OWNERSHIP STRUCTURE AND SYSTEMATIC RISK

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION
In the Global Asset and Wealth Management Program
For Xiaoning (Anna) Liu

AND

MASTER IN FINANCIAL RISK MANAGEMENT
For Tong (Tony) Zhu

of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY

Summer 2009

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Abstract

This paper examines the relation between market risk, our measure for systematic risk, and ownership structure. For the overall sample ranging from 1983 to 2008, the correlation between market return and a firm's specific return is related to the holdings by its institutional investors. Specifically, there is a significantly positive relationship between market risk and institutional ownership, and a significantly negative relationship between market risk and institutional concentration. The results are robust to the inclusion of other firm-specific variables such as size, leverage, and liquidity measures.

Keywords: Institutional Concentration, Institutional Ownership, Monday Effect, Systematic Risk

JEL Classification: G11; G12; G14

Dedication

This project is dedicated to our respective families, who have been very devoted and supportive in the past year, especially to Angelina, Ethan and Jerry. We love you all! We would also like to dedicate this thesis to our classmates and faculty of Business Administration. We cherish the opportunity to have met all of you, have you with us all the way, and enjoy every moment of the program during this amazing one year.

Acknowledgements

We would especially like to extend our gratitude to Dr. Amir Rubin, our thesis senior supervisor. There is no way we can come this far without your intellectual insights and unwearied help. Because of you, we are courageous, positive and never alone in this journey.

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1: Introduction

1.1   CAPM and Risk Measurement

The Sharpe-Lintner capital asset pricing model (CAPM) asserts that in equilibrium the expected return of a risky asset is a function of risk free rate, the security's beta and the market risk premium. Under the CAPM assumptions, an efficient portfolio alone captures all systematic risk; therefore we can measure the systematic risk of a security simply by its beta. Beta can be estimated through a time-series regression of a firm's historical returns on market returns (Sharpe, 1964; Lintner, 1965).

A number of empirical studies have been done to identify the real determinants of a firm's systematic risk. Many practitioners forecast beta by analyzing other financial characteristics of a firm in addition to its past returns (Beaver, Kettler & Scholes, 1970).

When the market portfolio is not efficient, beta won't be an adequate measure of a portfolio's systematic risk. Researchers have developed alternative multifactor models to model risk and return. Under the multifactor model, the excess return of a stock is explained by the variation of its factor characteristics, and the systematic risk can be captured by the betas of these factors.

Based on the efficient market hypothesis, the expected return of a security equals its cost of capital (Fama, 1970). The cost of capital is the expected return that its investors should be able to earn on other investments with the same risk and maturity (Berk & Demarzo, 2009). Because

the expected return is determined by beta, the proxy for systematic risk, thus the cost of capital can be measured by the expected return available on securities with the same beta.

While the CAPM debate continues, it is unlikely that a truly perfect model will be found in the foreseeable future. CAPM remains the most commonly used model of risk and the most important method for estimating the equity cost of capital (Berk & Demarzo, 2009). Hasbrouck (1991) points out that modelling systematic risk requires a thorough understanding of the activities and characteristics of a firm and its industry. CAPM is a very practical starting point and a benchmark.

1.2   Institutional Ownership Structure

Many efforts have been taken to integrate corporate finance concepts with capital market theory by investigating the relationship between institutional ownership and bid-ask spread, volatility, short interest and capital structure (Rubin, 2007; Fehle, 2004; Asquith, Pathak & Ritter, 2005; Chaganti & Damanpour, 1991). Ideally, there should be a fully developed model to examine the relationship between systematic risk and the firm-specific characteristics. This paper explores this relatively new finance area and in search of empirical evidence regarding the relationship between systematic risk and ownership structure. The reasons are as follows:

Institutional investors play an increasingly important role in the U.S. capital markets as the percentage of U.S. equity held by institutional investors has quadrupled in the past four decades. Institutions held 65% of equity in firms belonging to NYSE/AMEX in 2005, indicating a compound annual growth rate of 6.3% over the last 25 years (Agarwal, 2007). Many practitioners consider mutual fund flows to be a measure of investor sentiment, which is an important factor in overall market movements (Black, 1986). Frazzini and Lamont (2008) believe mutual fund flows can be a measure of individual investor sentiment, and conclude that this sentiment is not rational.

