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Essays on the Impact of Institutional Investors on Firms' Liquidity and Payout Policy

Munira Ismail
University of New Orleans, mueyaismail@gmail.com

Essays on the Impact of Institutional Investors on Firms' Liquidity and Payout Policy

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Munira Ismail

B.Sc. National University of Malaysia, 2002
M.Sc. University of Hull, 2007
M.Sc. University of New Orleans, 2012

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Table of Content

List of Tables and Figures

Abstract

This dissertation consists of 2 essays in the area of corporate finance. The title of my first essay is “Impact of Institutional Investors on Firms’ Financial Constraint and Liquidity”. We can find ample evidences in existing literatures which show that institutional investors play a vital role in the corporate world. Many researchers have linked institutional investors to activism, monitoring benefits, mitigating the cost of debt using government bond, spin off activities and improving information asymmetry problem. In the first essay, I would like to add another dimension to institutional investors’ literature by examining institutional investors’ role in mitigating financial constraint problem in the firm. Institutional investors have large financial networks and make large financial investment in firms. Their presence might help firms attract external capital. I am using 2 financial constraint measurements; KZ index (Lamont, Polk, Saa-Requejo, 2001) and bank line of credit (Sufi, 2009). I am also adding additional measurement for financial constraint using notes payable. I find evidences to support the hypotheses that institutional investors’ presence and ownership mitigate financial constraints. The title of my second essay is “Long- and Short-Term Institutional Investors and Payout Policy”. In the second essay, I examine the relationship between the firms’ payout policy and the presence/ownership of certain type of institutional investors. I classify the types of institutional investors using Bushee’s (1998, 2001) classification of institutional investors. I find that the presence and the magnitude of long term institutional investors positively affect the likelihood and the magnitude of dividend. I also find that the presence and the magnitude of short term institutional investors positively affect the likelihood and the magnitude of share repurchases. This study suggests that the presence of different types of institutional investors can affect payout policy.

Keywords: Transient, dedicated, Monitoring, Trading

Chapter 1

1.1 Introduction

Previous literature has found evidence that institutional investors play a vital role in the corporate world. Many have linked institutional investors to activism and monitoring benefits (Smith 1996, Gillian and Starks 2000, Del Guercio and Hawkins, 1999, Demiralp et al, 2011). However, so far as to my knowledge, I haven't seen literatures which investigate whether the presence of institutional investors can mitigate financial constraint in a firm.

In this research, I want to add another dimension of institutional investors' role by examining institutional investors from the liquidity perspectives. I am looking at liquidity in terms of the ability of a firm to generate adequate amount of cash to meet firm's need for cash or financing. Firms can meet future liquidity by issuing new claims, obtain bank line of credit or/and by holding claims on other firms (Holmstrom and Tirole, 1998). Firms which are unable to raise capital and financing are considered as financially constrained. The main question I am investigating in this research is, will the presence of institutional investors and institutional ownership mitigate financial constraint and improve firms' liquidity. I wish to examine institutional investors' role in mitigating financial constraints in the firm. Since institutional investors have large financial networks and make large financial investment in firms, does their presence help firms attract external capital. If institutional presence helps firms attract external capital, their presence should mitigate financial constraint.

This research can contribute to existing literature by providing evidence whether institutional investors are able to mitigate financial constraints. Liquidity is a crucial component in a firm and it is an important fuel for a firm. Funds enable firms to take advantage of growth prospects, strengthen existing investment and future investment, or

simply surviving. (Tirole, 2006). Hence, it is important to understand factors that can mitigate financial constraints and improve liquidity. In this essay, the factors that I wish to examine are institutional presence and institutional ownership. I wish to argue that since institutional investors are financial institutions themselves; their presence in the firm might provide firm with access to more capital and different sources of capital. Gatev and Strahan (2006) and Sufi (2009) stress that banks are the most efficient liquidity providers in the economy. Financial institutions are part of institutional investors. Sufi (2007, 2009) and Gatev and Strahan (2006) also document that line of credit is an important source of liquidity. Line of credit is also known as revolving credit facilities or loan commitments provided by banks. I expect that the presence of institutional investors improves the financial condition of the firm and should mitigate the financial constraint in a firm. I also expect that firms with higher institutional ownerships will exhibit lower financial constraints.

1.2 Literature Reviews

Institutional investors play a vital role in the corporate world, in investment and in other areas. The empirical evidence on institutional investors has shown us the importance of institutional investors and the many benefits they bring to the firm.

The Evolution of Institutional Investors Literatures

Institutional investors have been linked to activism (Smith 1996, Gillian and Starks 2000) and monitoring (Del Guercio and Hawkins, 1999). Demiralp et al (2011) find evidence of monitoring benefit by institutional investors on seasoned equity offerings.

Institutional investors are known as sophisticated investors because they are able to hire good analyst and able to have more resources. There is evidence of improvement in information asymmetry with institutional investors' presence (O'Brien and Bhushan, 1990). Institutional

investors are also known to bring improvements in a firm. Hribar, Jenkins and Wang (2004) and Burns, Kedia and Lipson (2006) find evidence that institutional investors' presence can mitigate the effect of earning management. Bhojraj and Sengupta (2003) find evidence that institutional investor mitigate the cost of debt in firm. Their research mainly focuses on corporate bond yield. Hoechle et al (2012) find that institutional investor presence improves the diversification discount in a firm. Asbaugh, Collins and LaFond (2004) analyse the corporate governance and the cost of equity capital. They find that the institutional ownership is positively related to risk. Abarbanell, Bushee and Raedy (2003) investigate whether institutional investors rebalance their portfolio in the event of spin offs. They find evidence that institutional investors that are subjected to stringent fiduciary standards are more likely to immediately rebalance their portfolio after spin off events. Using Bushee's institutional investors classification data, institutional investors are categorized into these legal types; banks, insurance companies, investment companies, independent investment advisor, corporate (private) pension fund, public pension fund, university and foundation.

The vital role and the benefits of institutional investors in a firm are obvious and lucid. However, since we are trying to link institutional investors and financial constraint, it is crucial to understand the link between liquidity and financial constraint.

Measuring Financial Constraint

Financial constraint is being linked to the firms' ability to raise capital and financing. As discussed earlier, we are looking at liquidity from the perspective of a firms' ability to generate adequate amount of cash to meet the firms' need for financing or investment. The definition of liquidity in this essay is improved access to capital. Firms can meet future liquidity by issuing new claims obtaining bank line of credit or/and holding claims on other

firms (Holstrom and Tirole, 1998). Firms which are unable to raise sufficient capital are considered financially constrained.

Lamont, Polk and Sae-Requejo (2001) defined financial constraint as frictions that prevent firm from funding desired investment. With the definition of financial constraint as the spread between internal and external cost of funds, using manufacturing firms as their sample, Fazzari, Hubbard and Petersen (1988) find that firms which are financially constrained as more sensitive to fluctuation in their cash flow. They investigate the investment-cash flow sensitivity by dividing the firms using certain classification (dividend payout, retention earnings) as their priori measurement of financial constraint. Using Fazzari, Hubbard and Petersen (1988) or FHP (1988) financial constraint measurement, Hoshi, Kasyhap and Scharfstein (1991) find evidence using Japanese firms as their sample, creditors that are in the same group (industrial group) with the shareholders are less financially constrained.

Kaplan and Zingales (1997) refute that investment-cash flow sensitivities is an accurate measurement for financial constraint. They argue that theoretically, investment-cash flow sensitivities do not necessarily increase with the degree of financial constraint which contradicts FHP (1988) argument. Using FHP (1988) sample of financially constrained firms from different sources, they find empirical evidence which contradicts FHP (1988) results. Using their classification scheme (later known as KZ index), they conclude that investment-cash flow sensitivities is not a correct measure for financial constraint. Using KZ index from Kaplan and Zingales (1997), Lamont, Polk and Saa-Requejo (2001) investigate whether financial constraint characteristics can be observed via stock returns. They find evidence which support that it is reflected in stock price and they conclude that financial constraint are subject to common shock, not the firm specific risk. Whited and Wu (2006) construct an index of financial constraints based on a standard intertemporal investment model which is

augmented to take into account financial frictions via generalized method of moments (GMM). They find that the returns of constrained firms move together which suggest there exist financial constraint factor. KZ index is also not exempted from having its own critics. Hadlock and Pierce (2010) cast some doubts concerning using KZ index as financial constraint measurement based on a set of financially constraint firms hand collected from 10K SEC filings. From the 10K SEC filings, they identify financially constraint firms and assigned them in a logit form model. The logit model is then regressed against variables used to construct KZ index such as leverage, cash, Q, debt and dividends. They compare the results with KZ index and find some inconsistency in terms of the signs. They conclude that size and firms' age can do a better job in measuring financial constraint compared to KZ index.

