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OWNERSHIP CONCENTRATION AND THE MARKET FOR CORPORATE CONTROL

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ABSTRACT

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This paper examines the forces which affect the equilibrium structure of corporate ownership. Empirical findings suggest that the level of ownership concentration and changes in ownership concentration respond to factors which are related to the firm's derived demand for monitoring. There is substantial evidence that ownership structure changes in advance of announcements of takeover bids, and that the level of block shareholdings may facilitate the market for corporate control. There is also evidence that large adjustments may substitute for takeovers. Discussion focuses on ways to separate the efficiency responses of ownership concentration from entrenchment theories.

Ownership Concentration and the Market For Corporate Control

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A fundamental problem facing any organization is that of delegated authority. The appointed "managers" are charged with serving the good of their constituency. However, since the good is a public good no single individual will have sufficient incentive to devote adequate resources to monitoring the agents of the group. Examining the agency conflicts confronted by the modern corporation, Demsetz and Lehn (DL) propose that concentrating the ownership structure of the firm facilitates monitoring. As a single owner ties a greater fraction of his wealth to the fortunes of the corporation, his incentive to shirk monitoring responsibilities declines. The observed structure of ownership is the outcome of an equilibrium process. The gains from improved management are balanced against the costs of owner management -- explicit costs of exercising control and the implicit cost of risk borne in the under-diversified portfolios of large-block owners. By internalizing the gains from more effective management, concentrated ownership gets around the free-rider problems inherent in diffuse ownership structures.

Implicit in the DL analysis is the notion that the concentration of ownership interests is a substitute for alternative (costly) solutions to the corporation's agency problem -- e.g. the use of profit-sharing/contingent bonus plans or reliance on the external market for corporate control. In particular, finding evidence that concentrated ownership is used as a

substitute for alternative forms of monitoring would separate the hypothesis that "concentrated ownership is valuable for monitoring" versus "concentrated ownership is valuable for the resulting access to inside information". Indeed, several studies have shown that insiders reap higher-than-average returns on their stock positions (See Demsetz (1986), Jaffee (1974) and Finnerty (1976)).

Shleifer and Vishny (SV)(1986) propose an alternative to the DL hypothesis. In their model the presence of concentrated ownership facilitates monitoring indirectly. Rather than assuming that concentrated owners themselves monitor managers, SV assert that the existence of major shareholders is a prerequisite for a takeover. Their model addresses the tender offer free-rider problem which was the focus of Grossman and Hart (1980). If the value of an outsider's plans are recognized by diffuse stockholders, rational individual action dictates that shares are not tendered for less than their expected future value. Faced with positive transaction costs, outsiders are unable to overcome the free-rider problem and no acquisition occurs. Large shareholders, as major consumers of the public good, facilitate third-party takeovers by promising to split the gains with the bidder. Thus, where DL suggest that concentrated ownership may be a substitute for alternative control measures, SV suggest that the presence of large block shareholders is valuable to the extent that they facilitate the use of the external market for corporate control. This paper re-examines the determinants of ownership structure in an attempt to shed some empirical light on these competing hypotheses.

II. The Task at Hand

The purpose of this paper is to examine the equilibrium determinants of a corporation's ownership structure. Focus is centered on the role of large shareholders in attenuating potential agency conflicts between owners and managers. There are three thrusts to the empirical analysis that follows:

1> **What determines the level of ownership concentration?** The Demsetz and Lehn (DL) study is extended to examine the relationship between ownership concentration and firm operating characteristics which exacerbate the potential for managerial malfeasance. The cross sectional analysis is then extended to examine the extent to which the incentive to concentrate shareholdings is derived from a future interest in initiating a tender offer for the firm. A complementary relationship between ownership concentration and the incidence of takeovers is a direct implication of the SV theory.

2> **Comparative Statics: Why Does Ownership Concentration Change Over Time?** As factors which affect the magnitude of agency conflicts change, so too should ownership structure¹. Annual and quarterly changes in ownership concentration are linked to changes in "agency-conflict" measures. The pattern of share ownership preceding the announcement of a takeover contest is also examined.

¹Time series analysis of ownership concentration may also get around problems inherent in cross-sectional studies. First, specification errors and measurement problems can lead to biased interpretations of the economic importance of the regressors specified in the cross-sectional regressions. Provided that these errors do not vary systematically over time, examining the comparative statics of the hypothesized model will attenuate the econometric problems. Furthermore, if ownership structure changes significantly over time, the dynamic adjustment to new equilibria can only be examined in a time series context.