Empirically speaking, institutional investors herd and ride the market momentum due to "agency problems, security characteristics, fads, or the manner in which information is impounded in the market" (Nofsinger & Sias, 1999). More than three quarters of mutual funds are momentum traders (Grinblatt, Titman & Wermers, 1995).

Our objective in this research is to examine whether the correlation between the market return and the firm's return is associated with the firm's ownership structure. We construct two measures of the ownership structure, institutional ownership and institutional concentration. Institutional ownership is a proxy for market sentiment as it is defined as the sum of the fractional ownership of a security owned by all institutional investors reporting their holdings in quarterly form 13F. Institutional concentration, a measure of the blockholders and insiders' behaviour, is related to information asymmetry and is defined as the sum of blockholders' (institutional investors with 5% or greater ownership) ownership of a security.

Our basic premise is that market sentiment, which is represented by institutional ownership, behaves more like the general public, with individual investors using mutual funds as "liquidity vehicles", buying or redeeming units following the momentum of the market. If this were the case, the decisions to buy or sell by mutual fund managers might not be their own, but rather the individuals who own the funds. (Dennis & Strickland, 2002).

On the other hand, institutional blockholders, which are represented by institutional concentration, trade mostly on privileged information. Large institutions are not momentum investors (Gompers & Metrick, 2001). Generally speaking, blockholders are better informed than the general public because they have access to more privileged data, they have better control of the board, and they are taxed differently. (Ning & Tong, 2004)

1.3 Control Variables

After defining the topic and our hypothesis statement, we would like to present our control variables.

There are some empirical studies which help us to choose our control variables. Hamada (1969) believes that market risk is correlated to financial management activities and practices. Beaver, Kettler and Scholes (1970) find that size, leverage and liquidity, among others, explain systematic risk.

To filter out other noises and get a clear picture of the true relationship between systematic risk and institutional ownership structure, we decide to control for size, leverage and liquidity in our regressions.

The market capitalization of a security, i.e., our SIZE variable, has long been proved to associate closely with systematic risk (Fama & French, 1992). Chen, Chang, Yu and Mayes (2005) revisit "size effect" in recent years and conclude that size is a "pervasive" risk factor of the stock markets. Large firms are also considered to be more efficient in portfolio theory (Beaver, Kettler & Scholes, 1970). In addition, large firms are presumed to be less risky (Fisher, 1959). Ben-Zion and Shalit (1975) also conclude that large firms are less likely to go bankrupt.

There are also empirical evidences to justify the inclusion of LEVERAGE variable. Bhandari (1988) suggests that leverage is a great measure of risk when other approaches unavailable. The more levered the firm is, the more risky its equity is (Berk & Demarzo, 2009). In addition, the increase of debt financing enhances a firm's systematic risk. According to Hamada(1972), leverage accounts for more than 20% of the systematic risk. On the contrary, Breen and Lerner (1973) find that leverage variable is not statistically consistent.

The last control variable is LIQUIDITY. Liquidity risk plays an important role in the overall risk (Bangia, Diebold, Schuermann & Stroughair, 1999). That explains why institutions have a consistent and strong demand for liquid securities (Gompers & Metrick, 2001). Pastor and Stambaugh (2002) discover that liquidity risk is priced, and that it is positively related to the security's expected return. Theoretically thinking, liquidity is a measure of trading intensity; therefore, the more frequently the shares are traded, the less liquidity risk for the stock (Ben-Zion & Shalit, 1975).