Using bank line of credit as a measure of financial constraint, Sufi (2009) provides evidence that lack access of bank line of credit is more powerful in terms of statistical significance compared to other financial constraint measurement traditionally used in literatures such as FHP (1988) cash flow sensitivity measurement.

1.3 Hypotheses Development

Lamont, Polk and Saa-Requejo (2001) or LPS (2001) define financial constraint as the friction that prevents a firm from funding all desired investment. As mentioned by LPS (2001), financial constraints might be caused by the inability to borrow, inability to issue equity or illiquidity of assets. As discussed earlier, there are evidences which suggest that the presence of institutional investors improve the condition of a firm (Demiralp et al (2011), O'Brien and Bhushan (1990), Hribar, Jenkins and Wang (2004), Burns, Kedia and Lipson (2006), Bhojraj and Sengupta (2003), Hoechle et al (2012)). We would expect the same would hold for firm with financial constraints. The presence of institutional investors can

mitigate the financial constraint condition in a firm. Institutional investors comprises of bank trust, corporate pension fund, independent investment advisor, insurance company, investment company, public pension fund, and university and foundation endowment (Bushee, 1998, 2001). I wish to argue that since institutional investors are financial institutions themselves, their presence may provide firm with access to more capital and different sources of capital. Hence, this can help mitigate or lower the financial constraints that a firm might face. The general hypotheses is as following; I expect that firms with institutional investors' presence and higher institutional ownership would exhibit lower financial constraint. I am adopting 2 financial constraint measurements; KZ index (LPS, 2001) and bank line of credit (Sufi, 2009). Using KZ index, the first hypotheses is as following; firms with institutional presence and higher institutional ownership would exhibit lower KZ index. High KZ index indicates a firm which is highly constrained. If the first hypotheses holds, I would expect that institutional presence and higher institutional ownership negatively affects KZ index.

Sufi (2007, 2009) and Gatev and Strahan (2006) find that line of credit is an important source of liquidity. Most of the firms in Sufi (2009) sample have at least one quarter of line of credit as debt outstanding. In Sufi (2009), he documents that in previous literature such as in Kashyap, Rajan and Stein (2002) and Gatev and Strahan (2006), they emphasized that banks are the most efficient liquidity providers. There is also evidence that there has been a growing use of bank line of credit over the years (Morris, Sellon, 1995, Sufi, 2007). As discussed earlier, the presence of institutional investors may provide firms access to more capital and different sources of capital. Since there are evidences which show that line of credit is one of the important sources of liquidity, in the next section, I wish to focus on one type of capital which is the line of credit. This will also make this research differ from

Bhojraj and Sengupta (2003) because their focus is on corporate bond yield. The bank line of credit is also known as revolving credit facilities (Sufi, 2009). Bank line of credit can be considered as an important source of liquidity to a firm because of its flexibility and convenience to the borrower. It can serve as a liquidity buffer and it is also known to protect borrowers from market uncertainty such as credit rationing or credit crunch (Berger and Udell, 1998). The presence of institutional investors would improve firms' ability to obtain bank line of credit in their liquidity management. So, my second hypotheses is as following; firms with institutional investors presence and higher institutional ownership, would exhibit higher access to bank line of credit. Financial networks typically include financial institutions and banks. So, institutional presence in a firm brings with it the ability of these institutions to arrange line of credit access through their networks (Fan, Subramaniam, and Ye, 2014)

Loan agreement would usually include some financial covenant as part of the term and condition in the agreement. The lender would expect the borrower to be able to adhere to certain limits or conditions agreed by both parties prior to the lending. Sufi (2009) also investigates whether firms are in compliance with the financial covenant or in violation of financial covenant. Sufi (2009) finds that when a firm violates a covenant, the firm will lose access to a substantial amount of its line of credit.

As an addition to this research, I also include notes payable as another measurement for financial constraint. Notes payable is a form of short term debt for capital, financing and investment purposes. Using the same argument, the presence of institutional investors should improve the firms' ability to obtain or have access to notes payable. The hypotheses is as following; firms with institutional investors' presence and higher institutional ownership would exhibit higher access to notes payable.

1.4 Methodology

To test our first hypotheses, I am using the KZ index by Lamont, Polk and Saa-Requejo (2001) as our measurement of financial constraint. The first model is as following;

Model 1

$$KZ_{i,t} = \alpha_1 + \beta_1 PIH_{i,t} + \beta_2 MVE_{i,t} + \beta_3 NCTA_{i,t} + \beta_4 NW_{i,t} + \beta_5 SID_{i,t} + \beta_4 HI_{i,t}$$

where

$KZ_{i,t} = \text{KZ index}$

$PIH_{i,t} = \text{Institutional ownership for firm } i \text{ and at time } t$

$MVE = \text{Market Value of Equity,}$

$NCTA = \text{Non cash total asset,}$

$NW = \text{Net worth,}$

$SID = \text{Number of segments}$

$HI = \text{Herfindahl Index}$

Institutional ownership is the ratio between the total shares held by institutional investors and total shares outstanding.

Following Lamont, Polk and Saa-Requejo (2001), the KZ index is measured as following,

$$KZ = -1.001909 * \left(\frac{CF}{K}\right) + 0.2826389 * Q + 3.139193 * \left(\frac{Debt}{TC}\right) - 39.3678 * \left(\frac{Div}{K}\right) - 1.315 * \left(\frac{Cash}{K}\right)$$

where CF is the cash flow, K is the tangible asset, Q is total investment, TC is the total capital, and Div is the dividend.

Model 2

To test for our second hypotheses, the model is as following,

$$Pb(LC)_{i,t} = \alpha + \beta_1 PIH_{i,t} + \beta_2 Size_{i,t} + \beta_3 MVE_{i,t} + \beta_4 NCTA_{i,t} + \beta_5 NW_{i,t} + \beta_6 SID_{i,t} + \beta_7 HI_{i,t} + \ldots + \beta_8 MB_{i,t}$$

where

LC =Line of credit where $Pb(LC)$ is equal to 1 if there is access to line of credit and

$Pb(LC)$ is equal to 0 if there is no access to line of credit.

$Size$ = log of total asset.

Model 3

The alternative model to test for the second hypotheses is as following,

$$NP_{i,t} = \alpha_1 + \beta_1 PIH_{i,t} + \beta_2 MVE_{i,t} + \beta_3 NCTA_{i,t} + \beta_4 NW_{i,t} + \beta_5 SID_{i,t} + \beta_4 HI_{i,t}$$

where

NP = notes payable.

Endogeniety problem

Firms with high financial constraints could attract institutional ownership through other mean. For example through dividend policy. Allen, Bernardo and Welch (2000) tax clientele model argue that institutions have a relative advantage to monitor firms or detect firms' quality, so firms issue dividend to attract large institutions. So, it could be financial constraints affecting institutional ownership, and causing spurious correlation between institutional ownership. In this case, we might face endogeniety issue. To address the endogeneity issue that might occur in this study, I am using the endogenous self-selection model and Heckman (1979) model approach.

Endogenous self-selection model and Heckman's (1979) approach

There are possibilities that firms' financial constraint can affect institutional ownership. We are looking into possibilities that the institutional investors choose firms which are less financially constrained. In this case, there is a potential endogeneity issue which might arise in this research. To address this problem, I am using the endogenous self-selection model and Heckman's (1979) approach.

The first stage model is as following,

$$Pb\_PIH_{i,t-1} = \alpha_1 + \beta_1 KZ_{i,t-1} + \beta_2 LEV_{i,t-1} + \beta_3 Size_{i,t-1}$$

where,

$Pb\_PIH_{i,t-1}$ = Likelihood of institutional presence,

$KZ_{i,t-1}$ = Prior year KZ index for firm i ,

$LEV_{i,t-1}$ = Prior year leverage for firm i ,

$Size_{i,t-1}$ = Prior year size for firm i .

The prior year is denoted as $(t-1)$ in the model. Leverage and Size are control variables for institutional ownership and presence. To measure Heckman's (1979) two-stage procedure, first I will estimate the previous equation in order to obtain the Inverse Mills Ratio. Then I will run the second stage model as following,

$$KZ_{i,t} = \alpha_2 + \beta_4 PIH_{i,t} + \beta_5 MVE_{i,t} + \beta_6 NCTA_{i,t} + \beta_7 BE_{i,t} + \beta_8 NW_{i,t} + \beta_9 SID_{i,t} + \beta_{10} HI\_A_{i,t} + \ldots$$
$$\ldots + \beta_{11} MB_{i,t} + \beta_{12} IM_{i,t}$$

where

IM = Inverse Mills Ratio.