3> Do Large Shareholdings Facilitate the Market For Corporate Control? Or, do less extreme adjustments in ownership concentration permit the use of monitoring and control mechanisms that substitute for takeovers². The effects of ownership structure on the likelihood of a takeover are empirically examined .

III. What Do the Numbers Look Like?: An Overview of Ownership Structure

Theoretical insights into the relationship between ownership structure and firm performance have spawned numerous empirical investigations. Table I summarizes some of the recent empirical evidence on who owns how much of a corporation's common stock. Conventional wisdom from Berle and Means to present day has typically suggested that the ownership of the largest corporations would be highly dispersed and atomistic. The evidence is surprising. Among the largest U.S. corporations (Fortune 500), the five largest shareholders control nearly 25% of outstanding common shares. The largest shareholder, on average, holds over 15% of the corporation. While these estimates are influenced by a few extreme observations -- median ownership concentration is 20% for the top 5 shareholders and 6% for the largest single owner -- they do not suggest a scattered class of owners with little incentive or ability to monitor the affairs of the corporation.

The efficiency effects of concentrated ownership will likely depend on who owns the shares as well as how many are owned. Both the incentive to invest resources in monitoring and the costs of owning a controlling

²Tender offers can be viewed as an extreme response to an under-concentrated ownership structure.

interest depend on the fraction of the owners wealth that is tied to the firm (Murphy (1985), Stulz(1988))³. A given ownership interest is likely to represent a smaller fraction of an institution's wealth than it would for an individual. Share ownership by management aligns incentives, on one hand, but may facilitate managerial entrenchment if "too many" shares are owned (Morck, et al. 1988).

Evidence suggests that the Board will control 10% of the shares, on average, with 3-4% of the firm held by the CEO and President. Increasingly institutions have become major shareholders in larger corporations, controlling 20-30% of voting shares. In 45% of all corporations the largest shareholder is an institution or pension plan.⁴

The ownership concentration data used in this study are taken from ownership data published in Computer Direction Advisors (CDA) Spectrum 5 and Spectrum 6 periodicals. CDA compiles its information from 13-d, 13-G and 14D-1 filings with the SEC. To provide comparability with previous studies, a "4-owner concentration" was computed on a quarterly basis from 1981-1985 for each firm in the CDE 1980 Fortune 500 data base. As noted in Table 1, the measures of ownership structure derived from the Spectrum sample are

³Holding wealth constant, undiversified risk will rise as shareholdings in a single corporation increase. Restrictions on personal borrowing or other wealth constraints will also increase the cost of concentrating ownership.

⁴The behavior of institutional shareholders is not examined in this paper. Pound (1988) notes that institutional shareholders typically side with management in proxy control contests. In contrast, Brickley, Lease and Smith (1988) find that institutional shareholders are more likely to vote on antitakeover amendments than diffuses shareholders and that institutions typically oppose measures which "appear to harm shareholder interests". Brickley ,et. al. note, however, that the existence of a business relationship with the firm tends to align institutional votes with management's position in proxy contests.

highly correlated with the CDE sample measures.

IV. Takeover Activity

An efficient market for corporate control will limit divergence from profit maximization, even where internal monitoring mechanisms have failed to align management and shareholder interests. Table 2 examines the incidence of takeover activity over the period 1981-1985 for the CDE 1980 Fortune 500 firms. A takeover bid is defined as a formal announcement of the intent by some party to obtain control of the firm by acquiring a fraction of voting shares. It includes both successful and unsuccessful bids but does not include "rumors" of the intent to acquire significant shareholdings. At present no distinction is made between bids initiated by management, existing blockholders or outsiders.

The structure of firm ownership can affect the likelihood of a takeover contest. On one hand, following DL, large blockholders will promote efficient monitoring of management decisions. Similarly, management shareholdings act to align the incentives of managers with those of shareholders. The alignment of incentives hypothesis suggests that firms exhibiting more concentrated ownership structures will, *ceteris paribus*, be less likely to be taken over simply because they are less likely to suffer from shirking on the part of either managers or owners.

However, given that the firm is an attractive acquisition target, costly defensive strategies may be more readily implemented when management controls significant voting shares. Theoretical work by Stulz (1988) and Harris and Raviv (1988) suggest that concentrated shareholdings by management can reduce the probability of a takeover due to managerial entrench-

ment.⁵

As seen in Table 2, target firms were characterized by significantly lower pre-takeover ownership concentration than were those firms that escaped external control contests. Management holdings were also significantly lower among targets. Furthermore, target firms were more likely to have performed poorly than were non targets-- as measured by risk and market-adjusted share prices. The simple descriptive statistics are unable to separate the hypothesis that less concentrated firms suffered greater shirking due to under-concentration of ownership, from the hypothesis that over-concentration of ownership in the hands of self-interested managers inhibited the efficient operation of the market for corporate control.