1.4 "Monday Effect" or Not

The efficient market hypothesis is also challenged by the empirical evidence of "Monday Effect" (Cross, 1973; French, 1980, Lakonishok & Smidt, 1988). We are especially interested in the role "Monday Effect" is playing in our setting of systematic risk and ownership structure. Specifically, we will examine how the correlation between systematic risk and ownership structure varies on Mondays and on all weekdays. Lakonishok and Maberly (1990) find that individuals are more active on Mondays than on other days. Therefore, in our context, we expect to see the systematic risk, i.e. the correlation between market return and firm's return, exhibits a stronger association with institutional ownership on Mondays.

1.5 Empirical Results

Our regression results are consistent with our assumption that market risk, our proxy for systematic risk, is significantly positively associated with institutional ownership, and significantly negatively associated with institutional concentration. In addition, among all the five independent variables, institutional ownership is the second most important factor after size.

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Moreover, we find that the relationship between institutional ownership and the cost of capital is contrary to the common belief.

Understanding the relationship between ownership structure and systematic risk helps corporate managers estimate the cost of capital and grasp prospective investment opportunities, and assists portfolio managers to gauge the systematic risk and make effective choices.

This paper proceeds as follows: Section 2 provides a brief review of the empirical evidence for institutional herding evidence, and the famous "Monday Effect". Section 3 describes how the data are constructed and provides the methodology used in the empirical tests. Section 4 presents and discusses the main empirical results. Section 5 concludes the paper and provides recommendations.

2: Literature Review

2.1 Institutional Investors and Herding Evidence

The study of institutional herding can be traced back to the 1970s and has mixed results. Kraus and Stoll think institutions herd probably only by coincidence (Kraus & Stoll, 1972). Lakonishok, Shleifer and Vishny (1992) find weak herding evidence of pension funds, and only present in smaller stocks. Grinblatt, Titman and Wermers (1995) cannot get strong evidence of institutional herding either. Four years later, however, Wermers (1999) finds mutual funds have a slightly greater tendency to herd than pension funds. Nofsinger and Sias (1999) find strong herding evidence of institutional investors during 1977 to 1996 period. Wermers (1999) further established the relationship between mutual fund herding and a firm's quarterly return. Edelen and Warner (2001) also find positive relation between market returns and aggregate fund flow into mutual fund market. Both of these studies delve further into positive feedback trading behavior of institutional investors.

But why institutional investors herd at the first place? Scharfstein and Stein attribute this to human nature. Fund managers would rather make errors while their peers are making them, because this will not make them look too bad once their investment decisions prove to be incorrect and short-sighted (Scharfstein & Stein, 1990). Dennis and Strickland also point out that managers are extremely protective of their reputations. They will be very careful not to act as contrarians to the market (Dennis & Strickland, 2002).

From another perspective, as pointed out by Dennis and Strickland (2002), individual investors, the underlying owners of the mutual funds, are the ones making investment decisions. These individual investors are the originators of the herding activities, and the institutional investors are more like the tail of the Haley's Comet.

In contrast to institutional investors, individual investors are normally painted as unsophisticated, uninformed and irrational. Shiller (1984) argues that individual investors' chasing after fads and swinging with social movements is the cause of herding. Shleifer and Summers (1990) suggest that individual investors herd because the signals they follow, the noise traders' movements and popular models used by investors are all correlated. Lakonishok, Shleifer, and Vishny (1994) demonstrate that individual investors often prefer "glamour stocks" which make them discriminate value stocks and involve in positive feedback trading. Sirri and Tufano (1998) also present evidence that individual investors tend to invest in previously well-performed funds, and that their investment decisions tend to be positively related to the marketing efforts of mutual funds.

2.2 "Monday Effect"

Some empirical studies believe that firms tend to release bad news over the weekend (Pattel & Wolfson, 1982). Others provide evidence that brokers produce more buy recommendations than sells over the weekend (Lakonishok & Maberly, 1990). In that case, individual investors tend to think over the weekend and make investment decisions on Mondays. After studying the price changes over the weekend versus other days, Cross (1973) finds their relationships significantly different. However, there are also empirical studies showing the reversal of the "Monday Effect" after 1988 (Brusa, Liu & Schulman, 2003). So far there is no

consensus on the cause of the so-called "Monday Effect", and there is no consistent empirical

evidence either.