1.5 Data Description

For KZ index and notes payable measurement, the sample period spans from 1981until 2013. Using Sufi (2009) data set, the sample period for bank line of credit spans from 1996 to 2003. The bank line of credit originated from 10-K SEC filings and the line of credit information is only made available in 1996. So, in this essay I have 2 separate data sets. I am going to use the first data set to test the first and third hypotheses pertaining KZ index and notes payable. To test the second hypotheses, I am going to use the second sample.

Following Sufi (2009), Compustat data contains non-financial US based firms with at least 4 consecutive years between 1996 and 2003 of positive data on total assets (item 6), four consecutive years of non missing data on total liabilities (item 181), total sales (item 12), a measure of EBITDA (item 13), share price (item 199), share outstanding (item 25), preferred stock (item 10), deferred taxes (item 35), and convertible debt (item 79). Following Sufi (2009), firms are required to have 4 consecutive years of book leverage ratios between 0 and 1.

Institutional Ownership

Following Bushee (1998), institutional ownership is measured as the ratio of total shares held by institutional investors and total shares outstanding. I obtain quarterly data for institutional ownership from Thomson-Reuters Institutional holdings 13(F) database. Institutional investors with $100 million or more in Section 13(f) securities are required by United States Securities and Exchange Commission to file a report using a Form 13(F). In this form, institutional investment manager is required to disclose information regarding their holdings. Thomson-Reuters Institutional holdings 13(F) database provides us with information from the Form 13(F) filed with the US Securities and Exchange Commission.

Financial constraint measurement

KZ index and Notes Payable

Cash flow is computed as the ratio of total income before extraordinary items (Compustat Item #18) and depreciation and amortization (Compustat item #14) with property, plant and equipment (Compustat Item #8) (LPS, 2001). K is property, plant and equipment (Compustat Item #8). Investment opportunity or Q is computed as the ratio of total equity (Compustat Item #6) and CRSP December Market Equity (CRSP) subtracted by total common equity (Compustat Item #60) and deferred tax (Compustat Item #74) with total equity (Compustat Item #6). Debt is computed as total long term debt (Compustat Item #9) and debt in current liabilities (Compustat Item #34). Total capital is computed as total long term debt and debt in current liabilities plus stockholders equity (Compustat Item #216). Dividend is the total of common stock dividend and preferred stock dividend (Compustat Item #216 + Compustat

Item #19). Cash is the cash and short term investment (Compustat Item #1). Notes payable (Compustat item #206) is divided by total asset.

Sufi (2009) Line of Credit Database

Using Sufi (2009) line of credit data, the sample consist of non-financial US based firms span from 1996 to 2003. Line of credit is also known as revolving credit facilities or loan commitments. Usually, banks or financing companies provides line of credit. The used line of credit is the debt obligation while the unused line of credit remains off the balance sheet. There are 2 types of samples in this database; the full sample and the random sample. The full sample is obtained by searching the 10-K SEC filing using certain phrases which indicate that the firms have bank line of credit. The phrases as indicated by Sufi (2009) are "credit lines", "credit facility", "revolving credit agreement". "bank credit line", "working capital facility", "lines of credit", and "line of credit". In order to reduce error in the search term, Sufi (2009) refines the search by manually search to make sure that 10 lines before the search phrases do not contain any "no", "do not have a", "not have any", "retired our", "terminated our" and "equity. Next, Sufi (2009) refines the search again by manually examining whether the search term contains the words "expired", "terminated" and "was terminated".

For random sample, the sample is collected manually where 300 firms are randomly selected. In this sample, the financial covenant violation information is also collected. These covenants require firms to maintain their financial ratios at a certain rate.

Control Variables

I am selecting control variable consistent with Sufi (2009). Book debt is the short term plus long term debt (Compustat item 34 + Compustat item 9) divided by total asset (item 6). Asset tangibility is tangible asset (item #8) divided by non-cash total asset. Balance sheet cash is

measured using item #1. The market to book ratio is calculated using total assets less the book value of equity plus the market value of equity less cash and divide all with non-cash total assets. Book value of equity is the book value of assets (item #6) less the book value of total liabilities (item #181) and preferred stock (item #10) plus deferred taxes (item 35). The market value of equity is the common shares outstanding (item #25) multiplied by share price (item #199). Cash flow is EBITDA (item #13) divided by non-cash total assets. Net worth cash adjusted is non cash total assets less total liabilities, divided by non-cash assets. The number of segments measure diversification where the number of segment is higher when a firm is more diversified. Herfindahl-Hirschman Index is measured as the sum of squared market shares computed using Compustat total asset (item #6). The Herfindahl index is based on 3 digits SIC code.

The sample is winsorized at the 5^{th} and 95^{th} percentile to mitigate extreme outliers.

1.6 Analysis

KZ index

Summary Statistics for KZ index

As discussed earlier, I am using 2 financial constraint measurements which are KZ index (LPS, 2001) and line of credit (Sufi, 2009). As an additional measurement, I include notes payable as an alternative to line of credit. As discussed earlier, since line of credit data set is limited from 1996 to 2003, I am going to use 2 separate data sets for both measurements. Although we are using 2 different data sets, the results are consistent to support the hypotheses which I am going to discuss in the next section.

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
KZ	34880	3.6983843	-0.047923	35.004483	-53.905615	350.302526
NP	314915	428.385628	0	7912.61	-1072	605462.51
PIH	15396	0.0467616	0.0223678	0.0736746	5.52E-09	1.6019429
MVE	34880	4084	260.66007	18800.35	0	626550.35
NCTA	34880	3774.04	209.6835	19291.92	0	747592
NW	34879	0.1551409	0.4543012	5.4700726	-709.25	0.9987654
BVE	34880	1937.21	143.176	9826.77	-84777	311097
SID_T	276051	27.7807724	3	79.970083	1	1618
HI_Asset	34880	0.026442	0.0151856	0.030906	0.0045636	1

Table 1: Summary statistics for KZ Index, Notes Payable and the control variables

This table reports the summary statistics for all firms in the sample. The sample period spans from 1980 to 2013. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. KZ index is measured as following;

$$KZ = -1.001909 * \left(\frac{CF}{K}\right) + 0.2826389 * Q + 3.139193 * \left(\frac{Debt}{TC}\right) - 39.3678 * \left(\frac{Div}{K}\right) - 1.315 * \left(\frac{Cash}{K}\right)$$

where CF is the cash flow, K is the tangible asset, Q is total investment, TC is the total capital, and Div is the dividend.

Table 1 is the summary statistics for sample firms using KZ index and notes payable as the financial constraint measurement. For this sample, the time period spans from 1980 to 2013. The data starts from the year 1980 because the institutional holdings data on Thomson-Reuters 13(F) Institutional holdings database is only available from year 1980 onwards. After winsorizing the data at 5^{th} and 95^{th} percentile to mitigate outliers and after ensuring that there is no missing observations in the data set, we have 34,880 observations in this data set.

Using 34,880 firm-year observation, the distribution statistics for the KZ index are as following; mean, median and standard deviation for the index are -3.3933, -0.9254 and 13.1714 respectively. The minimum and the maximum values for the KZ index are -53.9056 and 350.3025. Our alternative financial constraint measurement using notes payable (NP) has a mean of 428.3856, median of 0 and the standard deviation of 7912.61. The minimum value is -1072 and the maximum value is 605,462.51 respectively. Our variable of interest which is the institutional ownership (PIH) where it is measured as the ratio of total shares held by institutional investors and the total shares outstanding, has a mean of 0.0468, a median of 0.0224 and the standard deviation of 0.0737. The minimum and the maximum value for institutional ownership is 0.0000 and 1.6019 respectively. The market value of equity (MVE) is measured as common shares outstanding multiply with the share price. The mean, median and the standard deviation for market value of equity are 4084, 260.66 and 18,800.35 respectively. I am going to divide all the firm characteristics control variables with total asset to control for size. The minimum and maximum are 0.0000 and 626550.35 respectively. Non cash total asset (NCTA) is measured as the total asset minus cash. The mean and median are 3774.04 and 209.6835 respectively. The minimum and maximum values are 0.0000 and 747,592 respectively. The standard deviation is 19,291.92. Net worth (NW) is measured as non-cash total asset minus total liabilities divided by non-cash total asset where mean and median are 0.1551 and 0.4543 respectively. The standard deviation is 5.4700 and the minimum and maximum values are -709.25 and 0.9987 respectively. Book value of equity (BVE) is measured as the book values of assets minus book value of total liabilities plus preferred stock plus deferred taxes. The mean and median are 1937.21 and 143.176 respectively. The standard deviation is 9826.77 and the minimum and maximum values are -84777 and 311097 respectively. The mean, median and standard deviation for number of segments to measure diversification are 27, 3, and 79.9701 respectively. The minimum and

maximum value for numbers of segments are 1 and 1618 respectively. Herfindahl index is defined as the sum of squared market shares using 3 digits SIC. The market shares of firm i in industry j in year t is computed using total asset (Compustat item #6).