V. The Data

The ownership concentration data used in this study come from 2 sources. Estimates of ownership concentration in 1980 are derived from the Corporate Data Exchange Stock Ownership Directories: Fortune 500, Energy, and Banking and Finance. CDE compiled holdings data from SEC forms 3, 4, 13-D, 13-G and 14D-1, proxy statements, pension fund holdings, foundation endowment portfolios, and prospectuses. All publicly identifiable shareholders with stakes exceeding 0.2% of voting shares are included in the CDE data base. The CDE data were the basis for the DL study and most other empirical studies on ownership structure to date.

⁵As the share of votes controlled by management rises, so does the premium that a rational bidder expects to pay in order to gain control. The probability of a successful bid, however, falls. This leads to a non-monotonic relationship between firm value and management ownership. Initially value rises as management shareholdings rises but then falls. Morck, Shleifer and Vishny (1988) discover a similar empirical relationship between the share of management holdings and firm value, as measured by Tobin's Q.

Quarterly time-series data on ownership concentration from 1981-1985 were compiled from Computer Directories Advisors Spectrum 5 and Spectrum 6 publications. Ownership concentration figures are compiled for all firms in the DL study. Hence, the sample used in this study is virtually the same as was used in DL and most other studies that rely upon the CDE data. Spectrum 5 is published monthly and contains information on five-percent beneficial owners from SEC filings 13-D, 13-G and 14D-1. Running accounts of ownership levels are reported each month, as are major recent transactions by beneficial owners. Spectrum 6 summarizes holdings of corporate insiders, as reported to the SEC in forms 3 and 4. The Spectrum data will not include many of the smallest institutional owners that are included in the CDE survey.

The relation between the CDE and Spectrum measures of ownership concentration are examined in Table 3. A5, the share of the firm held by the 5 largest shareholders -- the DL measure of ownership concentration -- is regressed on the measures of ownership concentration constructed from the Spectrum data for 1981:Qtr 1, 1983:Qtr 1, and 1985: Qtr 1. The Spectrum measures are four-owner concentration ratios. The regressions provide summary measures of correlation, bias and also supply insight into the extent to which ownership concentration changes over time.

The correlation between the CDE 1980 measures and the 1981 Spectrum measure is reasonably high -- over .80 . On average the Spectrum measure is 5% lower than the CDE measure, and increases by .95 for every 1% rise in ownership concentration measured by CDE. The association weakens over time, suggesting that ownership concentration levels are not particularly stable over the 6-year period from 1980-1985. By 1983 the correlation between the

two measures drops to .56 and by 1985 it is .52. There is some indication of a secular rise in ownership concentration over the period.

Data on the financial and operating characteristics of the firms are compiled from Compustat. The performance of common stock is evaluated using monthly returns data from the Center for Research on Securities Prices (CRSP). Takeover activity, successful and unsuccessful, was identified from the Wall Street Journal Index. The explanatory data set is discussed in greater detail, below. Table 4 provides simple descriptive statistics on the variables used in this study.

VI. Empirical Tests

A. Determinants of the Level of Ownership Concentration

If large block shareholders mitigate owner-manager agency problems then the observed level of ownership concentration in the firm should be related to (1) factors which make large block holdings relatively less costly than other incentive alignment schemes (a substitution effect) and (2) factors which increase the potential magnitude of agency conflict (a scale effect).

Demsetz and Lehn postulate that owner control should be more valuable in firms where rapid, uncertain changes in the operating environment make it difficult to evaluate the effort of management. At the same time, uncertainty and instability make simple incentive contracts inappropriate, while complex contingent contracts become increasingly costly. As the volatility of a firm's operating environment rises, ownership concentration is predicted to rise. The cost of concentrated shareholdings also rises directly with volatility. Non-systematic risk is borne by large shareholders with under-diversified portfolios. Eventually the cost of risk due to portfolio

specialization outweighs gains that accrue from better monitoring, limiting efficient levels of ownership concentration.

Regulation, by design, restricts the potential actions of a firm, and by extension may restrict the actions of managers.⁶ Hence, DL expect, and find, that the benefits of concentrated ownership are less among regulated firms.

