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**Abstract**

This paper investigates foreign ownership in the Vietnam stock market from 2007 to 2009 employing a rich and detailed dataset. From the perspective of informational asymmetry, the paper examines the relationship between the foreign ownership level and attributes of Vietnamese listed firm in Ho Chi Minh City Stock Exchange. The findings of the paper indicate that foreign investors have preference for large firms, firms with high book-to-market ratio and firms with low leverage. Foreign investors also avoid firms with dominant shareholders and prefer to invest in firms where they can have influence. The results imply that foreign investors favor to invest in firms where they can avoid informational asymmetry.

**Keywords:** foreign ownership, firm attributes
**JEL Classification: G10**

# Foreign ownership in Vietnam stock markets - an empirical analysis

## 1. Introduction

The flow of funds to emerging markets has increased sharply in recent years. Investor interest in these markets surges in response to their prospects for rapid economic growth, financial deregulation, and the benefits of international diversification. The Institute of International Finance estimates that net private capital flows to emerging economies is about $908 billion in 2010, which is 50% higher than in 2009 and projects to grow to above $1009 billion in 2012.

Even though Vietnam initiates the stock market later than many other developed countries, there has been a substantial growth. The first stock exchange in Ho Chi Minh city was established in 2000 with four listed companies. Increased foreign interest and the privatization of state-owned enterprises leads to a rapid increase in listings. At the end of 2009, there are about 250 firms listed on the Ho Chi Minh Stock Exchange and the smaller exchange in Hanoi.

One of the most prominent features in Vietnam stock markets is the rapid increase in the level of stock ownership and trading volume by foreign investors over time. Increases in foreign ownership are expected to result in an increases in trading volume, the number of trades, visibility and analyst coverage. As the importance of foreign investors in Vietnam stock markets increases, both the characteristics of their investment behavior and their impact on stock prices are becoming the interesting subject for research.

However, there is not much published research employing a detailed dataset of foreign investors' stock ownership and firm characteristics. This paper is one of the first to attempt to fill the gap in this field. In this paper, we characterize the ownership of foreign investors in Vietnam Stock markets using a dataset of ownership and attributes of Vietnamese firms listed on Ho Chi Minh city Stock Exchange (Hose). In other words,

this research will provide answers to the question of which types of firms that foreign investors in Vietnam stock markets invest.

It is generally accepted that foreign investors in Vietnam behave like institutional investors as foreign institutional investors account for a large proportion of foreign investment (Coval & Moskowitz 1999; Dahlquist & Robertsson 2001). Therefore, it is assumed that foreign investors in Vietnam stock markets share the same investment strategy as institutional investors. Foreign investors tend to be well capitalized foreign financial institutions with a long history of successful investment in other stock markets. This category is generally composed of mutual funds, hedge funds, and foreign investment banks. Foreign investors alone tend to be momentum investors over all horizons.

In Vietnam, there is foreign ownership constraints of that foreign investors are allowed to own up to 30% in commercial banks and 49% in other listed companies. Therefore, foreign ownership is more likely to reflect the investment choices of foreign investors with some firm attributes.

It is theoretically argued that investors diversify their portfolio to take advantage of the gain from diversification. The benefits of international diversification are well established in the literature. French and Poterba (1991) and Tesar and Werner (1995), for example, argued that diversified international investment dramatically improves the performance of portfolios. Theories assuming under-diversification of investor portfolios, such as Levy (1978) and Merton (1987) predicts a positive relationship between idiosyncratic risk and expected return. However, investors in reality often do not hold perfectly diversified portfolios (Fu 2009). In global markets, investors normally have strong preference for domestic equities and this is well documented as the 'home bias' phenomenon Lewis (1999). In addition, global investors do not hold global portfolio as predicted by International CAPM as presented by Solnik (1974) but actually consider specific advantages when selecting their foreign assets (Rhee & Wang 2009).

The extent of the home bias puzzle needed to be addressed to provide an insight into factors drive the deviation from the optimal international equity portfolio. If investors more generally already hold the optimal portfolio, then the diversification gains are achieved. However, the literature suggests that portfolios are not optimal and that the cost in terms of lower return and higher risk is large. Lewis (1999) argues that costs of home bias due to forgone gains from international diversification in the range of 20% to almost double of lifetime (permanent) consumption.

The disproportional holding of stocks is not only evident in international investment, but also applied to domestic portfolio selection (Coval & Moskowitz 1999; Dahlquist & Robertsson 2001). The academic literature attributes the preferences in foreign investors' firm selection to investment barriers and asymmetric information among investors. To avoid the informational asymmetry, foreign investors tend to select firms with certain characteristics. Results from many studies show that foreign investors favor firms with certain characteristics, such as large size and low debt ratio (Dahlquist & Robertsson 2001; Kang & Stulz 1997; Lin & Shiu 2003).