3: Data and Methodology

3.1   Data

The data used in this study has been compiled from three sources via Wharton Research Data Services (WRDS): the Center for Research in Security Prices (CRSP), Thomson Reuters CDA/Spectrum 34 database (13f Institutional Holdings), and Standard & Poor's Compustat North America. We include eight variables in this study:

The CUSIP variable helps identify securities during data analysis and control security-specific fixed effect.

The QUARTER variable aims to identify quarters and to control quarter-specific fixed effect.

The RSQR variable is the correlation coefficient between a specific firm's return versus value-weighted market return, and our proxy to model market risk. The daily stock return and value-weighted market return data are retrieved from CRSP ranging from January 1, 1983 to December 31, 2008. This period is chosen because there is limited liquidity and institutional ownership data available prior to this date. We exclude those data that have non-positive stock prices. Furthermore, to include only actively traded securities, we calculate the total trading days for each security for each calendar year, and discard those securities not meeting the maximum trading days during each calendar year. To study the so-called "Monday Effect", we also calculate a second set of RSQR variables based on Mondays' stock returns only. Our RSQR variable, a.k.a. coefficient of determination, ranges from 0 to 1 and is skew-free for both datasets.

The IO variable stands for institutional ownership. The quarterly institutional ownership data are retrieved from Thompson Reuters based on the report date. Because it keeps virtually all U.S.-based mutual funds in existence since 1980, this dataset is largely free of the survivor-bias that has been a major concern in the mutual fund research (Wharton Research Data Services, 2008). We first calculate institutional ownership for each institution and for each security, and then discard those data with non-positive ownership values. We then sum the ownership value of different institutions for each security to derive the IO variable. Due to the late reporting-stale data issues of Thomson-Reuters database, we set the maximum IO variable value to 1 to correct skewness.

The IC variable stands for institutional concentration. Basing on the institutional ownership data calculated above for each institution and for each security, we sum only those ownership values which are greater than or equal to 5% of different institutions for each security. We apply the same approach as IO variable to correct skewness for IC variable dataset.

We use the market capitalization as a proxy for our SIZE variable, which is calculated as the product of the shares outstanding for each security at the end of each quarter and its corresponding closing price. The original data are retrieved from CRSP. Since SIZE variable has no negative value, we are able to apply natural logarithm to correct skewness.

The LEVERAGE variable is the ratio of long-term liability to market capitalization. The quarterly long-term liability data are retrieved from Compustat North America. For those securities without a long-term debt data, we assume they have zero long-term debt. We also discard all the negative values and set the maximum value to 99 percentile to correct skewness.

We use the bid-ask spread (i.e., the ask price minus the bid price, divided by the quote midpoint) as the proxy for the LIQUIDITY variable. This is one of the most often used measures

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of liquidity because it is easy to obtain and interpret (Hasbrouck, 1991). The daily closing bid and asks are obtained from CRSP. We calculate our quarterly bid-ask spread by averaging all those daily positive spread data to derive our quarterly liquidity proxy for each security. Our liquidity dataset is also skew-free.

Descriptive statistics for the above variables are presented in Table I.

Table I
Variable Summary

The sample includes 9,443 securities and covers 104 quarters, ranging from January 1, 1983 to December 31, 2008, altogether 165,388 observations. The RSQR variable is from the time-series regression of individual stock return on value-weighted market return, basing on data from CRSP. The $RSQR^1$ variables are the R-squares collected from the time-series regression on all weekdays' data (Monday to Friday). The $RSQR^2$ variables are the R-squares collected from the time-series regression on Mondays' data only. The IO variable is the sum of all institutional investors' ownership for each security, with data from Thomson Reuters. The IC variable is the sum of the ownership of all institutional investors that have at least 5% holdings for each security. The SIZE variable is the market capitalization of each security in thousands, calculated basing on the quarter-end closing price and shares outstanding, with original data downloaded from CRSP. The LEVERAGE variable is the ratio of long-term debt to market capitalization, with original data from Compustat North America. LIQUIDITY variable is the quarterly average relative bid-ask spread, with original data from CRSP.