Myers (1977) and Alchian and Woodward (1988) contend that the magnitude of agency problems is affected by the characteristics of a firm's investment opportunities. While Myers' main focus is on the potential for agency conflicts between bondholders and equity claimants, he notes that "the decision to exercise an (investment) option is not trivial and automatic" since it depends on the incentive structure facing the manager. Hence, the greater the "investment opportunity set" facing a firm of a given size, the greater the potential returns from monitoring the decisions of management. Alchian and Woodward stress that the extent to which assets can be cheaply and easily redeployed increases the potential for agency conflict and hence, the returns to monitoring.

Similarly, agency problems will be intensified whenever the link between the actions of management and their effect on the future value of the firm becomes more difficult to observe. The outcome of capital investment, R&D, and advertising expenditures are uncertain. Considerable time may elapse, or spurious economic factors may intervene between the decision and the outcome. As the environment becomes noisier, control

⁶ Empirically, regulated firms have less volatile earnings streams. Contemporary theories of regulation contend that regulated prices will buffer profit swings.

becomes more difficult. Hence, the intensity of R&D and investment expenditures should be linked to the potential magnitude of control problems.

Finally, according to SV, agency conflicts are mitigated through large shareholdings in a less direct fashion. The ability to internalize any gains from the redeploying firm assets gives large blockholders greater incentive to invest in finding superior operating strategies. Majority control is required to affect the firm's strategic policy. Hence, the probability of a takeover varies directly with the level of ownership concentration. Note that where DL focus on the control potential that resides with large, but less-than-majority blocks, SV focus on takeovers as the means of exercising control over the firm's assets.

Let:

$$\text{OCR} = f(\text{instability, regulation, investment opportunity/intensity, probability of future takeover})$$

Where OCR is defined as the ownership concentration ratio. Two measures are used in this study.

A5 = Percentage of shares controlled by the five largest shareholders.

Source: CDE Stock Ownership Directories: Banking and Finance

(1980), Energy (1980) and Fortune 500 (1980). A5 is one of the

measures of ownership concentration employed by DL.⁷

⁷DL employ a logistic transformation of A5 to normalize the distribution of error terms. Specifically:

$$\text{LA5} = \log [\text{A5} / (100 - \text{A5})]$$

YYQCR4 - The percentage of shares controlled by the top 4 shareholders, where YY denotes the year, YY = (1981, .. ,1985), Q denotes quarter, Q = (1,2,3,4). Source: Spectrum 5 publication, Computer Direction Advisors. Spectrum 5 is compiled from SEC form 13-D, 13-G, and 14D-1 filings and is published monthly. March publication = Q1, June = Q2, September=Q3 and December=Q4. YYQCR4 is calculated for the DL sample for 1981:1 - 1985:4.

Explanatory variables include:

SE - Non-systematic risk--i.e. the standard deviation of the error of a market model estimated on monthly common stock returns. Source: Center for Research in Securities Prices (CRSP). Computed annually, 1980 - 1985. (DL variable)

SE2 - SE squared. (DL variable)

EQUITY - Market value of common equity (\$1000's), annual average, computed for 1980 - 1985 , source :CRSP. (DL Variable)

UTILITY - Dummy variable equals one if the firm is a regulated utility, equals zero otherwise. (DL variable)

FININST - Dummy variable equals one if the firm is a regulated financial institution, equals zero otherwise. (DL variable)

MEDIA - Dummy variable equals one if the firm is involved in broadcast or news media ownership. Measures amenity potential. (DL variable)

BID81 - Dummy Variable equals one if the firm received a takeover bid in 1981.

BID8283 - Dummy variable equals one if the firm received a takeover bid in 1982-83.

BID8485 - Dummy variable equals one if the firm received a takeover bid in 1984-85.

R&D/EQ - Ratio of expenditures on R&D deflated by the market value of equity of the firm. A proxy for the investment opportunity set/investment intensity. Source: Compustat.⁸

INV/EQ - Ratio of capital expenditures deflated by the market value of equity. A proxy for investment intensity/ investment opportunities. Source: Compustat.

OLS is used to estimate the relation between the foregoing factors and ownership concentration. Results are reported in Table 5. Four regressions

⁸Smith and Watts (1986), Brickley, et al , (1988) and Titman and Wessels (1986) employ very similar measures in an effort to measure the investment opportunity set. Admittedly, all ex post measures of actual investment decisions are very poor measures of the potential investment opportunities faced by the firm. In particular, if investment decisions are systematically made which do not maximize the value of the firm then there will be no relationship between observed investment and the size of the investment opportunity set.

are reported. The DL results are re-estimated using the original DL concentration data, A5, and then using the CDA Spectrum Data for the first quarter in 1981. When the dependent variable is A5, the independent regressors take on 1980 values. When the dependent variable is 811CR4, the explanatory variables take on values for the preceding calendar year (1980). Next the analysis is extended to include measures of the firm's investment opportunity set and the binary variables indicating whether the firm became a takeover candidate in the period 1981-85. Again the determinants of ownership concentration are examined using both the DL A5 measure of ownership concentration and the Spectrum measures (81CR4).