This paper deepens the understanding of holdings of foreign investors in general and holdings of foreign investors in emerging market like Vietnam in particular. By analyzing a rich and detailed firm level dataset of equity ownership, and studying the determinants of foreign ownership in Vietnamese firms, we identify various firm attributes that are common to foreign ownership. In particularly, the paper investigates whether foreign investors investing in firms based on some common firm attributes including size, dividend payout, firm's stock return, risk, book-to-market ratio, financial strength, financial leverage and firm performance.

In addition, the paper further analyzes the preference of foreign investors for firm's stock liquidity and presence in international markets, measured through export sales or listings on other exchanges, seem to characterize foreign holdings better than firm size alone. The

paper also considers whether a particular industry is a matter of choice for foreign investors.

This paper is one of the very first research carefully investigating the characteristics of foreign ownership in Vietnam stock markets. Our main contribution to the financial literature is to provide an extensive empirical analysis on the foreign investors' ownership and firm attributes relation over an extended time period. The construction of the foreign ownership data, together with the detailed attributes of listed firms in Ho Chi Minh City Stock Market, allows us to achieve this task.

The remainder of this paper is structured as follows. Section two reviews the literature on the relationship between foreign ownership and firm attributes. Section three introduces data description. Section four presents the research method. Section five reports the empirical results. Finally, section six concludes the paper.


## 2. Literature Review

This section reviews the literature on foreign ownership and firms characteristics. There is a large and growing literature examining whether foreign investors have information disadvantages over domestic traders in developing markets. However, the empirical evidence is mixed. In the one side, foreign investors are considered to have significant global investment experience utilizing well-developed technology and high-skilled financial experts, which suggests they are in a stronger position to evaluate a firm's prospects. Especially in developing countries, foreign investors can take advantage over local investors in selection of firms. On the other side, foreign investors may possess inferior information due to geological, cultural, and political differences.

However, the impricial evidence is mixed in the literature.

Many authors states that foreign investors have better information than local investors (Froot & Ramadorai 2001). For examples, Seasholes (2000) employs Taiwan data to investigate whether foreign traders have superior information than domestic investors by looking at net buying prior to positive and negative earning surprises. This paper's results indicate that foreign investors have superior information over domestic investors when foreign investors tend to buy prior to positive and sell prior to negative earnings surprises.

On the other side, many researchers argue that foreign investors stand at an informational disadvantage relative to domestics. Brennan & Cao (1997) develop a model of international equity portfolio flows that relies on informational differences between foreign and domestic investors. They find out that U.S. investors being at an informational disadvantage relative to locals in foreign markets, and trading on new information with a lag. The findings from more recent research by Hau (2001) using German data, Dvorak (2005) using Indonesian data, and Choe et al (2005) using Korean data are consistent with the argument that foreign investors are of informational disadvantage.

The problem of information asymmetry and investment barriers tends to be material in emerging markets. Therefore, foreign investors are more likely to depart from holding diversified portfolios. Specifically, foreign investors tend to have preference to invest in firms with specific attributes. There are many authors tend to agree with this school of thought and empirically investigate the link between foreign investors' ownership in domestic market and firm attributes.

Kang & Stulz (1997) examine stock ownership in Japanese firms by non-Japanese investors from 1975 to 1991. Their findings are inconsistent with the other existing models predicting that foreign investors hold national market portfolios or portfolios tilted towards stocks with high expected returns. In fact, this research documents that foreign investors in Japan hold disproportionately more shares of firms in manufacturing industries, large firms, and firms with good accounting performance, low unsystematic

risk, and low leverage. Controlling for size, there is evidence that small firms that export more, firms with greater share turnover, and firms that have ADRs have greater foreign ownership.

Grinblatt and Keloharju (2000) measure the performance of foreign versus domestic investors by comparing a group's tendency to buy future winning stocks and sell future losing stocks. Future winning (losing) stocks are those with 6-month returns that fall in the top (bottom) quartile. The tendency to buy winners and sell losers is computed as the difference between the foreign share in buy volume of winning stocks minus the foreign share in buy volume of losing stocks. The measure of performance is intuitive but requires judgment as to the horizon at which returns are measured and the thresholds for classifying winners and losers.

Dahlquist and Robertsson (2001) compare the preference of foreign investors to that of domestic institutions using Swedish firms listed from 1991 to 1997. This study reveals that foreign investors show a preference for firms paying lower dividends, large firms, and firms with large cash positions on the balance sheets.

Lin & Shiu (2003) investigates foreign ownership in the Taiwan stock market from 1996 to 2000. From the perspective of informational asymmetry, foreign investors appear to favor large firms and low book-to-market stocks. Analytical results show that foreign investors strongly prefer firms with high export ratios with which they are more familiar on account of their higher foreign sales. Foreign investors hold more shares of high beta stocks than of low beta stocks for small firms. However, this result does not hold for large firms, implying that large firms have lower investment barriers than small firms. Foreign investors, due to their different tax status, may also hold slightly more stocks with low dividend yield. However, evidence for this assertion is inconclusive, with only a weak effect displayed by the sample considered in their study.