| | Mean | Std.Dev. | Skewness | Percentile | | | | | | |
				1st	5th	25th	50th	75th	95th	99th
$RSQR^1$	0.171	0.174	1.485	7.67E-05	0.002	0.036	0.116	0.255	0.521	0.772
$RSQR^2$	0.245	0.233	0.929	0.0001	0.002	0.044	0.174	0.394	0.714	0.872
IO	0.590	0.245	-0.097	0.109	0.184	0.394	0.599	0.787	1.000	1.000
IC	0.202	0.140	1.648	0.051	0.055	0.094	0.168	0.271	0.463	0.680
SIZE($,000,000)	$589.6	1.626	0.403	$21.06	$50.89	$191.5	$515.2	$1,622	$10,979	$42,709
LEVERAGE	0.279	0.571	3.855	0.000	0.000	0.000	0.040	0.313	1.316	3.030
LIQUIDITY	0.012	0.015	3.638	0.001	0.001	0.002	0.008	0.017	0.040	0.068

1. R-squares from time series regression of individual stock return on value-weighted market return from data set including all weekdays (Monday to Friday).

2. R-squares from time series regression of individual stock return on value-weighted market return from dataset including only Mondays.

3.2 Methodology

Our study aims to investigate whether systematic risk is associated with institutional ownership structure. This implies that our RSQR variable, i.e., the R-squares resulting from the time-series regression of individual stock return on value-weighted market return will be a function of institutional ownership and institutional concentration. RSQR variable also indicates the percentage of total price fluctuations that can be explained by market fluctuations.

In order to filter out the noise that may affect our interpretation of the true relationship between systematic risk and institutional ownership structure, we add three more control variables, i.e. SIZE, LEVERAGE and LIQUIDITY.

By including these three control variables, we can crystallize the relationship between systematic risk and institutional ownership structure.

We use multivariate linear regression (also known as "cross-sectional time series regression" or "panel regression") as our tool to conduct empirical tests, which consist of the following three steps:

Step 1: Run panel regression of RSQR on both IO and IC variables and control for security-quarter fixed effects.

Step 2: Run panel regression of RSQR on IO, IC and SIZE variables and control for security-quarter fixed effects.

Step 3: Run panel regression of RSQR on IO, IC, SIZE, LEVERAGE and LIQUIDITY variables and control for security-quarter fixed effects.

The problem with panel dataset is that errors are likely to be correlated across time for each security and across each security for each quarter, which could understate the true standard

errors for the coefficient estimates (Agarwal, 2007). Fixed effects regression helps to control for variable-specific effects in a standard multivariate linear regression and overcome this problem (Princeton University, 2007). Therefore, we decide to control for the fixed effects in both CUSIP and QUARTER variables during regressions: the quarter-specific fixed effect takes into account of the time trends of the variables and thus excludes spurious relationships; and the security-specific fixed effect deals with correlation across residuals for the same security and therefore eliminates the common variations of observations. This procedure warrants that the estimated regression parameters are consistent and robust (Agarwal, 2007).

Lastly, to investigate the so-called "Monday effect", we conduct a separate test on Mondays' data only. Both empirical results are provided in the following section.

4: Results and Discussion

The statistical results of our panel regressions are displayed in Table II, followed by the discussions.

Table II

Panel Regression Results

Our dataset includes 9,443 securities and covers 104 quarters, ranging from January 1, 1983 to December 31, 2008, altogether 165,388 observations. The RSQR variable is from the time-series regression of individual stock return on value-weighted market return, based on data from CRSP. There are two sets of RSQR variables (see Table I). The IO variable is the sum of all institutional investors' ownership for each security, with data from Thomson Reuters. The IC variable is the sum of the ownership of all institutional investors that have at least 5% holdings for each security. The SIZE variable is the market capitalization of each security in thousands, calculated basing on the quarter-end closing price and shares outstanding, with original data downloaded from CRSP. The LEVERAGE variable is the ratio of long-term debt to market capitalization, with original data from Compustat North America. The LIQUIDITY variable is the quarter-average relative bid-ask spread, with original data from CRSP. The panel regression results by using all weekdays' (Monday to Friday) data are listed on the left hand, and the results by using only Mondays' data are listed on the right side. The table also reports the t-statistics (in brackets), corresponding to a test of the mean being different from zero, calculated as the mean over standard error. The P value s, testing the null hypothesis that the coefficient is zero, are given in italicized form.