The DL variables take on the expected sign and, excepting EQUITY, are statistically significant in all regressions. The instability of the environment is, statistically, the most powerful determinant of ownership concentration. As the instability of the firm's cash flows rise, the benefits from direct monitoring increase as well. A one standard deviation increase in SE suggests a 10-20% increase in ownership concentration levels.

The measured effect of volatility on ownership structure is largest for the DL regressions and also larger when the takeover and investment variables are omitted. This is as expected. Idiosyncratic risk rises prior to takeover contests. Failure to control for impending takeovers inflates the measured effect of the SE variables in the DL regressions.

The effect of instability is not monotonic. The coefficient on SE2 is negative and significant. As DL note, portfolio specialization increases the risk borne by large shareholders. The marginal costs of ownership concentration outweigh the marginal benefits, however only for the most

volatile firms -- i.e. those with values of SE exceeding .18 - .23. Regulation, ceteris paribus, reduces the level of ownership concentration as does the size of firm.

The takeover dummies contribute to the explanation of ownership concentration. Firms which subsequently received a takeover bid in 1981 had significantly higher levels of ownership concentration 9 - 12 months prior to the first public announcement of the bid. The coefficient on BID81 suggests that firms destined to receive takeover bids in the next 12 months have 10 - 20% more of their voting shares concentrated in the hands of the top 4-5 owners. The large coefficient on BID81 indicates that there is a significant, transitory rise in ownership concentration levels prior to the public announcement of a takeover bid. The acquisition of shares in the market prior to a bid reduces the number shares which must be acquired in a tender offer, reducing the cost of the acquisition. The magnitude of the increase is surprising since there is value to secrecy. SEC regulation requires disclosure of shareholdings when a 5% beneficial stake is reached.

The coefficients on the BID8283 and BID8485 variables take on negative signs, and in the case of the 1984-85 dummy variable, the coefficient estimates are both economically and statistically significant. Firms that received takeover bids in 1982-85 were on average, less concentrated than their counterparts in 1980-81. Firms receiving bids in 1984-85 had, on average, 5 - 6 % less of their voting stock in the hands of large blockholders in 1980. Targets in 1982-83 were 2-3% less concentrated. One way to interpret this finding is that firms that had lower levels of ownership concentration than would otherwise be predicted using the DL framework were more likely to become subsequent takeover targets. The lack of monitoring by

owners leads to monitoring via the market for corporate control. The obvious question remains why ownership levels did not adjust to "equilibrium" levels -- short of a takeover attempt -- if the firm was incurring excessive agency costs. Subsequent sections of this paper investigate the behavior of ownership concentration more closely preceding takeover attempts. The signs on the BID8283 and BID8485 variables also reinforce the finding that much of the rise in ownership concentration that precedes a takeover contest is transitory. When the relationship between ownership structure and takeover activity is examined over a 2-5 year period, there is no direct relationship between ownership concentration and the likelihood of a takeover bid.

The investment measures also carry the expected signs and are of borderline statistical significance. Ownership concentration rises with the intensity of a firm's R&D and capital investment expenditures. To the extent that these crude measures proxy for difficult to monitor investment expenditures or the size of the "investment opportunity set" they reflect the benefits of monitoring that result from expanding the scope of agency conflicts. The investment measures, however, have limited economic significance. A one standard deviation increase in either measure gives rise to only a 2-4% change in ownership concentration.

B. Comparative Statics: What Factors Influence Changes in Ownership Concentration?

The level of ownership concentration should respond to changes in the costs or benefits of solving a firm's agency problems. At the extreme, ownership may be concentrated and control realigned through a takeover contest.

Table 6 examines the comparative statics of the previously defined model of ownership concentration. CHGCR4 is defined as the annual change in the 4-owner concentration ratio -- measured as the 4th quarter CR4 in year t less 4th quarter CR4 in year $t-1$. Changes in ownership structure are expected to be driven by prior period changes in exogenous agency variables. Changes in the volatility of the operating environment are captured in CHGSE_ variables. CHGSEY measures the change in idiosyncratic risk in the preceding year ($SE_{t-1} - SE_{t-2}$). CHGSEQ captures changes in idiosyncratic risk occurring in the last quarter of year $t-1$. Prior year changes in investment behavior are captured in CHGRD and CHGINV, respectively. BID is a binary variable which indexes the existence of a takeover attempt during a year. The effects of current period and future period ($t+1$) bids are examined.