Using transaction data from Indonesia, DvoŘÁK (2005) shows that domestic investors have higher profits than foreign investors. In addition, clients of global brokerages have

higher long-term and smaller medium (intramonth) and short (intraday) term profits than clients of local brokerages. This suggests that clients of local brokerages have a short-lived information advantage, but that clients of global brokerages are better at picking long-term winners. Finally, domestic clients of global brokerages have higher

profits than foreign clients of global brokerages, suggesting that the combination of local information and global expertise leads to higher profits.

Ko et al. (2007) examine the foreign and institutional investors' preference for firm attributes in Japan and Korea. There are some important points in their findings. First, foreign investors have a clearer preference for stocks with large capitalization and low book-to-market ratios than do institutional investors in both Japanese and Korean stock markets. Second, foreign investors prefer stocks with a high return on equity, especially in Korea. Third, average returns have more apparent differentiation among institutional (foreign) ownership portfolios than among foreign (institutional) ownership portfolios in Japan (Korea). Fourth, the stocks that are preferred simultaneously by both institutional and foreign investors show statistically significant positive abnormal returns in both Korea and Japan, whereas those preferred by either institutional or foreign investors show statistically significant positive abnormal returns only in Korea. The institutional investors' incentive for stock holding, the extent of stock market efficiency, and stock price polarization could be the possible explanations for the different empirical results observed for Japan and Korea.

Jeon et al. (forthcoming) examine the relationship between foreign ownership and the decisions on payout policy in the Korean stock market. The evidence indicates that foreign investors show a preference for firms that pay high dividends. When they have substantial shareholdings, foreign investors lead firms to pay more dividends.

However, there is not many research empirically investigating the foreign investors' ownership in Vietnam and Vietnamese firm characteristics. In lieu of the current literature, this research enriches the literature by examining whether foreign investors are

attracted to some common firm attributes as in previous related studies (Dahlquist & Robertsson 2001; Jeon et al. forthcoming; Kang & Stulz 1997).

An aversion towards international investments may also be due to informational asymmetries between foreign and domestic investors. Vietnam is an emerging economy where there is environment of high informational asymmetry, foreign investors in Vietnam are expected to hold more stocks with specific characteristics. This section proposes several empirical hypotheses which are consistent with the literature (Aggarwal et al. 2005; Dahlquist & Robertsson 2001; Kang & Stulz 1997; Lin & Shiu 2003; Rhee & Wang 2009). These hypotheses also allow us to make comparisons between the characteristics of foreign investors in Vietnam and other markets.

## 3. Data description

The data employed in this paper are collected from different sources. The firm attributes data are taken directly from financial reports of listed companies. The market data are provided by the in Ho Chi Minh Stock Exchange.

We also group the companies in our data set into different industries according to Ho Chi Minh City Stock Exchange. There are 9 industries/sectors in our data set including food producer, industrial engineering, construction and materials, real estate, general retailers, pharmaceutical and biotechnology, electricity, mining, electronic and electrical equipment

Foreign ownership level (FOWN) variable is well suited to provide us insights about the characteristics and trading behavior of foreign investors. The table 1 below shows foreign ownership in Vietnam on a year-by-year basis over the period from 2007 to 2009. Overall, the average of ownership of foreign investors increase from 10.16% in 2007 to 17.46% in 2008, however, it reduces significantly to 14.80% in 2009.

**[INSERT TABLE 1 ABOUT HERE]**

**Firm characteristics:**

In this subsection, we briefly introduce a number of firm-specific attributes used in the empirical analysis. To enable easy comparison, we first choose essentially the same attributes as Kang and Stulz (1997), Dahlquist & Robertss (2001) and Lin & Shiu (2003). These are:

(i) Size: This variable is the market capitalization of the firm at the year-end. In the regressions, we consider the log of the market capitalization.

Merton (1987) and Huberman (2001) argue that investors prefer securities they are familiar with. It is more likely that foreign investors prefer to invest in Vietnamese firms about which they have some knowledge or familiarity. It is commonly assumed that more information is available on large firms than on small ones (Merton 1987). It is argued that foreign investors should favor large firms to minimize the negative impact of informational asymmetry since the degree of informational asymmetry is higher for foreign investors than for local investors. Similarly, foreign investors should favor blue-chip stocks.

(ii) Dividend yield (DIVY): The value of all dividends paid during the year divided by the market value of the firm at year-end.

(iii) Return (RETU): The annual return on the shares of the firm is calculated as the cumulative compounded return preceding the year-end.

(iv) Systematic risk (BETA): Systematic risk is the beta coefficient for the market model, estimated using the weekly returns. The market portfolio is the value-weighted portfolio in our sample. Stulz (1981) developed an international investment barrier model, showing that such barriers raise the cost of cross-boarder investments. Accordingly, foreign investors seek assets with higher expected returns to cover these costs. We hypothesize

that foreign investors who face such barriers hold more shares of high beta stocks, yielding higher expected returns.

(v) Idiosyncratic risk: This variable measures the residual variance in the market model regression using weekly returns.