	KZ	IO	MVE	NCTA	NW	BVE	SID	HI_Asset
KZ	1.0000							
PIH	-0.0110	1.0000						
MVE	-0.0523	0.0191	1.0000					
NCTA	0.0011	0.0050	0.7340	1.0000				
NW	-0.1469	0.0159	0.0197	0.0049	1.0000			
BVE	-0.0147	0.0065	0.8567	0.8867	0.0268	1.0000		
SID	0.0014	0.0578	0.2689	0.3398	0.0269	0.2807	1.0000	
HI_Asset	-0.0045	0.0233	-0.0595	-0.0215	0.0523	-0.0521	0.0857	1.0000

Table 2: Correlation Matrix between the dependent and independent variables

Table 2 reports the correlation matrix between all variables of interest. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. KZ index is measured as following;

$$KZ = -1.001909 * \left(\frac{CF}{K}\right) + 0.2826389 * Q + 3.139193 * \left(\frac{Debt}{TC}\right) - 39.3678 * \left(\frac{Div}{K}\right) - 1.315 * \left(\frac{Cash}{K}\right)$$

where CF is the cash flow, K is the tangible asset, Q is total investment, TC is the total capital, and Div is the dividend. MVE is the market value of equity, NCTA is the non-cash total asset, NW is net worth, BE is the book value of equity, SID is the number of segments and HI_Asset is the Herfindahl Asset measured by total asset. According to LPS (2001), the higher the value of KZ index, the firm is more likely to be constrained. In this case, according to my hypotheses, I expect a negative correlation between KZ index and institutional

ownership (PIH). From the table, there is a negative relationship between KZ and institutional investors (PIH). This relationship indicates the initial evidence which supports our first hypotheses where firms with higher institutional ownership exhibit lower financial constraints.

Regression Analysis for KZ Index

Table 3 reports the ordinary least square regression for firm-year sample. The dependent variable is KZ index measured as following;

$$KZ = -1.001909 * \left(\frac{CF}{K}\right) + 0.2826389 * Q + 3.139193 * \left(\frac{Debt}{TC}\right) - 39.3678 * \left(\frac{Div}{K}\right) - 1.315 * \left(\frac{Cash}{K}\right)$$

where CF is the cash flow, K is the tangible asset, Q is total investment, TC is the total capital, and Div is the dividend. MVE is the market value of equity, NCTA is the non-cash total asset, NW is net worth, BE is book value of equity, SID is the number of segments and HI_Asset is the Herfindahl Asset measured by total asset. For each variable, I report the coefficient estimates (in bold) and the standard error (in italic). This is going to consistent throughout the essay. For all tables in this chapter, * corresponds to a coefficient estimate which is statistically significant at 10% significance level, ** corresponds to a coefficient estimate which is significant at 5% significance level and *** corresponds to a coefficient estimate which is significant at 1% significance level. This is consistent for all tables in this essay.

Intercept	**[-3.30157]*** **	**[-3.12201]*** **	**[-3.25344]*** **	**[-3.17166]*** **	**[-2.50096]*** **	**[-2.56272]*** **	**[-2.53393]*** **
	0.12573	0.12859	0.1285	0.12856	0.13241	0.14448	0.17195
PIH	**[-1.96166]**	**[-1.78423]**	**[-1.94467]**	**[-1.64687]**	**[-1.24911]**	**[-1.29884]**	**[-1.29086]**
	1.44083	1.43918	1.44075	1.43693	1.42187	1.42878	1.42906
MVE		**[-0.00002856]*** **		**[-0.0000629]*** **	**[-0.0000601]8*** **	**[-0.00006032]*** **	**[-0.00006046]*** **
		0.00000441		0.00000649	0.00000642	0.00000644	0.00000646
NCTA				**0.00004627*** **	**0.00004468*** **	**0.00004329*** **	**0.00004331*** **
				0.00000642	0.00000635	0.00000652	0.00000652
NW					**[-2.13558]*** **	**[-2.13777]*** **	**[-2.13588]*** **
					0.11713	0.11746	0.11762
BE			**[-0.00001639]***				
			0.00000906				
SID						**0.00074856**	**0.00077232**
						0.00077603	0.00077986
HI Asset							**-1.08978**
							3.52894
R-Square	0.0001	0.0028	0.0003	0.0062	0.0272	0.0273	0.0273
Adj R-Sq	0.0001	0.0027	0.0002	0.006	0.0269	0.0269	0.0269

Table 3: OLS Regression (Firm-Year Sample)

Table 3 reports the OLS regression results for the model specified in model 1 using firm-year observations. The dependent variable for this regression is KZ index. In column one, the institutional ownership has a coefficient of -1.96166 but it is not significant. When I add firm specific control variables, there is no changes to the result. Institutional ownership remains insignificant.

In the next analysis, the observations are being divided into 2 groups; highly constrained firms and less constrained firms using median. Using firm-year observations and the median for KZ index, there are some evidence which support hypothesis 1 where firms with higher institutional ownership exhibit lower financial constraint. The firms above median is classified as highly constrained firms and the results are presented in table 4. The results in table 4 are as following; institutional ownership (PIH) negatively (highly significantly) affects the KZ index. This evidence suggests that institutional investors (PIH) is especially important for firms that are highly constrained.

Intercept	**3.66627*** **	**3.8718*** **	**3.81351**	**3.87152*** **	**5.15243*** **	**5.15243*** **	**5.60186*** **	**6.16344*** **	**3.73272*** **
	0.22342	0.23112	0.22837	0.23115	0.21677	0.21677	0.23878	0.28625	0.27034
PIH	**[-11.74285]*** **	**[-11.49836]*** **	**-11.61112**	**[-11.49245]*** **	**[-7.88307]*** **	**[-7.88307]*** **	**[-7.33399]*** **	**[-6.86771]*** **	**[-5.26004]*** **
	2.50588	2.50467	2.50451	2.50541	2.31346	2.31346	2.32033	2.32183	2.13163
MVE		**[-0.00006592]*** **		**[-0.00006893]** **	**-0.00003089**	**-0.00003089**	**-0.0000301**	**-0.00003507**	
		0.00001921		0.00003256	0.00003005	0.00003005	0.00003009	0.00003009	
NCTA				**0.00000201**	**-0.00001291**	**-0.00001291**	**-0.00000153**	**-0.00000163**	**-0.00001019**
				0.00001759	0.00001623	0.00001623	0.00001645	0.00001643	0.00000914
NW					**[-5.47082]*** **	**[-5.47082]*** **	**[-5.4495]*** **	**[-5.42291]*** **	**[-3.25748]*** **
					0.16736	0.16736	0.16759	0.1676	0.16687
BE			**-0.00007157**						
			0.00002333						
SID							**[-0.00606]*** **	**[-0.00564]*** **	**[-0.00376]*** **
							0.00136	0.00136	0.00125
HI Asset								**[-21.77156]*** **	**[-14.27905]*** **
								6.13377	5.63082
MB									**0.4646*** **
									0.01385
R-Square	0.0036	0.0055	0.0051	0.0055	0.1541	0.1541	0.1569	0.1587	0.2905
Adj R-Sq	0.0034	0.0052	0.0048	0.005	0.1536	0.1536	0.1562	0.1578	0.2898

Table 4: OLS Regression (Sample of highly constrained firm using median)

Firms with high financial constraints could attract institutional ownership through other mean. For example through dividend policy. Allen, Bernardo and Welch (2000) tax clientele model argue that institutions have a relative advantage to monitor firms or detect firms' quality, so firms issue dividend to attract large institutions. So, it could be financial constraints affecting institutional ownership, and causing spurious correlation between institutional ownership. Next, I control for endogeneity using the whole sample (firm-year observation in table 3). In the first step, the dependent variable is the prior year institutional presence (t-1) and the independent variables are prior year KZ index (t-1). The control variables for institutional ownership are prior year leverage (t-1) and size (t-1). Both leverage and size are to control for institutional ownership. The last row from table 5 reports the coefficient and the standard error for inverse Miller ratio obtained from the first step regression. The Inverse Miller Ratio is going to be used in the second step regression. The second step is the regression of KZ index as the dependent variable with institutional ownership (PIH), control variables for KZ index and inverse Miller ratio as the independent variables.