One signal of the degree to which a firm is solving its agency problems is the extent to which the firm is earning a normal rate of return on its assets. Poor performance can be attributed to poor management. The comparative statics analysis includes a measure of the abnormal market and industry-adjusted returns earned by the firm in the prior, current and subsequent year⁹. In this fashion the response of owner-monitoring to firm performance, and vice versa, can be examined. Results are reported in Table 6.

⁹For each firm in the sample a multi-factor market model is estimated using monthly data from 1979-1987. The returns earned by the firm are posited to be related to the return on the market portfolio and an industry-specific factor. Dummy variables are used to capture excess returns by quarter, in each year 1981 -1985. The value of the coefficients on the dummy variables is the average excess return (per month) over the quarter. $CAR = 3 * (\text{sum of dummy variable coefficients for the year})$. This is analogous to standard event study techniques in which the CAR is computed as the sum of the regression residuals.

First, examining the DL variable SE, there is no relationship between a change in instability in one year and a subsequent change in ownership structure in the following. When the lag between CHGSE and CHGCR4 is narrowed, however, there is a direct relationship between changes in volatility in the and current period (year) changes in ownership concentration. The coefficient on the variable CHGSEQ is significant and positive. A .02 rise in SE (approximately one standard deviation) results in a 5% increase in ownership concentration. Interpretation of this finding is troubled by the fact that the firms that exhibited the greatest rise in volatility were frequently those firms that became subject to takeover contests. The leakage of information and rumors in the months prior to the announced bid will increase stock price volatility. The dummy variable that explicitly controls for takeover bids in the following year may not fully capture takeover-related changes in ownership structure.

A takeover bid has a strong impact on ownership concentration. On average, a current period bid is associated with a 17% rise in ownership concentration. Ownership concentration rises in anticipation of takeover activity. In the preceding year, the proportion of shares held by the 4 largest shareholders rises by over 5%.

Ownership concentration responds to indications that the firm is earning a sub-standard return on its assets. Changes in concentration are inversely related to prior period excess returns. A 10% risk-adjusted loss gives rise to a 6% increase in concentration. There is a slight positive, though neither economically nor statistically significant relation between current period changes in CR4 and excess returns. Finally, there is some indication that a rise in ownership concentration in the present period is

linked to positive excess returns in the subsequent year -- though the magnitude of the effect and the level of significance are probably not strong enough to put ones money on.

C. Takeovers and Ownership Structure

Can moderate changes in ownership structure substitute for a costly external acquisition when there is evidence that the redeployment of assets will enhance firm value? The relationship between adjustments in ownership structure and the likelihood of an attempted takeover is examined below.

The probability of a takeover bid is modeled using a logistic probability model. The model posits that the likelihood of a takeover is a function of (1) evidence of mismanagement -- proxied by sub-normal stock returns and (2) characteristics of the ownership structure.¹⁰ In particular, the likelihood of a takeover will be small if "small" adjustments in shareholdings convey sufficient voting power to affect management decisions (DL hypothesis). While according to SV the level of ownership concentration will directly increase the probability of a takeover.

¹⁰ Palepu (1986) models the probability of a takeover as a function of firms financial characteristics --e.g leverage, profitability, size, liquidity and growth. Using a sample of firms drawn from the late 1970's he finds that the size of the firm is the most important influence on the probability of a takeover -- entering negatively. Increases in leverage also reduce the likelihood of a takeover, however, this is broadly consistent with the notion that replacing equity with debt will further concentrate ownership and may contribute to management entrenchment (Stulz (1988). Lehn and Mitchell (1988) show that bad bidders can become attractive targets. None of the factors used to predict takeovers in these previous studies are entered into the present analysis. Also, as noted, above, institutional shareholders have different incentive in control contests than do either inside shareholders or atomistic investors. Future versions of this paper will account more completely for the effect of institutional holdings on takeover probabilities.

Three empirical models are examined. In all 3 specifications market and industry adjusted stock returns proxy for the scope of agency problems. Firms losing money relative to the market and their industry are not well managed. The stakes of large shareholders are captured in CR4 -- the 4 owner concentration ratio. BOARD measures the percentage of shares controlled by the board of directors.

CHGSEY, CHGSEQ, CHGINV, and CHGRD are as previously defined. These are the measures that were linked by DL and other researchers to the potential scope of the firm's agency conflicts. Recall from the results presented in Table 6 that there is little empirical evidence of an association between changes in the posited agency variables and adjustments in firm ownership structure -- results that are not supportive of the DL hypothesis. The relation between changes in the agency variables and the probability of a takeover is examined in the first column of Table 7.