(vi) Book-to-marke (BMAR): This is a valuation measure of the firm. Growth firms typically have low book-to-market ratios, while firms with higher ratios are referred to as value firms. The ratio is defined as the book value of equity divided by the market value of equity at year-end. Fama and French (1996) proposed the book-to-market equity (B/M) as a proxy for profitability and growth. Low B/M firms have persistently high earnings while high B/M firms have consistently poor earnings. The future financial performance for low B/M firms are more transparent than for high B/M firms. We hypothesize that, under such circumstances, foreign investors would hold more shares of low B/M firms.

(vii) Current ratio (CURR): We use this as a proxy for short-term financial distress. It is calculated as current assets divided by current liabilities at year-end, and measures the ability of the firm to meet its short-term payment requirements.

(viii) Leverage ratio (LEVR): This is a measure of long-term financial distress. It is defined as the ratio of total liabilities to total equity at year-end.

(ix) Return on equity (ROE): Return on equity is measured as net income divided by the book value of equity at year-end.

As mentioned above, we use firm size as a first proxy for how well-known a firm is abroad. When we further analyze the preference for large firms, we consider alternative variables that proxy for firm recognition and investor influence. These variables are:

(x) Export rate (EXPR): Firms with large sales abroad are more likely to be familiar to foreign investors. The export rate is measured as export sales divided by total sales.

It is commonly believed that foreign investors are likely to have more knowledge and information about firms with high foreign sales than about firms with low export ratios. This is based on the conjecture that firms with high export ratio are more widely known internationally. To take into account of this behavior, we propose that foreign investors favor firms with high foreign sales to mitigate asymmetric information. Kang and Stulz (1997), and supports the arguments of Merton (1987) and Coval and Moskowitz (1999).

(xi) Liquidity (TOVR): We employ the trading turnover rate to proxy for liquidity of the firm's shares. It is defined as the total value of stocks traded over a year divided by the market value of the firm. This is a proxy of liquidity employed by many papers (Brennan et al. 1998; Chordia et al. 2001; Datar et al. 1998; Rouwenhorst 1999)

An unresolved area in the field of finance is the relation between share ownership structure and liquidity (Rubin 2007). Tesar and Werner (1995) document that the turnover rate on international equity investments is high both when compared with the turnover rate in the investor's home country, and when compared to the market of the foreign security. Their findings suggest that market liquidity is particularly important for foreign investors. For this reason, we want to examine whether the implication that ceteris paribus, foreign investors prefer to hold liquid stocks is supported by our data as stated in many papers (Agarwal et al. 2009; Chan et al. 2005; Covrig et al. 2006; Ferreira & Matos 2008; Rhee & Wang 2009).

(xii) Concentration (CONC): This measure of ownership concentration is defined as the proportion of votes held by the largest shareholder coalition. Ownership concentration measures are also a natural proxy for adverse selection (Rubin 2007). By Vietnamese Securities Law, owners who hold directly more than 5% of the firm's shares outstanding must report any transaction to the authorities prior to and after their trading.

Moreover, if foreign investors have an interest in the management, we would expect them to avoid firms with highly concentrated ownership as in Dahlquist & Robertsson (2001). Therefore, we use a measure of ownership concentration to test whether foreigners want to be able to directly influence the management of a firm.

(xiii) Volatility of returns (VOLR): This measure the volatility of firm stock returns.

Table 2 presents a description of firm attributes of listed firms in Vietnam.

**[INSERT TABLE 2 ABOUT HERE]**

## 4. Research Method

In this paper, multivariate linear regression analysis is employed to explore the relationship between foreign ownership and firm characteristics. The estimated equation is a standard linear regression model as follows.

$$y_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_{i,t}$$

where $y_{i,t}$ denotes the foreign ownership of firm i at time t; $X_{i,t}$ is a vector that represents the firm characteristic variables i at time t ; and $\varepsilon_{i,t}$ is the error term.

In the first approach, we estimate regressions on a year-by-year basis. The advantage of this approach is that every year we can compare the differences in the result. The disadvantage of these regressions is that they make no use of the time-series information.

In the second approach, we use panel data regressions.

To ensure the validity of the results, we also conduct several robustness checks. Firstly, we run the above regressions with different year. In addition, we also consider whether foreign investors favor a specific industry in Vietnam stock market by allowing dummy variables to proxy for industry.

## 5. Empirical Results

Table 3 reports the correlation coefficient matrix between foreign ownership and firm characteristics for the data set. At first glance it can be seen that foreign ownership positively correlates with firm size, beta, book-to-market ratio, current ratio, return on equity and export rate. However, foreign ownership negatively correlates with dividend yield, previous return, leverage, liquidity and concentration.

**[INSERT TABLE 3 ABOUT HERE]**

In this section, we discuss our regressions results on the relationship between foreign ownership and other firm attributes.

Table 4 represent the results of regressions when we run the model for each year from 2007 to 2009. The findings are as follows. The coefficients of firm size measure are positive and significant in each year. Firm size has the largest impact on holding of foreign investors. Foreign investors also favor firms with lower dividend yield as the coefficients of dividend yield are negative however not statistically significant. Foreign investors prefer to hold shares of firms with low leverage. In addition, the coefficients for concentration are negative and significant indicating that foreign investors tend to avoid firms with dominant shareholders. In other words, foreigners seem to attach significant importance to their influence in the firm.

