

OWNERSHIP CONTROL AND SMALL FIRM ANOMALITIES

by

David S. Krause
Marquette University

Abstract

Tests using the Capital Asset Pricing Model show that during the 1981 through 1983 period, a portfolio of common stocks composed of "owner-controlled" firms significantly outperformed a group of "manager-controlled" firms, even after adjusting for systematic risk. Small capitalization stocks were also shown to have generated large abnormal returns compared to large firm stocks during this period. Interestingly, the statistical significance of both the ownership control and small firm effects was not reduced when the other effect was controlled. The implications of these results for investors are that large excess returns may be earned by tilting stock portfolios towards owner-controlled, small capitalization firms.

I. Introduction

In a recent empirical study, Krause [9] found that the stocks of owner--controlled (OC) firms outperformed the common stocks of manager-controlled (MC) firms during the early 1980s. Using the Capital Asset Pricing Model (CAPM), he showed that portfolios of closely-held or OC firms earned significantly higher risk-adjusted returns, on average, than the common stocks of widely-held or MC firms. The excess risk-adjusted returns for the OC firms were found to be positive and significantly greater than zero, while the common stock portfolios of MC firms generated negative excess returns. Empirical research by Kamerschen [8] and Lerner [10], which revealed that the accounting return on equity ratios of OC firms were higher, on average, than those of MC firms, also provide empirical support for the existence of an "ownership control" effect.

A "small firm" anomaly has also recently been documented by Reinganum [16]. He reported that significant abnormal stock returns have been earned by the owners of small capitalization firms. During the past fifty years it appears that the risk-adjusted returns of small firms have outperformed the stocks of large capitalization firms. No satisfactory economic explanation for the size effect has yet been offered.

The purpose of this study is to provide empirical evidence on the relationship between the ownership control and small firm anomalies. The implications of these results for investors are also discussed, since they indicate that excess returns may be earned by tilting stock portfolios towards owner-controlled, small firms. Finally, an economic explanation for these findings is offered.

II. Data and Methodology

The sample of firms was obtained from the 1980 Fortune 500 and consists of the 345 firms included in Standard and Poor's 1984 Compustat Data Tape. The time period covered in the study was the three-year period from 1981 through 1983. This time period is considered to be sufficient in length to enable identification of the relationship between ownership control, firm size and risk-adjusted stock market performance. In fact, this shorter test period minimizes measurement errors which are more likely to occur over longer periods due to changing firm risk, size and common stock ownership positions.

As of January 1981, all of the firms in the sample were classified as either: a) owner-controlled (OC), b) manager-controlled (MC), or c) neutral (N). OC status was assigned to a firm if the largest shareholder owned 20 percent or more of the voting common stock. Conversely, MC status was assigned to a firm if no single holding of stock was greater than 5 percent of the outstanding common stock. This ownership control criteria was consistent with that used in the prior empirical work of Monsen, Chiu, and Cooley [15] on the separation of ownership and control. The data on common stock ownership, which was used to determine each firm's control status, was obtained from Corporate Data Exchange's Stock Ownership Directory[2]. From the sample of 345 firms, 72 were classified as OC firms and 98 were categorized as MC firms according to the control criteria.

Defining the size of a firm in terms of its market capitalization, three portfolios consisting of 115 firms were formed. The largest portfolio in terms of firm size consisted of those stocks in the upper third of the sample as of January 1981, when ranked by market capitalization value. Consistent with Reinganum, firm size for each firm was determined by multiplying the number of common shares outstanding by the firm's stock market price at the beginning of the study period. The other two firm size portfolios were comprised of those stocks in the middle and lowest third size rankings.

Table 1 presents the number of stocks in each of the nine firm size and ownership control intersection portfolios. The relationship between firm size and ownership control can be seen in the table. Of the OC firms, almost one-half (35 of 72) were classified in the smallest size group. Conversely, nearly one-half (48 of 98) of the MC firms were contained in the largest capitalization category. These findings are not surprising and confirm the results of earlier research on the separation of ownership and control.