Even, after controlling for endogeneity, most of the coefficients for institutional ownership remain negative and insignificant. Overall, results do not show support that the institutional ownership can mitigate financial constraint.

First Step							
Intercept	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **
	0.0217	0.0217	0.0217	0.0217	0.0217	0.0217	0.0217
KZ lag	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Lev lag	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **
	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Size lag	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **
	3.60E-03	3.60E-03	3.60E-03	3.60E-03	3.60E-03	3.60E-03	3.60E-03
Second Step							
Intercept	**[-9.78122]*** **	**[-9.15855]*** **	**[-10.09696]*** **	**[-9.36182]*** **	**[-9.34341]*** **	**[-10.37803]*** **	**[-10.27676]*** **
	0.59675	0.67045	0.67615	0.68072	0.68044	0.73544	0.74095
PIH	**1.09461**	**0.91055**	**1.42552**	**1.42336**	**1.48422**	**1.51594**	**1.53861**
	1.42076	1.42345	1.41983	1.41621	1.41571	1.41961	1.41973
MVE		**[-0.00000892]** **	**[-0.00004714]*** **	**[-0.00004648]*** **	**[-0.00006386]*** **	**[-0.00006457]*** **	**[-0.00006481]*** **
		4.38E-06	0.00000606	6.05E-06	7.93E-06	7.95E-06	7.95E-06
NCTA			**0.00005485*** **	**0.00005341*** **	**0.0000306*** **	**0.00002368** **	**0.00002405*** **
			0.00000604	6.02E-06	9.03E-06	9.25E-06	9.26E-06
NW				**[-1.11449]*** **	**[-1.14128]*** **	**[-1.14102]*** **	**[-1.1331]*** **
				0.13999	0.14015	0.14044	0.14062
BE					**0.00008101*** **	**0.00009006*** **	**0.000089*** **
					0.00002391	0.00002409	0.00002411
SID						**0.00283*** **	**0.00291*** **
						0.00077335	0.00077605
HI Asset							**-3.94109**
							3.51113
IMR	**13.25206*** **	**12.11738*** **	**13.84613*** **	**13.13566*** **	**13.11714*** **	**14.72638*** **	**14.73108*** **
	1.18165	1.30628	1.31576	1.31543	1.31487	1.38635	1.38634
R2	0.0104	0.0107	0.0174	0.0225	0.0234	0.0245	0.0246***
Adj R2	0.0102	0.0104	0.017	0.0221	0.0229	0.0239	0.024

Table 5: Heckman 2 Stage Model (Firm-Year Sample)

Table 6 reports the endogeniety test for highly constrained firm-year sample using the same Heckman's (1979) 2 stage model. In the first stage the dependent variable is institutional presence regressed against the prior year KZ index, size measured using log of total asset and leverage measure as ratio of long term debt and total asset. The coefficient and the standard deviation for inverse miller ratio are reported in the last column of the table. In the second stage, the dependent variable is the likelihood of financially constrained firm regressed against institutional ownership (PIH), market value of equity (MVE), NCTA (Non cash total asset), NW (Net worth), BE (Book value of equity), SID (Number of segments) and Herfindahl Index measured using total asset (HI_Asset). For each variable, I report the coefficient estimate (in bold) and the standard error (in italic). After controlling for endogeniety, institutional ownership (PIH) negatively (highly significantly) affects KZ index. This evidence strengthens my previous result. This evidence suggests that institutional ownership (PIH) is especially important for firms that are highly constrained.

First Step							
Intercept	**[-2.1476]*** **	**[-2.1476]*** **	**[-2.1476]*** **	**[-2.1476]*** **	**[-2.1476]*** **	**[-2.1476]*** **	**[-2.1476]*** **
	0.0341	0.0341	0.0341	0.0341	0.0341	0.0341	0.0341
KZ lag	**[-0.0022]*** **	**[-0.0022]*** **	**[-0.0022]*** **	**[-0.0022]*** **	**[-0.0022]*** **	**[-0.0022]*** **	**[-0.0022]*** **
	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Lev lag	**0.0427*** **	**0.0427*** **	**0.0427*** **	**0.0427*** **	**0.0427*** **	**0.0427*** **	**0.0427*** **
	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161
Size lag	**0.3198*** **	**0.3198*** **	**0.3198*** **	**0.3198*** **	**0.3198*** **	**0.3198*** **	**0.3198*** **
	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03
Second Step							
Intercept	**[-7.07764]*** **	**[-7.15845]*** **	**[-7.11028]*** **	**[-7.20538]*** **	**[-4.49401]*** **	**[-3.91076]*** **	**[-3.41052]*** **
	0.88605	0.94491	0.92852	0.94663	0.87831	0.91478	0.92238
IO	**[-6.99296]*** **	**[-6.98213]*** **	**[-6.98625]*** **	**[-6.92126]*** **	**[-3.97707]* **	**-3.78041**	**-3.22045**
	2.50354	2.50412	2.50439	2.50526	2.31565	2.32241	2.32391
MVE		**4.90E-06**		**-0.00001637**	**0.00001408**	**0.00001295**	**0.000008**
		1.99E-05		3.25E-05	3.00E-05	3.01E-05	3.01E-05
NCTA				**0.00001442**	**-0.00000186**	**0.00000469**	**4.66E-06**
				1.74E-05	1.61E-05	1.63E-05	1.63E-05
BE			**2.81E-06**				
			2.39E-05				
NW					**[-5.3715]*** **	**[-5.36206]*** **	**[-5.33158]*** **
					0.16588	0.16623	0.16621
SID						**[-0.00368]*** **	**[-0.00318]** **
						0.00137	0.00137
HI Asset							**[-24.05358]*** **
							6.07895
MB							
IMR	**20.13826*** **	**20.26113*** **	**20.18862*** **	**20.34371*** **	**17.67364*** **	**17.11147*** **	**17.32772*** **
	1.60841	1.68411	1.66448	1.6871	1.56039	1.58954	1.58855
R2	0.0286	0.0286	0.0286	0.0287	0.1716	0.1728	0.1749
Adj R2	0.0283	0.0282	0.0282	0.0281	0.1709	0.1719	0.1739

....Continuation from previous table

Table 6: Heckman 2 Stage Model (Highly Constrained Firm Sample)

Next, I run a cross sectional regression model using firm observations. Table 7 reports the results from the cross sectional regression analysis. The coefficient for institutional ownership in column 1 is -17.8947 and significant at 1%, 5% and 10% level of significance. In column 2 until column 7 the coefficient for institutional ownership is -15.8710, -17.0423, -15.8324, -10.1543, -8.5219 and -13.7986 respectively and all are significant at 1%, 5% and 10% level of significance. Using cross sectional regression, I find that institutional ownership (PIH) negatively (highly significantly) affects KZ index.

I control for endogeneity problem for this cross sectional regression analysis using the same Heckman's (1979) 2 stage model. Table 8 reports the endogeniety test results for this analysis. In the first stage the dependent variable is institutional presence regressed against the prior year KZ index, size measured using log of total asset and leverage measured as the ratio of total long term debt and total asset. The coefficient and the standard deviation for inverse miller ratio are reported in the last column of the table. In the second stage, the dependent variable is the likelihood of firm being financially constrained and it is regressed against institutional ownership (PIH), market value of equity (MVE), NCTA (Non cash total asset), NW (Net worth), BE (Book value of equity), SID (Number of segments), Herfindahl Index measured using total asset (HI_Asset) and market to book ratio (MB). For each variable, I report the coefficient estimate (in bold) and the standard error (in italic).

After controlling for endogeneity, the results remain consistent where institutional ownership (PIH) negatively (highly significantly) affects KZ index.