**[INSERT TABLE 4 ABOUT HERE]**

Foreign investors seem to have no preference for firms with high liquid stocks and firms with high exports. This is different from the finding of previous research in other markets (Dahlquist & Robertsson 2001)

**[INSERT TABLE 5 ABOUT HERE]**

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Table 4 and table 5 reports the panel data regressions. Overall, firm size is positive and statistically significant. This confirms that foreign investors in Vietnam have preference for large firms. This finding supports the hypothesis of Merton (1987) that investors hold shares in firms with which they are familiar and that investors are more likely to be familiar with large firms. This finding is also consistent with previous studies (Kang & Stulz 1997; Lin & Shiu 2003).

In addition, foreign investors invest more in firms with low debt as leverage measure enters the regressions with negative coefficients in all regressions and significant. Our result is similar to the finding of Dahlquist & Robertsson (2001).

Book-to-market measure is positive and statistically significant at the 1% level. It is also of particular note that foreign investors invest less in high current ratio firms. This finding contrasts with the result of Dahlquist & Robertsson (2001).

The coefficients of liquidity measure are negative but not significant. Foreign investors do not show a preference for high liquid stocks. This finding may indicate that when foreign investors invest in Vietnamese firms, they tend to hold to stock in a long term. High ownership may make foreign investors corporate insiders. In addition, foreign investors employ buy-and-hold strategy and this reduces the need for frequent trading for price discovery. This finding is consistent with the results of Amihud and Mendelson (1980). Their study formalizes the important link between market microstructure and asset pricing and shows that, in equilibrium, illiquid assets would be held by investors with longer investment horizons.

Moreover, concentration measure is negative and significant in all regressions. This is consistent with the theory stating that foreign investors in Vietnam prefer to invest in firms where they can have influence. This might be driven by the fact that most of the foreign investors in the Vietnamese market are institutional investors with the buy-and-hold strategy.

One of the interesting points here is foreign investors in Vietnam do not favor shares of firms of high export ratio. The coefficients are negative in all regressions even though not significant. The result seems to contradict with the hypothesis that foreign investors invest more in firms with high export.

We do not find evidence to support the idea of Merton (1987) that foreign investors invest more in high export firms as firm export is a proxy for how well know a firm to foreign investors.

Table 6 reports the regression results of regressions when we include dummy variables to control for industry effect. The results are almost the same with the exception that foreign investors invest heavily in pharmacy sector.

**[INSERT TABLE 6 ABOUT HERE]**

To sum up, foreign investors in Vietnam seem to prefer large firms, firms with high book-to-market ration, firms with low leverage and firms with low ownership concentration. In addition, foreign investors favor pharmacy firms. The overall evidence from the paper indicates that the ownership of foreign investors seems to be driven by informational asymmetry so that there is a bias in their Vietnamese stock holdings. In addition, foreign investors also have a long-term horizon in their investment and follow the buy-and-hold strategy.

## 6. Conclusion

Foreign investment in Vietnam is an interesting topic on its own merits. Moreover, foreign investors are essential in Vietnam market as one of the expected benefits of the increasing presence and trading of foreign investors in small emerging markets is that it would reduce the informational asymmetry. This study investigates foreign ownership in Vietnam, from 2007 to 2010 and identifies the characteristics of listed firm that are attractive to foreign ownership in emerging markets.

By using a rich dataset on equity ownership and firm-specific attributes, we are able to characterize foreign ownership in Vietnamese firms in great details. We find that foreign investors allocate a disproportionately high share of their funds to large firms. In addition, foreign investors seem to prefer firms with low leverage. Moreover, foreign investors avoid firms with dominant shareholders.

In this paper, we have focused on the characterization of foreign ownership and investigated the relationship between foreign investor ownership to firm attributes using a detailed dataset from Vietnam Stock markets. There are many further issues that are worth exploring include how foreigners have performed relative to the general market, what determines foreigners' purchases and sales of shares, and how flows are related to returns. We hope to be able to address these issues in the near future.

**Table 1 Description of the Foreign Ownership in Vietnam**

| Year | 2007 | 2008 | 2009 | Whole sample |
|---|---|---|---|---|
| Mean | 0.10102 | 0.17453 | 0.14795 | 0.14117 |
| Median | 0.02010 | 0.13490 | 0.09410 | 0.08690 |
| Maximum | 0.49000 | 0.49000 | 0.49000 | 0.49000 |
| Minimum | 0.00000 | 0.00230 | 0.00370 | 0.00000 |
| Std. Dev. | 0.14338 | 0.15116 | 0.13408 | 0.14584 |
| Skewness | 1.52871 | 0.67960 | 0.85044 | 0.96442 |
| Kurtosis | 4.26777 | 2.22234 | 2.55973 | 2.76642 |
| | | | | |
| Jarque-Bera | 52.03643 | 11.64799 | 14.66227 | 53.79367 |
| Probability | 0.00000 | 0.00296 | 0.00066 | 0.00000 |
| | | | | |
| Sum | 11.51640 | 19.89620 | 16.86610 | 48.27870 |
| Sum Sq. Dev. | 2.32307 | 2.58208 | 2.03151 | 7.25252 |
| | | | | |
| Observations | 114 | 114 | 114 | 342 |