Table 1

Firm Size	Number of Firms In Each Size and Ownership Control Portfolio			Total
	Owner Control	Neutral	Manager Control	
Largest Third	18	49	48	115
Middle Third	19	60	36	115
Smallest Third	<u>35</u>	<u>66</u>	<u>14</u>	<u>115</u>
Total	72	175	98	345

Using the Sharpe-Lintner model of the CAPM, we computed the average annual excess risk-adjusted return earned by each of the nine control and size portfolios during the three-year period. The method used to calculate each firm's excess return and beta was similar to Reinganum's methodology and is available from the author on request.

The risk-free rate for the three-year time period was approximated by using the average annual return on newly issued 90-day Treasury bills which was obtained from the Federal Reserve Bank of St. Louis' U.S. Financial Data. The return on the market portfolio was approximated by using the value-weighted average return on the Standard and Poor's 500 Index, while the return on each stock for the three-year period was obtained from Compustat by calculating the annual compounded yield resulting from price appreciation and dividends.

Monthly returns for the five years preceding the study were used to estimate the systematic risk measure for each stock. The beta for each stock was obtained by performing an ordinary least squares regression on the market model. Portfolio betas for the control and size portfolios were calculated as the weighted average of the betas of the individual stocks. Finally, to calculate the mean excess risk-adjusted returns for each of the portfolios, the residuals of the stocks in the respective control and size portfolios were averaged on an equal-weighted basis.

Descriptive statistics of each sample are given in Table 2. The average beta and annual excess return, as well as the standard deviations, for each size and ownership control portfolio are presented. Note that the smallest capitalization and OC firms had the highest average betas, while the largest size and MC firms had the lowest betas. These results suggest that the small OC firms in the sample were slightly more risky than the large capitalization MC firms. Despite the higher betas, the small size and OC firms significantly outperformed the large MC firms during the study period on a risk-adjusted basis. Thus, an ownership control effect was observed during this three-year period since the average annual excess return for the OC firms was 12 per cent higher, on average, than the excess return of MC firms.

Also shown in Table 2, a firm size effect was observed during this three-year period. Consistent with the findings of Reinganum, the excess returns of small capitalization firms exceeded those of the larger firms by over 17 per cent. T-tests confirmed that both the ownership control and the small firm anomalies were significant at the .01 level during the 1980s.

III. Results

Table 3 contains the average annual excess returns for the nine size and control intersection portfolios. By reading across a particular row, the effect of ownership control can be observed while firm size is held roughly constant. Similarly, by reading down each column the effect of firm size can be observed while controlling for ownership control.

Table 2
Descriptive Statistics by Firm Size and Ownership Control

<u>Firm Size</u>	Average Betas	Average Annual Excess Returns
Largest	1.03 (.332)*	-4.55% (.152)
Medium	1.16 (.379)	1.90% (.173)
Smallest	1.16 (.340)	12.65% (.216)
 <u>Control Status</u>		
Owner-Controlled	1.14 (.365)	10.73% (.216)
Neutral	1.13 (.378)	2.82% (.193)
Manager-Controlled	1.04 (.389)	-1.17% (.167)
All Firms	1.12 (.355)	3.34% (.204)

*Standard deviations in ().

Examination of the results in Table 3 reveals that the OC firms in each size category had a significantly higher average annual excess return than the MC firms. For example, OC firms in the smallest capitalization classification outperformed MC firms by over 10 per cent (18.60 per cent versus 8.31 per cent). Moreover, a pattern of increasing excess returns for small firms was evident within each ownership control classification. In the OC category, small firms outperformed large firms by over 17 per cent. Holding the type of ownership status constant, size was found to have a significant negative relationship with excess returns at the 5% level of significance. The strong relationship between excess returns and the type of ownership status, with size held constant, was also found to be significant at the 5% level. Taken overall, the results presented in Table 3 suggest that neither the ownership control nor the small firm anomaly was subsumed by the other.

The mean excess return observations were further analyzed when each cell mean was decomposed. Table 4, which contains the marginal mean excess returns, summarizes the results of this decomposition for each of the three ownership and size groups. The marginal means were calculated by taking the differences between each group mean and the sample mean.

Table 3
Average Annual Excess Returns
For The Size and Control Intersection Portfolios

Firm Size	Ownership Control Status			
	Owner Control	Neutral	Manager Control	Total
Largest Third	1.20% (.155)*	-5.06% (.156)	-5.29% (.149)	-4.55% (.152)
Middle Third	7.52% (.174)	0.88% (.170)	0.65% (.175)	1.90% (.173)
Smallest Third	18.60% (.235)	10.42% (.221)	8.31% (.170)	12.65% (.216)
Total	10.73% (.216)	2.82% (.193)	-1.17% (.167)	3.34% (.195)

*Standard deviations in ().