Table II-Step 1

	All Weekdays (Monday to Friday)			Mondays		
Variable	Coefficient	t-stat	P>|t|	Coefficient	t-stat	P>|t|
IO	0.16	(60.37)	*0.00*	0.18	(37.52)	*0.00*
IC	-0.14	(-42.05)	*0.00*	-0.14	(-25.13)	*0.00*
Constant	0.01	(0.39)	*0.70*	0.10	(2.43)	*0.02*

Table II – Step2:

	All Weekdays (Monday to Friday)			Mondays		
Variable	Coefficient	t-stat	P>|t|	Coefficient	t-stat	P>|t|
IO	0.08	(27.00)	*0.00*	0.11	(21.02)	*0.00*
IC	-0.07	(-19.51)	*0.00*	-0.09	(-14.33)	*0.00*
Size	0.03	(64.53)	*0.00*	0.02	(29.53)	*0.00*
Constants	-0.32	(-13.14)	*0.00*	-0.16	(-3.80)	*0.00*

Table III – Step 3:

	All Weekdays (Monday to Friday)			Mondays		
Variable	Coefficient	t-stat	P>|t|	Coefficient	t-stat	P>|t|
IO	0.08	(25.86)	*0.00*	0.10	(19.36)	*0.00*
IC	-0.06	(-19.02)	*0.00*	-0.08	(-13.78)	*0.00*
Size	0.03	(59.93)	*0.00*	0.02	(25.05)	*0.00*
Leverage	-0.00	(-3.00)	*0.00*	0.00	(0.34)	*0.73*
Liquidity	-0.21	(-7.27)	*0.00*	-0.53	(-9.41)	*0.00*
Constants	-0.30	(-12.42)	*0.00*	-0.12	(-2.90)	*0.00*

4.1 Analysis of Step 1 Regression

The statistical results of the regression--R-squares on both institutional ownership and institutional concentration with security-quarter fixed effects controlled for all weekdays (Monday to Friday) and for Mondays, respectively, are displayed in Table II – Step 1.

The coefficient for IO is significantly positive (0.16) at the 5% level for all weekdays and for Mondays (0.18). In addition, the coefficient for IC is significantly negative (-0.14) at the 5% level for all weekdays and for Mondays (-0.14). Thus, the regression results are consistent with our

hypothesis that market risk, our proxy for systematic risk, which is the correlation coefficient from time-series regression of a security's return on market return, should be significantly positively associated with institutional ownership, and significantly negatively associated with institutional concentration.

Comparing the coefficients and the t-statistics from these two datasets, we also find that the coefficients for the Monday sample remain significant and keep the same signs as the all weekdays' sample.

4.2   Analysis of Step 2 Regression

The statistical results of regression--R-squares on institutional ownership, institutional concentration and size, with security-quarter fixed effects controlled for all weekdays and for Mondays, respectively, are displayed in Table II – Step 2.

After including the security-specific variable size in the regression, both IO and IC are able to keep their positive/negative sign and statistical significance. The coefficient for IO is significantly positive (0.08) at the 5% level for all weekdays and for Mondays (0.11). Similarly, the coefficient for IC is significantly negative (-0.07) at the 5% level for all weekdays and for Mondays (-0.09). Notably, the coefficient for SIZE variable is significantly positive (0.03) at the 5% level for all weekdays and for Mondays (0.02).

Again, our statistical results confirm the strong relationship between institutional ownership and systematic risk even after controlling the "size effect".

This step also shows that the coefficients for the Monday sample remain significant and keep the same signs as the all-weekdays' sample.