Intercept	**[-1.93783]*** **	**[-1.72009]*** **	**[-1.85557]*** **	**[-1.75562]*** **	**[-0.82923]*** **	**[-0.79588]*** **	**[-0.58835]*** **	**[-3.1444]*** **
	0.36962	0.37516	0.37504	0.37501	0.36581	0.40526	0.4655	0.47942
IO	**[-17.5441]*** **	**[-16.60321]*** **	**[-17.33585]*** **	**[-16.26164]*** **	**[-13.37701]*** **	**[-13.13688]*** **	**[-12.99832]*** **	**[-12.44878]*** **
	5.5194	5.51897	5.52119	5.51491	5.31428	5.3273	5.32965	5.17067
MVE		**[-0.00005245]*** **		**[-0.00010209]*** **	**[-0.00009509]*** **	**[-0.00009466]*** **	**[-0.00009594]*** **	
		0.0000162		0.00002435	0.00002346	0.00002349	0.00002353	
NCTA				**0.00005936*** **	**0.00005783*** **	**0.0000594*** **	**0.0000598*** **	**[-0.00000167]*** **
				0.00002177	0.00002096	0.00002144	0.00002145	0.02341
NW					**[-4.29766]*** **	**[-4.29627]*** **	**[-4.27873]*** **	**[-1.96911]*** **
					0.26987	0.27054	0.27124	0.00001436
BE			**-0.00004067**					
			0.00003152					
SID						**-0.00162**	**-0.00113**	**0.00236**
						0.00457	0.0046	0.30855
HI Asset							**-8.13317**	**-0.57065**
							8.97481	0.00448
MB								**0.3398*** **
								8.70873
R-Square	0.0031	0.0063	0.0036	0.0086	0.0808	0.0811	0.0813	0.1334
Adj R-Sq	0.0028	0.0057	0.003	0.0077	0.0797	0.0797	0.0796	0.1318

Table 7: Cross Section Regression (Firm observation)

First Step							
Intercept	**[-0.111]*** **	**[-0.111]*** **	**[-0.111]*** **	**[-0.111]*** **	**[-0.111]*** **	**[-0.111]*** **	**[-0.111]*** **
	0.0186	0.0186	0.0186	0.0186	0.0186	0.0186	0.0186
KZ lag	**[-0.0039]*** **	**[-0.0039]*** **	**[-0.0039]*** **	**[-0.0039]*** **	**[-0.0039]*** **	**[-0.0039]*** **	**[-0.0039]*** **
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Lev lag	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Size lag	**0.1061*** **	**0.1061*** **	**0.1061*** **	**0.1061*** **	**0.1061*** **	**0.1061*** **	**0.1061*** **
	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02
Second Step							
Intercept	**-20.58598**	**-19.59195**	**-20.47745**	**-20.00077**	**-18.93431**	**-15.48931**	**-16.92831**
	19.98945	19.9743	19.99289	19.94569	19.60998	19.44403	19.57312
IO	**[-24.12781]*** **	**[-23.1327]*** **	**[-23.73312]*** **	**[-23.11739]*** **	**[-19.20461]*** **	**[-17.10722]** **	**[-18.45709]** **
	8.80776	8.81485	8.82179	8.80177	8.6779	8.54504	8.79212
MVE		**[-0.00003291]***		**[-0.0000931]*** **	**[-0.00008027]** **	**[-0.00008693]*** **	**[-0.00008644]*** **
		1.81E-05		3.51E-05	3.46E-05	3.44E-05	3.44E-05
NCTA				**0.00005645** **	**0.00005334** **	**0.00006843** **	**0.00006884** **
				2.82E-05	2.78E-05	2.96E-05	2.96E-05
BE			**-2.53E-05**				
			3.03E-05				
NW					**[-3.40104]*** **	**[-3.46368]*** **	**[-3.52006]*** **
					0.56795	0.55845	0.5652
SID						**-0.00291**	**-0.0031**
						0.00224	0.00226
HI Asset							**9.1406**
							13.94636
MB							
IM Ratio	**25.24463**	**25.16301**	**25.78243**	**26.13009**	**32.76403**	**27.76452**	**28.58776**
	38.08079	*38.03764*	*38.092*	*37.98426*	*37.35982*	*36.78811*	*36.82007*
R2	0.008	0.0112	0.0087	0.0152	0.0491	0.0547	0.0551
Adj R2	0.0061	0.0083	0.0058	0.0112	0.0443	0.049	0.0484

Table 8: Heckman 2 Stage Model (CS Firm Sample)

Next, I divide the full sample (firm-year observations) into 2 separate groups, highly constrained firms and less constrained firms. I run the analysis using probit regression where the dependent variable is the likelihood of being financially constraint and the results are presented in table 10. This table reports the probit model regression for firm sample. The dependent variable is the likelihood of financially constraint firm. The likelihood of financially constraint firm is defined when the firms' KZ index are above median. KZ index measured as following;

$$KZ = -1.001909 * \left(\frac{CF}{K}\right) + 0.2826389 * Q + 3.139193 * \left(\frac{Debt}{TC}\right) - 39.3678 * \left(\frac{Div}{K}\right) - 1.315 * \left(\frac{Cash}{K}\right)$$

where CF is the cash flow, K is the tangible asset, Q is total investment, TC is the total capital, and Div is the dividend. MVE is the market value of equity, NCTA is the non-cash total asset, NW is net worth, BE is book value of equity, SID is the number of segments, HI_Asset is the Herfindahl Asset measured by total asset and MB is market to book ratio. For each variable, I report the coefficient estimate (in bold) and the standard error (in italics). The benchmark for the likelihood of being financially constrained is the median of KZ index, where the firms with KZ index above the median are defined as highly constrained firms and the firms with KZ index below the median are defined as less constrained firms. Using the likelihood of highly constrained firms (Pb FC), the result is as following; institutional ownership (PIH) negatively and highly significantly affects the likelihood of highly constrained firms. The results suggest that the higher is the institutional ownership, lower is the likelihood of firm being financially constrained. After addressing the endogeniety problem in table 10, the results remain consistent.

Intercept	**[-0.5371]*** **	**-0.4669**	**[-0.5176]*** **	**[-0.4323]*** **	**[-0.4568]*** **	**[-0.4169]*** **	**[-0.5538]*** **
	0.0456	0.0469	0.0463	0.0475	0.0521	0.0604	0.0618
PIH	**[-2.0867]*** **	**-1.7197**	**[-2.0234]** **	**[-1.2419]* **	**[-1.3305]** **	**[-1.2958]* **	**[-2.0744]*** **
	0.7356	0.731	0.735	0.7268	0.7315	0.7323	0.739
MVE		**-0.00002**		**[-0.00012]*** **	**[-0.00012]*** **	**[-0.00012]*** **	
		4.90E-06		0.000017	0.000017	0.000017	
NCTA				**0.000069*** **	**0.000068*** **	**0.000069*** **	**-1.52E-06**
				0.000011	0.000011	0.000011	2.04E-06
BE			**[-0.00001]*** **				
			5.07E-06				
SID					**0.000838**	**0.000945**	**0.000237**
					0.000614	0.00062	0.000584
HI Asset						**-1.5407**	**-0.2865**
						1.1878	1.1468
MB							**0.00518* **
							0.00288
AIC	4194.374	4194.374	4194.374	4194.374	4174.394	4174.394	4174.394
SIC	4200.456	4200.456	4200.456	4200.456	4180.471	4180.471	4180.471

Table 9: Probit Model (Financial constraint firms by median)

Table 10 reports the endogeniety test for probit model regression using Heckman 2 stage model. In the first stage, the institutional presence is regressed against the prior year KZ index, size is measured using log of total asset and leverage is measured as the ratio of total long term debt and total asset. The coefficient and the standard deviation for inverse Miller ratio are reported in the last column of the table. In the second stage, the dependent variable is the likelihood of financially constrained firm regressed against institutional ownership (PIH), market value of equity (MVE), NCTA (Non cash total asset), NW (Net worth), BE (Book value of equity), SID (Number of segments), Herfindahl Index measured using total asset (HI_Asset) and market to book ratio (MB). For each variable, I report the coefficient estimate (in bold) and the standard error (in italic).

Next, I am going to use our previous OLS model for KZ index. But this time, I am replacing the institutional ownership variable with the likelihood of institutional presence to measure institutional investors' presence. I present the results in table E1 and table E2 where table E1 is the OLS regression model using the likelihood of institutional investors' presence and the latter table is the endogeniety test for this OLS regression model. Using the likelihood of firm with institutional presence (Pb PIH), I find that the presence of institutional investors negatively and highly significantly affects KZ index. After controlling for endogeniety, the results remain consistent. This result suggests that the presence of institutional investors is important for constrained firms regardless of whether it is highly constrained or less constrained. However, the ownership of institutional investors is especially important for firms that are highly constrained.