From Table 4 it is apparent that owner-controlled firms earned much larger excess returns than the neutral and manager controlled firms. Also, the largest firms generated significant negative excess returns while the smallest firms produced large positive returns. This table provides additional support for the ownership control and small firm anomalies. It is also evident that investors who held the stocks of small, owner-controlled firms during this three-year period earned large positive excess returns, while the stockholders of large, manager-controlled firms experienced negative risk-adjusted returns.

Table 4
Marginal Mean Excess Returns

	Owner Control	Neutral	Manager Control
Ownership Status	7.39%	-0.52%	-4.51%
	Small	Medium	Large
Firm Size	9.31%	-1.44%	-7.89%

Table 5 shows the results of an analysis of variance, which tests whether control and size represent valid subpopulations of the continuous excess return variable. In Table 5, the main effects of ownership and size together are significant at the .001 level with an F-statistic of 14.9. Size alone has an F-statistic of 21.0 and is significant at the .001 level, while control alone has an F-statistic of 3.8 and is significant at the .023 level. The interaction effect has a low F-statistic and is therefore negligible and insignificant. The small variance of the error (residual mean square of .033) also

implies that the inferences are valid.

While the results in Table 5 confirm our earlier observations, it is evident from the table that size appears to be the dominant variable. The reason ownership control appears to be not as significant as the size effect is mainly due to the impact of the large firms in the sample. Since the MC group is composed of the majority of the firms in the sample, this skewness results in a less significant F-statistic for the ownership group than would have been obtained if ownership groups of equal weights were established. This analysis of variance test, however, validates that the ownership control anomaly existed above and beyond the small firm anomaly during the early 1980s.

Table 5
Analysis of Variance Test

Sources of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-stat.	Sign. of F-stat.
Main Effects	1.988	4	.497	14.93	.001
Ownership	0.254	2	.127	3.82	.023
Size	1.397	2	.699	20.98	.001
Interaction	0.025	4	.006	0.18	.947
Explained	2.013	8	.252	7.56	.001
Residual	11.186	336	.033		
Total	13.199	344	.038		

The next test takes the form of an analysis of covariance with size as the concomitant variable. Table 6 shows the effect of ownership control (using dummy variables for the three control classifications) when the continuous size or market value variable is introduced as a covariate. In general, the regression analysis corroborates the results of the previous analysis of variance test and confirms that separate ownership control and small firm anomalies existed.

In Table 6, the control measure has a reported F-statistic of 5.6 and is significant at the .004 level. The OC firms generated positive excess returns which were significantly greater than zero at the .001 level. Table 6 also indicates that size is an important covariate. The size regression coefficient had a t-value of -4.65, which is significant at the .001 level. The negative sign of the size coefficient again implies the existence of Reinganum's small firm anomaly.

Table 6
Analysis of Covariance with Size as the Covariate

<u>Variable</u>	<u>Coefficient</u>	<u>T-Value</u>	<u>Significance</u>	
OC	.0735	5.34	.001	
Neutral	-.0184	-1.36	.174	
MC	-.0375	-2.41	.017	
Size	-.295E-7	-4.65	.001	

<u>Sources of Variation</u>	<u>Sum of Squares</u>	<u>Mean Square</u>	<u>F</u>	<u>Sign. of F</u>
Within Cells	11.856	.03477		
Constant	.852	.85247	24.52	.001
Control	.391	.19553	5.62	.004
Regression	.752	.75191	21.63	.001

IV. Conclusion

Why did small, closely-held firms generate large abnormal returns during the early 1980s? It would be easy to conclude by providing the safe, standard academic reply that there are no real long-run excess returns to be earned from investing and that the CAPM must be at fault here because it did not correctly measure the "true" risk-adjusted returns of these portfolios. However, rather than attacking the heroic assumptions of the CAPM, the author believes that it is time to recognize that there must be something going on within these small OC firms which can possibly account for the findings of this research.