**Table 2: Data Descriptive Statistics for the firm attributes**

| | FOWN | SIZE | DIVY | RETU | BETA | BMAR | CURR | LEVR | ROE | EXPR | TOVR | CONC | VOLR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 0.14117 | 11.78717 | 0.04237 | -0.12313 | 0.87681 | 0.78581 | 2.46797 | 1.20587 | 0.15370 | 0.15007 | 0.00514 | 0.32325 | 0.03143 |
| Median | 0.08690 | 11.70461 | 0.03000 | -0.02327 | 0.94226 | 0.61560 | 1.70891 | 0.84165 | 0.14352 | 0.00000 | 0.00349 | 0.28400 | 0.03114 |
| Maximum | 0.49000 | 13.46383 | 0.18750 | 0.85591 | 2.10943 | 3.79822 | 19.48235 | 7.02120 | 0.95420 | 0.99926 | 0.02585 | 0.78000 | 0.09287 |
| Minimum | 0.00000 | 10.71600 | 0.00000 | -1.13988 | -2.94911 | 0.03930 | 0.11378 | 0.03191 | -1.80547 | 0.00000 | 0.00016 | 0.04000 | 0.01208 |
| Std. Dev. | 0.14584 | 0.61802 | 0.03861 | 0.39218 | 0.37857 | 0.60820 | 2.45459 | 1.18043 | 0.17184 | 0.30342 | 0.00458 | 0.18471 | 0.00633 |
| Skewness | 0.96442 | 0.62867 | 1.12942 | -0.40621 | -4.91510 | 1.50312 | 3.74682 | 1.89308 | -4.01974 | 1.85018 | 1.64253 | 0.36408 | 4.99761 |
| Kurtosis | 2.76642 | 2.80393 | 4.03238 | 2.28993 | 45.46707 | 5.79550 | 21.21299 | 7.09746 | 53.17594 | 4.79050 | 5.69777 | 1.98857 | 46.46484 |
| | | | | | | | | | | | | | |
| Jarque-Bera | 53.7936 | 23.0759 | 87.8966 | 16.5902 | 27076.2 | 240.145 | 5527.11 | 443.519 | 36797.1 | 240.804 | 257.492 | 22.1333 | 28344.6 |
| Probability | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00002 | 0.00000 |
| | | | | | | | | | | | | | |
| Sum | 48.2787 | 4031.21 | 14.4913 | -42.1119 | 299.870 | 268.745 | 844.046 | 412.405 | 52.5654 | 51.3247 | 1.75894 | 110.550 | 10.7484 |
| Sum Sq. Dev. | 7.25252 | 130.242 | 0.50823 | 52.4480 | 48.8709 | 126.138 | 2054.52 | 475.156 | 10.0693 | 31.3941 | 0.00715 | 11.6335 | 0.01365 |
| | | | | | | | | | | | | | |
| Observations | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 | 342 |

**Table 3 Correlation Matrix**

|      | FOWN | SIZE | DIVY | RETU | BETA | BMAR | CURR | LEVR | ROE | EXPR | TOVR | CONC | VOLR |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| FOWN | 1 | | | | | | | | | | | | |
| SIZE | 0.2149 | 1 | | | | | | | | | | | |
| DIVY | -0.0282 | -0.4135 | 1 | | | | | | | | | | |
| RETU | -0.0905 | 0.2712 | -0.3525 | 1 | | | | | | | | | |
| BETA | 0.0775 | 0.0480 | 0.1433 | -0.1260 | 1 | | | | | | | | |
| BMAR | 0.1023 | -0.5849 | 0.3936 | -0.5438 | 0.1643 | 1 | | | | | | | |
| CURR | 0.0631 | 0.0822 | 0.0498 | -0.0353 | 0.0220 | 0.0858 | 1 | | | | | | |
| LEVR | -0.2725 | -0.0675 | -0.0445 | -0.0539 | 0.0383 | -0.1048 | -0.3908 | 1 | | | | | |
| ROE | 0.0188 | 0.2680 | 0.1038 | 0.2781 | -0.0497 | -0.3491 | -0.0088 | -0.1331 | 1 | | | | |
| EXPR | 0.0563 | -0.1235 | 0.1145 | 0.0145 | 0.0146 | 0.1160 | -0.0274 | -0.1490 | -0.0020 | 1 | | | |
| TOVR | -0.1488 | -0.1758 | -0.0909 | 0.4400 | 0.0333 | -0.0596 | -0.0649 | 0.0799 | 0.1063 | 0.0694 | 1 | | |
| CONC | -0.1991 | 0.2014 | -0.0404 | 0.0097 | 0.0529 | -0.1584 | -0.0178 | 0.1231 | 0.0106 | -0.2168 | -0.3196 | 1 | |
| VOLR | -0.1187 | 0.0322 | 0.0130 | 0.0557 | 0.2214 | 0.0274 | -0.0591 | 0.0645 | 0.0328 | -0.0618 | 0.1279 | 0.0055 | 1 |