CHGCR4, CHGCR4², and CHGCR4Q are as previously defined. These variables are included to capture the relation between prior period adjustments in ownership concentration and the likelihood of a takeover. Finally, DLRES and DLRES² capture the extent to which the observed ownership structure varies from that which would be predicted using the DL framework. The DLRES variables are defined as the residuals of the cross-sectional ownership concentration model, estimated in year t-1.¹¹ Positive values of DLRES indicate that the firm is more concentrated than average, given the levels of the agency variables; negative values for DLRES imply less concentrated ownership structures. If the independent regressors from the cross-

¹¹The binary BID variables are excluded from the analysis, however the R&D and INV measures are used, as are all the original DL regressors.

sectional analysis capture the scope of potential agency problems, then these sub-optimally concentrated firms will be likely takeover targets. Results are presented in Table 7.

First, poor returns in year $t-1$ contribute significantly to raising the probability that the firm is subject to a takeover bid in year t . The coefficient on $CAR(t-1)$ is negative and significant in all specifications of the takeover probability model. Holding other variables at their means, a 10% loss translates into a 8-11% rise in the probability that a takeover bid is received.

The probability of a takeover rises as the ownership of the firm becomes more concentrated. The coefficient on $CR4$ is positive and statistically significant at $p < .10$ in all specifications. The estimated coefficient on $CR4$, however, is not large. A one standard deviation rise in $CR4$ results only in a 2-4% increase in the likelihood of a takeover.

Holdings by the board reduce the probability of a takeover bid. The coefficient on $BOARD$ is negative and statistically significant. At first blush, these results appear consistent with Stulz (1988) and Harris and Raviv (1988) who suggest that large managerial holdings increase the cost of the market for corporate control. However, the results could be equally consistent with the inference that concentrating shares in the hands of management aligns incentives and reduces reliance on takeovers to efficiently deploy firm assets.

Firms which become more concentrated in period " $t-1$ " are more likely to receive a bid in the following year. The relationship between changes in the level of ownership and the likelihood of a takeover, however, is non-monotonic. Increases in $CR4$ that exceed 30% reduce the probability of a

takeover. Moderate changes in CR4, ceteris paribus, precede public announcement of a takeover bid, as suggested by the positive coefficient on the variables CHGCR4 and CHGCR4Q. Large changes in CR4, however, reduce the probability of a takeover, as suggested by the negative estimated coefficient on (CHGCR4)². On one hand, this suggests that concentrating ownership substitutes for monitoring via the market for corporate control, however, the required adjustment is large in magnitude.

The market for corporate control appears to be triggered when there is evidence that there is departure from equilibrium levels of ownership concentration. Firms which are "under-concentrated" in a DL sense are more likely to be targets in a takeover contest in the following year. The coefficient on DLRES is negative and statistically significant. Takeovers, while an extreme response to the need to concentrate control, appear to substitute for adjustments in ownership structure accomplished by other means. "Over-concentrated" firms may also suffer agency problems -- as suggested by the coefficient on DLRES². The probability of a takeover rises as "excess concentration" surpasses 30%. These results could suggest the over-consumption of perquisites by dominant controlling parties. More work into the identity of the large block shareholders is in order.

VII. Summary and Preliminary Conclusions

This paper has examined the forces which affect the equilibrium structure of corporate ownership. Preliminary findings suggest that the level of ownership concentration and changes in concentration respond to

factors which are related to the firm's derived demand for monitoring. There is substantial evidence that ownership structure changes in advance of announcements of takeover bids, and that the level of block shareholdings may facilitate the market for corporate control. There is also evidence that large adjustments may substitute for takeovers. Extensions of this paper will focus on ways to separate the efficiency responses of ownership concentration from entrenchment theories.

