthogonalized regressions

While we have carefully constructed the regressions to avoid the inclusion of highly correlated independent variables we provide orthogonalized regressions to demonstrate the robustness of our findings. To avoid the problems caused by

Table 6
Multivariate orthogonal regression analysis relating ownership and governance structure to asset utilization efficiency

Regression	Constant	Inside ownership	Outside block ownership	Board size	Firm size	Leverage	R ²	M-stat (probability)
<i>Panel A: Pooled regression-random effects model</i>								
Without controlling for industry								
1	1.8399 (8.09)***	0.0944 (2.08)**	-0.0016 (0.64)	-0.0447 (2.28)**	0.1678 (3.33)***	-0.0063 (2.99)***	0.10	0.3688
With industry controls								
2	1.4085 (4.24)***	0.0816 (1.84)*	-0.0015 (0.59)	-0.044 (2.24)**	0.1425 (2.87)***	-0.0052 (2.57)***	0.26	0.3640
<i>Panel B: Pooled regression-fixed effects model</i>								
3	1.8503 (3.94)***	0.1040 (1.40)	-0.0044 (1.35)	-0.0151 (0.58)	0.2427 (2.87)***	-0.0054 (1.94)*	0.95	F-stat (probability) 0.0001

The dependent variable, ratio of total annual sales to total assets, is the proxy for agency cost. The test variables are: (1) inside ownership defined as the ratio of equity owned by management and the board members to total equity, (2) proportion of total equity owned by outside block holders (having equity stake greater than or equal to 5% of total equity). The control variables include size of the board of directors, ratio of independent outsiders on the board, the ratio of insiders (company executives) on the board, leverage defined as ratio of debt to total assets, and firm size defined as the log of annual sales. The sample size is 118 firms for each sample year and becomes 236 in the pooled sample. We also control for industry effects using the two digit SIC code. We include a dummy variable for each of the 17 cases in which there are two or more firms in a two digit SIC code but do not show the coefficients to preserve space in the tables. The regressions pertain to pooled sample observations over the two years, namely 1992 and 1994.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

possible correlation among three variables, namely, inside ownership, block ownership, and firm size we orthogonalize these variables by replacing the block ownership and size variables by their respective residuals. Specifically, while the block ownership residuals are obtained by regressing size and inside ownership on block ownership, firm size residuals are obtained by regressing block ownership and inside ownership on firm size. These regressions appear in Table 6 for the asset turnover ratio and Table 7 for the SG&A ratio.

Table 6 shows that the coefficient for inside ownership is positive and significant when regressed against asset turnover in the random effects model. The orthogonalized fixed effects model produces a positive but statistically insignificant coefficient for inside ownership. The control variable coefficients are similar in size and significance to the ones obtained in the non-orthogonal models.

In Table 7, the orthogonalized regressions produce insignificant coefficients for inside ownership in all three models. The control variable coefficients are also similar in size and significance to the ones obtained in the non-orthogonal models.

Table 7
Multivariate regression analysis relating ownership and governance structure to the ratio of SG&A expenses to sales revenue

Regression	Constant	Inside ownership	Outside block ownership	Board size	Firm size	Leverage	\bar{R}^2	M-stat (probability)
<i>Panel A: Pooled regression-random effects model</i>								
Without controlling for industry								
1	0.2042 (1.97)**	0.0119 (0.56)	0.0008 (0.77)	0.0080 (0.91)	-0.0080 (3.41)***	-0.0008 (0.85)	0.05	0.4028
Controlling for industry								
2	0.1780 (1.03)	0.0030 (0.14)	0.0005 (0.45)	0.0104 (1.13)	-0.0763 (3.12)***	-0.0009 (1.00)	0.13	0.3875
<i>Panel B: Pooled regression-fixed effects model</i>								
Without controlling for industry								
3	-0.0562 (0.28)	0.0451 (1.42)	0.0010 (0.77)	0.0108 (0.97)	-0.1068 (2.96)***	-0.0019 (1.63)	0.96	0.0001

The dependent variable, ratio of the SG&A expenses to sales revenue, is the proxy for agency cost. The test variables are: (1) inside ownership defined as the ratio of equity owned by management and the board members to total equity, (2) proportion of total equity owned by outside block holders (having equity stake greater than or equal to 5% of total equity). The control variables include size of the board of directors, ratio of independent outsiders on the board, the ratio of insiders (company executives) on the board, leverage defined as ratio of debt to total assets, and firm size defined as the log of annual sales. The sample size is 118 firms for each sample year and becomes 236 in the pooled sample. We also control for industry effects using the two digit SIC code. We include a dummy variable for each of the 17 cases in which there are two or more firms in a two digit SIC code but do not show the coefficients to preserve space in the tables. The regressions pertain to pooled sample observations over the two years, namely 1992 and 1994.

***, **, * Significant at the 1%, 5%, and 10% levels, respectively.

5. Summary and conclusions

In this paper we extend Ang et al.'s (1999) empirical analysis of the relation between ownership structure and agency costs. While they report a negative relationship between inside ownership and the absolute and relative measures of agency costs for their sample of small businesses, we analyze a sample of large American corporations and report somewhat similar findings. Using slightly different measures of agency costs, and controlling for ownership structure and governance mechanism differences across firms, we also find that higher inside ownership aligns managerial and shareholders' interests and lowers the agency costs in large corporations when we define agency costs in terms of asset utilization. However, the relation is generally insignificant when we define agency costs as discretionary expenses. One possible reason for the SG&A expense ratio not being significantly influenced by ownership and governance variables may be that it is not as visibly related to cash flows generated by firms as is sales revenue. Due to information asymmetries and informational lags, outside shareholders and boards may be more observant of cash flow generation and hence sales to assets ratios than accounting costs and profits. This may be especially true of large firms in our sample relative to small businesses in Ang et al.'s sample since small businesses are more closely scrutinized by lenders—more likely dominated by banks—and by equity holders due to the less diffused ownership structure of these small firms.

Analyzing multiperiod data for the years 1992 and 1994, we not only study inside ownership structure as a determinant of agency costs, but also investigate the role of outside block equity holders in disciplining the management. We report that proportion of equity held by outside block owners does not relate to agency costs as measured by asset utilization and discretionary expense ratios. This insignificance of linkage between block ownership and agency cost measures may be because these agency variables may not completely capture the performance metrics that are evaluated by the outside block holders when evaluating firm performance.

Our analysis also controlled for the role of board size and composition in alleviating agency problems. Board composition does not seem to significantly influence agency costs; higher executive representation on the board does not lead to higher agency costs in terms of managerial discretionary expenses. We find that board size is negatively related to asset turnover, but unrelated to discretionary expenditures. This evidence is consistent with the notion that large boards fail to be effective monitors and is similar to the predictions of Jensen and Meckling (1976), as well as, in line with empirical evidence provided by Yermack (1996), Eisenberg et al. (1998), and Bhagat and Black (1996) among others. It should also be noted that board size may be a proxy for something else. For example, board composition, committee structure, and firm age may all impact board size and thus may be the real drivers of the relation we observe between board size and agency costs. Future research could examine this issue.

An interesting finding pertains to the role of leverage in determining agency costs in large firms in contrast to that in small businesses. Ang, Cole and Lin report lower agency costs for firms with higher leverage. We find in large firms that leverage is

negatively related to one of our measures of agency cost. We argue that this difference in findings may be a consequence of differential intensity of monitoring by private (bank) debt holders in the case of small firms and public debt holders in the case of large firms. It may also be related to the difference in the extent of debt financing between small and large firms.

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