**Table 4 Regression Results**

| Variable | 2007 | | | 2008 | | | 2009 | | | Whole sample | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. |
| C | -0.50807 | -1.12671 | 0.2625 | -0.62008 | -1.55885 | 0.1222 | -0.25535 | -0.68995 | 0.4918 | -0.79187 | -4.00465 | 0.0001 |
| SIZE | 0.064598 * | 1.878543 | 0.0632 | 0.098533 *** | 3.257056 | 0.0015 | 0.079871 *** | 2.975028 | 0.0037 | 0.092163 *** | 5.734244 | 0 |
| DIVY | -0.99075 | -0.91771 | 0.361 | -0.12671 | -0.42456 | 0.6721 | -0.76356 * | -1.94129 | 0.055 | -0.01077 | -0.0479 | 0.9618 |
| RETU | 0.09092 | 1.121581 | 0.2647 | -0.05116 | -0.69088 | 0.4912 | 0.120106 * | 1.771444 | 0.0795 | 0.002477 | 0.097286 | 0.9226 |
| BETA | 0.021111 | 0.931866 | 0.3536 | 0.048631 | 0.425073 | 0.6717 | 0.038055 | 0.452367 | 0.652 | 0.028241 | 1.423075 | 0.1557 |
| BMAR | 0.093975 | 0.68376 | 0.4957 | 0.027627 | 1.090426 | 0.2781 | -0.04092 | -1.06907 | 0.2876 | 0.064075 *** | 3.639947 | 0.0003 |
| CURR | -0.0052 | -0.87753 | 0.3823 | -0.00591 | -1.20372 | 0.2315 | -0.00626 | -1.16514 | 0.2467 | -0.00572 * | -1.82673 | 0.0686 |
| LEVR | -0.01348 | -0.7635 | 0.4469 | -0.03435 *** | -3.04982 | 0.0029 | -0.03537 *** | -3.70279 | 0.0003 | -0.02602 *** | -3.80072 | 0.0002 |
| ROE | 0.03184 | 0.185435 | 0.8533 | -0.01413 | -0.21864 | 0.8274 | -0.13046 | -1.31437 | 0.1917 | 0.000679 | 0.0143 | 0.9886 |
| EXPR | 0.049429 | 1.06446 | 0.2897 | -0.02198 | -0.51654 | 0.6066 | -0.02328 | -0.65423 | 0.5144 | -0.00803 | -0.33339 | 0.7391 |
| TOVR | -5.74284 | -1.17848 | 0.2414 | -11.5633 | -1.54134 | 0.1264 | -1.81678 | -0.74209 | 0.4598 | -3.94648 ** | -2.00451 | 0.0458 |
| CONC | -0.25401 *** | -3.34422 | 0.0012 | -0.22656 *** | -2.97553 | 0.0037 | -0.12181 * | -1.84887 | 0.0674 | -0.20353 *** | -4.83425 | 0 |
| VOLR | -2.34142 * | -1.81297 | 0.0728 | -8.82929 | -1.5903 | 0.1149 | -12.0944 ** | -2.58468 | 0.0112 | -3.02141 *** | -2.63657 | 0.0088 |
| No. of Observations | 114 | | | 114 | | | 114 | | | 342 | | |
| R-squared | 0.228275 | | | 0.346897 | | | 0.425454 | | | 0.252145 | | |
| Adjusted R-Squared | 0.136584 | | | 0.269301 | | | 0.357192 | | | 0.224868 | | |
| F-Statistics | 2.489631 | | | 4.470529 | | | 6.232591 | | | 9.243748 | | |
| Prob F-statistics | 0.006708 | | | 0.00001 | | | 0 | | | 0 | | |

Note: The dependent variable is FOWN, *, **, *** indicates significance at the 10%, 5% and 1% respectively

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**Table 5 Regression Results**