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Table 1

The Structure of Corporate Ownership

<u>% of Common Stock Held By:</u>	<u>Mean</u>	<u>Median</u>
Largest Shareholder: ^a (Shleifer, Vishey)	15.4	-
Five Largest Shareholders: ^b (Demsetz, Lehn)	24.8	20.5
Board of Directors: ^c (Morck, et. al.)	10.6	-
All Institutions:		
Brickley, et. al. ^d	32.9	33.9
Pound ^e	19.1	-

This Study: ^f		
4 Largest Shareholders	22.6	16.6
Board and Officers	9.2	4.8

a Corporate Data Exchange Stock Ownership Directory: Fortune 500
1980 (CDE)

b CDE: Fortune 500, Energy and Finance 1980

c CDE: Fortune 500 1980

d 191 Firms Proposing anti-takeover amendments

e 95 Firms with proxy contests

f CDA Spectrum 5 and 6, 1981-85 average , values for CDE: Fortune 500 firms

TABLE 4

Descriptive Statistics

Variable	Mean	Median	25% - 75% Range	Min	Max.
CR41981:Q4	.191	.153	.07 - .28	0.01	.84
CR41985:Q4	.246	.187	.08 - .31	0.02	.87
SE	.072	.066	.044 - .096	.028	.361
EQUITY (\$mill)	1264	677	407 - 1707	79	4168
R&D/EQ	.11	.05	.02 - .11	0	.64
INV/EQ	.14	.09	.05 - .19	0	.77

Changes in CR4 Over Time (Absolute value)

$|CR4_t - CR4_{t-1}|$	.05	.023	.01 - .07	0	.64
$|CR4_t - CR4_{t-2}|$	.09	.05	.02 - .12	0	.80
$|CR4_t - CR4_{t-3}|$	.12	.065	.03 - .14	0	.89
$|CR4_t - CR4_{t-4}|$	.13	.076	.03 - .16	0	.90
$|CR4_t - CR4_{t-5}|$	.135	.08	.03 - .17	0	.82

Sample size - 396

Utilities - 33

Media - 10

#Fin. Inst - 26

Table 5
Determinants of Ownership Concentration
(t- statistics in parentheses)

	<u>Dependent variable</u>			
	A5	A5	81CR4	81CR4
Intercept	.100 (3.14)	.104 (3.21)	.106 (2.70)	.109 (2.78)
Utility	- .142 (-6.44)	- .143 (-6.59)	- .086 (-1.71)	- .096 (-1.33)
Fininst	- .073 (-3.6)	- .072 (-3.60)	- .007 (- .26)	.002 (.06)
Media	.132 (3.46)	.140 (3.61)	.172 (2.99)	.175 (3.04)
Equity	-5.04 E-9 (-2.1)	-4.84 E-9 (-1.73)	-1.87 E-9 (-1.19)	1.16 E-9 (.43)
SE _{t-1}	3.06 (5.42)	2.00 (4.40)	1.55 (2.56)	1.26 (2.61)
SE ² _{t-1}	-6.70 (-3.79)	-4.29 (-3.57)	-3.20 (-2.09)	-3.01 (-1.76)
BID 81		.239 (3.44)		.136 (1.34)
BID 82-83		- .033 (-1.65)		- .028 (-1.89)
BID 8485		- .065 (-2.09)		- .074 (-2.14)
R&D/EQ _{t-1}		.173 (1.58)		.111 (1.32)
INV/EQ _{t-1}		.099 (2.15)		.073 (2.07)
ADJ R ²	.218	.249	.131	.152

Table 6

Determinants of a Change in Ownership Concentration

Dependent Variable: CHGCR4^a

Variable	Coefficient	t-statistic
intercept	.011	4.162
BID _t	.171	3.965
BID _{t+1}	.057	2.484
CHGSEY	-.054	-0.503
CHGSEQ	.269	1.807
CHGRD _{t-1}	.099	2.114
CHGINV _{t-1}	.026	0.870
CAR _{t-1}	-.601	-1.967
CAR _t	.168	1.140
CAR _{t+1}	.082	1.567
Adj R ²		.085

^a CHGCR4 defined as the change in the 4-owner concentration ratio measured as 4th quarter (December) CR4 in year "t" less 4th quarter CR4 in "t-1".

Table 7

Factors Affecting the Probability of a Takeover Bid

Dependent Variable = 1 if bid in year "t"
 = 0 otherwise

Variable	Coefficient	χ^2	Coefficient	χ^2	Coefficient	χ^2
Intercept	-3.37	282**	-2.41	295**	-2.57	64**
CAR _{t-1}	-19.34	7.7**	-9.22	4.33*	-21.20	11.6**
CHGSEY	7.25	4.9*				
CHGSEQ	2.18	1.4				
CHGINV	-3.78	2.84				
CHGRD	-0.31	.22				
CHGCR4			7.84	26.0**		
CHGCR4 ²			-11.98	15.7**		
CHGCR4Q			6.08	2.1		
DLRES					-4.97	8.6**
DLRES ²					9.04	3.0
CR4	1.44	8.2**	0.86	2.7	1.17	3.6*
BOARD	-4.81	3.9*	-6.07	4.1*	-3.55	2.9

** p < .01

* p < .05