The following economic explanation of the empirical results of this study specifically recognizes the behavior of individual decision-makers operating within the structure of the firm. Economists, such as Berle and Means [1] and Jensen and Meckling [7], have theorized that the separation of ownership from control reduces the incentive of the agents or non-owner managers to innovate and search out new profitable ventures for the firm's owners. The hypothesis, that agency opportunity costs increase when ownership and control become separated and that firm performance will be negatively impacted, appears to be supported by the results of this study. Since many large firms today appear to be controlled by agents or non-owner managers, who may not be properly motivated to innovate and search out new and previously undiscovered profitable ventures, it is possible that we have found an explanation for the ownership control and small firm effects. Additional empirical research is necessary to validate this hypothesis.

The implications of these results for investment strategy are not completely clear yet since other time periods and data samples need to be examined. However, it does appear that investors who tilted their stock portfolios towards small owner-controlled firms during the early 1980s reaped significant excess returns. The results of this research suggest that investors should examine the relative ownership positions of the firm's managers and largest shareholders, in addition to the earnings and potential for significant growth, before making an investment. Further research along this line should enhance investor knowledge about the relationship between agency costs and these two interesting stock market anomalies.

REFERENCES

- [1] Berle, A.A., and G. Means. The Modern Corporation and Private Property, rev. ed., New York: MacMillian (1968).
- [2] Corporate Data Exchange, Inc. CDE Stock Ownership Directory - Fortune 500. No. 5, New York (1981).
- [3] Dye, T.R. "Who Owns America: Strategic Ownership Positions in Industrial Corporations." Social Science Quarterly, VXIV, (December 1983), pp. 862-870.
- [4] Elliot, J.W. "Control, Size, Growth, and Financial Performance in the Firm." Journal of Financial and Quantitative Analysis, (January 1972), pp. 1309-1320.
- [5] Federal Reserve Bank of St. Louis. U.S. Financial Data. (various issues from 1981 through 1983).
- [6] Gordon, R.A. "Ownership and Compensation as Incentives to Corporate Executives." Quarterly Journal of Economics, LIV, (May 1940), pp. 455-473.
- [7] Jensen, M.C., and W.H. Meckling. "Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure." Journal of Financial Economics III, (July 1976), pp. 305-360.
- [8] Kamerschen, D.R. "The Influence of Ownership and Control on Profit Rates." American Economic Review, LVIII, (June 1968), pp. 432-447.
- [9] Krause, D.S. "Ownership Control and Stock Market Performance." Journal of Behavioral Economics, (forthcoming Fall 1986).
- [10] Larner, R.J. "Ownership and Control in the 200 Largest Non-Financial Corporations, 1929 and 1963." American Economic Review, LVI, (September 1966), pp. 777-787.
- [11] Levy, R.A. "On the Short-term Stationarity of Beta Coefficients." Financial Analysts Journal, XXVII, (November/December 1971), pp. 55-62.
- [12] Lewellen, W.C. "Management and Ownership in the Large Firm." Journal of Finance, XXIV, (May 1969), pp. 299-322.
- [13] Lintner, J. "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." Review of Economics and Statistics, XLVII, (February 1965), pp. 13-37.
- [14] Manne, H.G. "Mergers and the Market for Corporate Control." Journal of Political Economy, VXXIII, (April 1965), pp. 110-120.
- [15] Monsen, R.J., J. Chiu, and D. Cooley. "The Effect of Separation of Ownership and Control on the Performance of the Large Firm." Quarterly Journal of Economics, LXXXII, (August 1968), pp. 435-451.
- [16] Reniganum, M.R. "Misspecification of the Capital Asset Pricing Model: Earnings Yield and Market Values." Journal of Financial Economics, IX (March 1981), pp. 19-46.
- [17] Sharpe, W.F. "A Simplified Model for Portfolio Analysis." Management Science, IX, (January 1963), pp. 227-293.
- [18] Sorensen, R. "Separation of Ownership and Control and Firm Performance: An Empirical Analysis." Southern Economic Journal, (July 1974), pp. 145-151.
- [19] Standard and Poor's Compustat Data Tape, Standard Statistics Division, Standard and Poor's Corporation (1984).
- [20] Zeitlin, M. "Corporate Ownership and Control," American Journal of Sociology, LXXIX, (March 1974), pp. 894-903.