First Step								
Intercept	**0.121*** **	**0.121*** **	**0.121*** **	**0.121*** **	**0.121*** **	**0.121*** **	**0.121*** **	**0.121*** **
	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181
PbFC lag	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **	**[-1.4049]*** **
	0.0546	0.0546	0.0546	0.0546	0.0546	0.0546	0.0546	0.0546
Lev lag	**0.0411**	**0.0411**	**0.0411**	**0.0411**	**0.0411**	**0.0411**	**0.0411**	**0.0411**
	0.0297	0.0297	0.0297	0.0297	0.0297	0.0297	0.0297	0.0297
Size lag	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Second Step								
Intercept	**[-1.7249]***	**-0.4809**	**-0.9529**	**-0.3608**	**-0.7286**	**-0.2725**	**0.0209**	**-2.0477**
	1.0156	1.0594	1.0544	1.0493	1.1142	1.1533	1.1768	1.1729
PIH	**[-33.8723]*** **	**[-18.5341]***	**[-24.8755]** **	**[-17.1258]***	**[-26.2294]** **	**[-22.1809]***	**[-22.4841]***	**-42.7791**
	11.0047	9.7052	10.7545	9.5348	13.0993	12.5518	12.6228	15.1968
MVE		**[-0.0032]*** **		**[-0.0017]** **	**[-0.0032]*** **	**[-0.0043]*** **	**[-0.0043]*** **	
		8.00E-04		9.00E-04	1.00E-03	1.20E-03	1.20E-03	
NCTA				**[-0.003]** **	**-0.0009**	**-0.0009**	**-8.00E-04**	**-0.0023**
				1.30E-03	9.00E-04	1.10E-03	1.00E-03	0.0011
BE			**[-0.0036]*** **					
			1.00E-03					
NW					**[-0.6067]*** **	**[-0.6322]*** **	**[-0.6032]*** **	**-0.1522**
					0.1183	0.1317	0.1322	0.1116
SID						**-0.0279**	**-0.0262**	**-0.0199**
						0.0173	0.0169	0.0157
HI Asset							**-11.3469**	**-4.715**
							9.083	7.9767
MB								**0.0496**
								0.0121
IM Ratio	**-1.6166**	**-2.0084**	**-1.8391**	**-1.9593**	**-1.3635**	**-1.4484**	**-1.5252**	**-0.045**

Continuation from previous table……

	1.981	2.0447	2.0523	2.0282	2.1217	2.1681	2.1837	2.1411
AIC	341.5526	295.9423	304.2021	288.0608	246.3568	226.6721	226.4332	223.1885
BIC	356.3117	315.621	323.8809	312.6593	275.8749	261.0544	265.7272	262.4825

Table 10: Heckman 2 Stage Model (Probit Model Firm Sample)

Intercept	**[-3.3933]*** **	**[-2.92631]*** **	**[-3.11351]*** **	**[-2.94719]*** **	**[-2.76373]*** **	**[-2.04937]*** **	**[-1.24282]*** **
	0.2775	*0.2848*	*0.28305*	*0.28503*	*0.284*	*0.28826*	*0.32763*
Pb PIH	**-12.6954*** **	**-12.3785*** **	**-12.5196*** **	**-12.3853*** **	**-12.2080*** **	**-10.2247*** **	**-10.2038*** **
	0.37129	*0.37363*	*0.37285*	*0.37364*	*0.37217*	*0.37893*	*0.37878*
MVE		**[-0.000071]*** **		**[-0.00009023]*** **	**[-0.00008919]*** **	**[-0.0000842]*** **	**[-0.00008704]*** **
		0.00000987		*0.00001462*	*0.00001455*	*0.00001329*	*0.00001329*
NCTA				**0.00002533***	**0.00002532***	**0.00004851*** **	**0.0000487*** **
				0.00001421	*0.00001415*	*0.00001326*	*0.00001325*
NW					**[-0.58198]*** **	**[-0.5722]*** **	**[-0.57012]*** **
					0.03355	*0.03123*	*0.03121*
BE			**[-0.00009372]*** **				
			0.00001884				
SID						**[-0.00977]*** **	**[-0.00907]*** **
						0.00158	*0.00158*
HI Asset							**[-29.86644]*** **
							5.77533
MB							
R-Square	0.0324	0.0339	0.0331	0.0339	0.0422	0.0448	0.0457
Adj R-Sq	0.0324	0.0338	0.0331	0.0338	0.0421	0.0446	0.0421

Table E1 : OLS KZ index and the likelihood of institutional presence

First Step							
Intercept	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **	**[-1.6634]*** **
	0.0217	*0.0217*	*0.0217*	*0.0217*	*0.0217*	*0.0217*	*0.0217*
KZ lag	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **	**[-0.0062]*** **
	0.0004	*0.0004*	*0.0004*	*0.0004*	*0.0004*	*0.0004*	*0.0004*
Lev lag	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **	**[-0.134]*** **
	0.035	*0.035*	*0.035*	*0.035*	*0.035*	*0.035*	*0.035*
Size lag	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **	**0.2668*** **
	3.60E-03	*3.60E-03*	*3.60E-03*	*3.60E-03*	*3.60E-03*	*3.60E-03*	*3.60E-03*
Second Step							
Intercept	**[-41.33685]*** **	**[-44.8741]*** **	**[-45.22201]*** **	**[-45.86041]*** **	**[-44.76]*** **	**[-38.5979]*** **	**[-38.02167]*** **
	0.82971	*0.90036*	*0.89093*	*0.90695*	*0.90574*	*0.92038*	*0.93508*
Pb _IO	**-1.93438*** **	**-1.7307*** **	**-1.62765*** **	**-1.62207*** **	**-1.62207*** **	**-1.33937*** **	**-1.33795*** **
	0.3875	*0.38734*	*0.38741*	*0.38721*	*0.38553*	*0.3535*	*0.35341*
MVE		**0.00009143*** **		**0.00001227**	**0.00001128**	**3.71E-08**	**-0.00000177**
		9.13E-06		*1.31E-05*	*1.31E-05*	*1.09E-05*	*1.09E-05*
NCTA				**0.00010832*** **	**0.00010653*** **	**0.00007867*** **	**0.00007868*** **
				1.30E-05	*1.29E-05*	*1.10E-05*	*1.10E-05*
NW					**[-0.65296]*** **	**[-0.68286]*** **	**[-0.68107]*** **
					0.04186	*0.03639*	*0.03638*
BE			**0.00020144*** **				
			1.71E-05				
SID						**0.00905*** **	**0.0094*** **
						0.00138	*0.00138*
HI Asset							**[-18.27128]*** **
							5.27827
IMR	**78.42994*** **	**84.37193*** **	**85.06967*** **	**86.14918*** **	**84.38462*** **	**70.46101*** **	**70.29427**

	1.62619	*1.72826*	*1.71727*	*1.73915*	*1.73526*	*1.71473*	*1.71498*
R2	0.1051	0.1083	0.1096	0.1106	0.1184	0.1153	0.1158
Adj R2	0.105	0.1082	0.1095	0.1105	0.1182	0.1182	0.1155

Table E2 : Endogeneity test for KZ index and the likelihood of institutional presence

Line of credit

Summary Statistics for Line of Credit

As discussed in the earlier section, the next financial constraint measurement is the line of credit. To be more precise, bank line of credit measures liquidity and it is an indirect measurement of financial constraint. According to Sufi (2009), firms which are more likely to have line of credit, are less likely to be constrained. Line of credit is one of the important sources for investment and capital. Research also shows that firms that have the history of getting line of credit will increase the likelihood of obtaining line of credit in the future. Financial networks typically include financial institutions and banks. So, institutional presence in a firm brings with it the ability of these institutions to arrange line of credit access through their networks (Fan, Subramaniam, and Ye, 2014). As discussed earlier, my second hypotheses is as following; firms with institutional presence and higher institutional ownership would exhibit higher access to bank line of credit.

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	1038	883	0.850674	1	0.356581	0	1
lineofcredit_rs	Has line of credit, random sample	1038	839	0.808285	1	0.39384	0	1
PIH		1038	86.46728	0.083302	0.042061	0.111516	1.67E-06	0.9724233
Size		1038	5932.11	5.71494	5.595036	1.468213	2.120943	10.539932
Size2		1038	5668.05	5.460548	5.35248	1.616671	0.714419	10.331236
CF		1038	109.0828	0.105089	0.147065	0.431419	-5.35618	1.4627892
NW		1038	451.4247	0.434899	0.469287	0.493939	-9.02247	0.9464607
BE		966	489825.2	507.0654	144.571	1977.73	1.164	28671
MB		966	3096.25	3.20523	1.528515	6.163353	-1.11772	123.28017

Table 11: Summary statistics for Sufi (2009) Line of Credit

This table reports the summary statistics for all firms in Sufi (2009) line of credit sample. The sample period spans from 1999 to 2003. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio.