| Variable | None | | | Cross-section fixed (dummy variables) | | | Cross-section fixed (dummy variables) Period fixed (dummy variables) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. |
| C | -0.79187 | -4.00465 | 0.0001 | 0.793273 | 1.212809 | 0.2265 | -0.5744 | -0.80475 | 0.4219 |
| SIZE | 0.092163 *** | 5.734244 | 0 | -0.04177 | -0.78066 | 0.4359 | 0.075847 | 1.285698 | 0.1999 |
| DIVY | -0.01077 | -0.0479 | 0.9618 | 0.065674 | 0.274856 | 0.7837 | -0.10889 | -0.46463 | 0.6427 |
| RETU | 0.002477 | 0.097286 | 0.9226 | 0.024956 | 1.017415 | 0.3101 | 0.015064 | 0.424515 | 0.6716 |
| BETA | 0.028241 | 1.423075 | 0.1557 | 0.006322 | 0.352974 | 0.7245 | -0.00148 | -0.0847 | 0.9326 |
| BMAR | 0.064075 *** | 3.639947 | 0.0003 | 0.036341 | 1.536362 | 0.1259 | 0.017563 | 0.752128 | 0.4528 |
| CURR | -0.00572 * | -1.82673 | 0.0686 | 0.001319 | 0.306698 | 0.7594 | 0.003063 | 0.734321 | 0.4636 |
| LEVR | -0.02602 *** | -3.80072 | 0.0002 | 0.00026 | 0.024396 | 0.9806 | -0.00446 | -0.4289 | 0.6684 |
| ROE | 0.000679 | 0.0143 | 0.9886 | 0.040855 | 0.787259 | 0.432 | 0.01954 | 0.388061 | 0.6984 |
| EXPR | -0.00803 | -0.33339 | 0.7391 | -0.20451 * | -1.68355 | 0.0937 | -0.19174 | -1.63418 | 0.1037 |
| TOVR | -3.94648 ** | -2.00451 | 0.0458 | -3.3625 | -1.5635 | 0.1194 | -4.67072 ** | -2.20494 | 0.0285 |
| CONC | -0.20353 *** | -4.83425 | 0 | -0.3551 ** | -2.44291 | 0.0154 | -0.31266 ** | -2.18156 | 0.0302 |
| VOLR | -3.02141 *** | -2.63657 | 0.0088 | -1.29375 | -1.20112 | 0.231 | -1.13957 | -1.09475 | 0.2749 |
| No. of Observations | 342 | | | 342 | | | 342 | | |
| R-squared | 0.252145 | | | 0.753753 | | | 0.772664 | | |
| Adjusted R-Squared | 0.224868 | | | 0.611249 | | | 0.637749 | | |
| F-Statistics | 9.243748 | | | 5.289353 | | | 5.727057 | | |
| Prob F-statistics | 0 | | | 0 | | | 0 | | |

Note: The dependent variable is FOWN, *, **, *** indicates significance at the 10%, 5% and 1% respectively

**Table 6: Panel regression results with industry dummy**

| Variable | None | | | Period fixed (dummy variables) | | |
|---|---|---|---|---|---|---|
| | Coefficient | t-Statistic | Prob. | Coefficient | t-Statistic | Prob. |
| C | -0.85454 | -4.13456 | 0 | -0.71921 | -3.57643 | 0.0004 |
| SIZE | 0.095883 *** | 5.645276 | 0 | 0.091895 *** | 5.607665 | 0 |
| DIVY | -0.0489 | -0.20982 | 0.8339 | -0.39877 * | -1.71099 | 0.0881 |
| RETU | 0.001695 | 0.065624 | 0.9477 | 0.04286 | 1.072733 | 0.2842 |
| BETA | 0.02784 | 1.356585 | 0.1759 | 0.010225 | 0.508632 | 0.6114 |
| BMAR | 0.069451 *** | 3.901667 | 0.0001 | 0.026521 | 1.377672 | 0.1693 |
| CURR | -0.00763 ** | -2.32755 | 0.0206 | -0.00683 ** | -2.16692 | 0.031 |
| LEVR | -0.02618 *** | -3.64576 | 0.0003 | -0.03177 *** | -4.5261 | 0 |
| ROE | 0.004681 | 0.096893 | 0.9229 | -0.00559 | -0.11999 | 0.9046 |
| EXPR | -0.03358 | -1.27335 | 0.2038 | -0.02169 | -0.85181 | 0.395 |
| TOVR | -3.90396 * | -1.9468 | 0.0524 | -3.94129 ** | -2.03848 | 0.0423 |
| CONC | -0.24368 *** | -5.30055 | 0 | -0.24448 *** | -5.53631 | 0 |
| VOLR | -2.59289 ** | -2.23629 | 0.026 | -2.90043 *** | -2.59969 | 0.0098 |
| D1 | 0.060707 * | 1.684694 | 0.093 | 0.045974 | 1.32235 | 0.187 |
| D2 | 0.074104 * | 1.884726 | 0.0604 | 0.052531 | 1.383374 | 0.1675 |
| D3 | 0.035983 * | 1.70522 | 0.0891 | 0.030853 | 1.520213 | 0.1294 |
| D4 | 0.033378 | 0.903154 | 0.3671 | 0.032268 | 0.909212 | 0.3639 |
| D5 | 0.005123 | 0.173103 | 0.8627 | 0.013641 | 0.478551 | 0.6326 |
| D6 | 0.013703 | 0.441009 | 0.6595 | 0.006952 | 0.2328 | 0.8161 |
| D7 | -0.03806 | -1.0105 | 0.313 | -0.05319 | -1.46549 | 0.1438 |
| No. of Observations | 342 | | | 342 | | |
| R-squared | 0.274317 | | | 0.334972 | | |
| Adjusted R-Squared | 0.231497 | | | 0.29133 | | |
| F-Statistics | 6.406308 | | | 7.675376 | | |

| Prob F-statistics | 0 | 0 |
|---|---|---|

Note: The dependent variable is FOWN, *, **, *** indicates significance at the 10%, 5% and 1% respectively

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