4.3 Analysis of Step 3 Regression

The statistical results of regression--R-squares on institutional ownership, institutional concentration and all three control variables, with security-quarter fixed effects controlled for all weekdays and for Mondays, respectively, are displayed in Table II – Step 3.

Our coefficients for IO and IC are consistent with our previous results. The coefficient for IO is significantly positive (0.08) at the 5% level for all weekdays and for Mondays (0.10); while the coefficient for IC is significantly negative (-0.06) at the 5% level for all weekdays and for Mondays (-0.08). The coefficient for SIZE variable remains significantly positive (0.03) at the 5% level for all weekdays and for Mondays (0.02). The coefficient for LIQUIDITY variable is significantly negative (-0.21) at the 5% level for all weekdays and for Mondays (-0.53).

We cannot draw a conclusion on the relationship between the debt level of a firm and its systematic risk due to the zero coefficients and the insignificance of the t-statistics of LEVERAGE variable. Our findings are consistent with Breen and Lerner's 1973 conclusion (Breen & Lerner, 1973). However, we do see LIQUIDITY and SIZE play an important role in a firm's systematic risk.

More importantly, when we control for all three variables, we get a clean picture of the relationship between ownership structure and systematic risk. Our regression results are still consistent with our previous findings: institutional ownership is significantly positively related to systematic risk, while institutional concentration is significantly negatively related to systematic risk.

This indicates that institutional investors, especially mutual funds, behave more like the general public and tend to herd together and trade with the momentum of the market whereas the institutional blockholders tend to be the contrarian.

We also conclude that the coefficients for the Monday sample remain significant and keep the same signs as the all weekdays' sample.

Finally, we would like to extend a little bit on the regression results of the control variables. At first glance concerning the sign of SIZE (positive) and LIQUIDITY (negative), we seem to conclude that the bigger the size of a firm (higher SIZE value), the more systematic risk, and the less liquid (higher LIQUIDITY value) a stock, the less systematic risk. This is contrary to what people generally think. However, the answer lies in how we get our dependent variable RSQR at the first place. The RSQR variable is collected directly from the time-series regression of individual stock return on value-weighted market return without controlling for any firm-specific factors, such as size, book-to-market ratio, previous one year return, etc., as has been done in the Fama-French-Carhart multifactor model. Therefore, the RSQR variable absorbs the impact of all those firm-specific factors. When we use this "un-processed" RSQR variable to perform the multivariate test with SIZE, LIQUIDITY and LEVERAGE as the control variables, we can't conclude that the coefficients of these control variables reflect their true relationships with RSQR, our market risk proxy and measure for systematic risk (Dennis & Strickland, 2002). Suppose we use the Fama-French-Carhart multifactor model to collect the RSQR variable instead, similar regression results for the IO and IC should persist. If those three control variables are further added in the panel regression, the resulting coefficients probably will have a sign consistent to existing empirical evidence, but lose their significance.

5: Conclusion

We aim to study the relationship between systematic risk and institutional ownership structure. Since the regression coefficient for institutional ownership variable is positively significant, this suggests that mutual fund managers, driven by underlying individual investors' momentum, buy and sell securities in accordance with market sentiments and act in a herd-like manner. We also find the regression coefficient for institutional concentration variable is negatively significant, which suggests that institutional blockholders are not part of the herding activities. Lastly, we test the so-called "Monday effect" in our context of systematic risk and ownership structure, and come to the conclusion that the coefficients for the Monday sample remain significant and keep the same signs as the all weekdays' sample.

To our knowledge, we are among the first to explore the relationship between systematic risk and ownership structure. Nevertheless, we are able to find consistent and significant evidence in this area. This study is an extension of the herding assumption, but on a much higher and broader level after systematic risk is introduced into this literature. However, we do have areas in need of improvements. Further studies in this area could consider using intraday data or monthly data, instead of our quarterly data; or testing other control variables. It is also interesting to see how ownership structure is related to abnormal return under the Fama-French-Carhart multifactor model. (Fama & French, 1992; Carhart, 1997)

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