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	106	93	0.877359	1	0.329584	0	1
lineofcredit_rs	Has line of credit, random sample	106	89	0.839623	1	0.368699	0	1
PIH		106	13.2993	0.125465	0.077603	0.136625	0.000127	0.6205412
Size		106	565.0045	5.330232	5.154363	1.425548	2.123817	9.8110981
Size2		106	537.5262	5.071002	4.965516	1.64059	0.714419	9.8085173
CF1		106	17.05735	0.160918	0.172285	0.452341	-3.5164	1.4627892
NW		106	47.99888	0.45282	0.503228	0.349708	-2.07978	0.9133342
BVE		97	24174.19	249.2185	107.843	430.9386	4.072	2860.88
MB		97	363.0797	3.74309	1.769148	5.413153	0.774203	29.781772

Table 12: Summary statistics for Sufi (2009) Line of Credit in year 1996

This table reports the summary statistics for all firms in Sufi (2009) line of credit sample in year 1996. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	126	109	0.865079	1	0.343003	0	1
lineofcredit_rs	Has line of credit, random sample	126	103	0.81746	1	0.387831	0	1
IO_sum		126	15.6763	0.124415	0.088504	0.137436	0.000126	0.88415
Size		126	678.7354	5.386789	5.278751	1.461766	2.120943	9.8314543
Size2		126	646.0278	5.127205	4.98229	1.648535	0.739076	9.8267685
CF1		126	15.90029	0.126193	0.174144	0.406539	-2.90388	0.8684441
NW		126	57.27545	0.454567	0.476483	0.324566	-1.75501	0.9464607
BVE		114	30973.79	271.6999	111.265	576.4247	3.548	4331.88
MB		114	390.2311	3.42308	1.916594	3.704787	0.857502	21.061891

Table 13: Summary statistics for Sufi (2009) Line of Credit in year 1997

This table reports the summary statistics for all firms in Sufi (2009) line of credit sample in year 1997. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio.

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	117	104	0.888889	1	0.315621	0	1
lineofcredit_rs	Has line of credit, random sample	117	97	0.82906	1	0.378076	0	1
PIH		117	16.31249	0.139423	0.093298	0.158132	2.33E-06	0.9724233
Size		117	667.9528	5.708999	5.548407	1.392509	2.735406	9.5266828
Size2		117	640.7407	5.476417	5.400251	1.544777	2.024325	9.5228126
CF1		117	15.6805	0.134021	0.163532	0.334595	-2.83186	0.757473
NW		117	56.46434	0.482601	0.471951	0.215439	-0.30926	0.9231962
BVE		108	41739.1	386.4731	137.523	874.7028	6.138	7149.73
MB		108	411.6931	3.811973	1.622188	12.00464	0.482297	123.28017

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
line of credit	Has line of credit, full sample	154	131	0.850649	1	0.357597	0	1
lineofcredit_rs	Has line of credit, random sample	154	127	0.824675	1	0.381485	0	1
IO_sum		154	9.585063	0.062241	0.030051	0.090903	1.67E-06	0.6359644
PIH		154	851.1779	5.527129	5.449622	1.437721	2.626479	9.7046097
Size2		154	815.5609	5.29585	5.200599	1.592316	1.443147	9.6917784
CF1		154	13.96839	0.090704	0.14464	0.495993	-4.91863	0.7884216
NW		154	58.95117	0.3828	0.457539	0.802539	-9.02247	0.8780156
BVE		140	56560.83	404.0059	118.6355	1234.86	1.44	11722
MB		140	491.1395	3.508139	1.437358	5.829408	0.482034	35.327145

Table 14 and 15: Summary statistics for Sufi (2009) Line of Credit in year 1998 and 1999

This table reports the summary statistics for all firms in Sufi (2009) line of credit sample in year 1998 and 1999. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio.

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	157	131	0.834395	1	0.372915	0	1
lineofcredit_rs	Has line of credit, random sample	157	128	0.815287	1	0.389307	0	1
IO_sum		157	7.40981	0.047196	0.022117	0.072108	8.06E-06	0.5083445
Size		157	884.4472	5.633421	5.540459	1.527488	2.695235	10.400316
Size2		157	848.5047	5.404488	5.250193	1.643845	1.984169	10.216289
CF1		157	16.45325	0.104798	0.145002	0.329965	-1.4487	1.3323618
NW		157	72.79493	0.463662	0.461666	0.222766	-0.24651	0.8814981
BVE		147	81138.52	551.9627	128.911	2388.09	1.164	27674
MB		147	411.6403	2.800274	1.272777	5.453729	0.152495	52.931047

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	133	110	0.827068	1	0.379619	0	1
lineofcredit_rs	Has line of credit, random sample	133	106	0.796993	1	0.403759	0	1
IO_sum		133	7.815344	0.058762	0.031485	0.078707	5.06E-06	0.5346972
Size		133	780.9975	5.872162	5.705261	1.482802	2.67656	10.46988
Size2		133	746.8933	5.615739	5.524544	1.615503	2.311347	10.251712
CF1		133	8.271987	0.062195	0.125955	0.349392	-2.18967	0.8234762
NW		133	62.86954	0.472703	0.470676	0.251356	-0.45561	0.8781064
BVE		126	81559.97	647.3014	189.681	2542.55	9.874	27142
MB		126	372.4721	2.956128	1.466372	4.485441	0.430938	34.993171

Table 16 and 17: Summary statistics for Sufi (2009) Line of Credit in year 2000 and 2001

This table reports the summary statistics for all firms in Sufi (2009) line of credit sample in year 2000 and 2001. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio .

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	123	101	0.821138	1	0.384804	0	1
lineofcredit_rs	Has line of credit, random sample	123	97	0.788618	1	0.409959	0	1
IO_sum		123	7.72747	0.062825	0.037901	0.075946	7.69E-06	0.4313238
Size		123	749.0693	6.089994	5.910832	1.405012	3.248901	10.539932
AT2		123	716.2407	5.823095	5.703716	1.543738	2.296165	10.234409
CF1		123	9.46151	0.076923	0.137338	0.501816	-4.83907	0.9827141
NW		123	54.70916	0.44479	0.447958	0.266977	-0.74379	0.8918239
BVE		117	83527.44	713.9097	205.35	2750.36	5.425	28671
MB		117	238.0103	2.034276	1.271365	3.434801	-1.11772	34.704286

Variable	Label	N	Sum	Mean	Median	Std Dev	Minimum	Maximum
lineofcredit	Has line of credit, full sample	122	104	0.852459	1	0.356107	0	1
lineofcredit_rs	Has line of credit, random sample	122	92	0.754098	1	0.432396	0	1
IO_sum		122	8.641505	0.070832	0.040568	0.085471	0.000013	0.4295808
Size		122	754.7231	6.186255	5.987744	1.394411	3.211771	10.521561
AT2		122	716.5549	5.873401	5.720613	1.552195	3.015388	10.331236
CF1		122	12.28952	0.100734	0.135677	0.542091	-5.35618	0.9440941
NW		122	40.36121	0.33083	0.437273	0.89012	-8.08534	0.8896402
BVE		117	90151.31	770.524	215.814	2747.13	8.539	28039
MB		117	417.9863	3.572532	1.688567	5.593886	0.519644	44.337839

Table 18 and 19: Summary statistics for Sufi (2009) Line of Credit in year 2002 and 2003

Table 18 and 19 reports the summary statistics for all firms in Sufi (2009) line of credit sample in year 2002 and 2003. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. Line of credit is the likelihood of obtaining line of credit using 10-K SEC Report. Size is measured as the total asset. Alternatively, Size2 measures the log of total asset. *CF* is the cash flow, NW is net worth, BE is book value of equity, and MB is the market to book ratio.

Table 12 is the total summary statistics from year 1996 until 2003 for line of credit sample. Since the line of credit is the likelihood of having a line of credit, the minimum and maximum value is 0 and 1 respectively. The mean and median for institutional ownership are 0.0833 and 0.1115 respectively with the minimum value of 0.00000167 and the maximum value of 0.9724. The standard deviation for the institutional ownership is 0.1115. The firm characteristics variables are size, cash flow, net worth, book value of equity and market-to-book ratio with mean of 5.7149, 0.1051, 0.4349, 507.0654 and 3.2052 respectively. The median and standard deviation for institutional ownership are 0.0421 and 0.1115 respectively. The median for size, cash flow, net worth, book value of equity and market-to-book ratio are 5.5950, 0.1471, 0.4693, 144.571 and 1.5285 respectively. Table 12 until table 19 are the summary statistics for bank line of credit sample according to years to record any significant changes in terms of distribution over the years. On average, institutional ownership which records the highest value is in year 1997 with 0.1394 and the lowest value is in year 2000 with 0.0472.

Intercept	**0.9069*** **	**0.9085*** **	**0.9121*** **	**1.106*** **	**0.8986&*** **	**0.9671*** **	**0.7493*** **	**0.8785*** **	**0.9731*** **
	0.0453	0.0458	0.0463	0.0568	0.0458	0.0616	0.079	0.0462	0.0618
PIH	**0.8753** **	**0.6928***	**0.7045***	**0.7***	**0.8286** **	**0.7522** **	**0.7071**	**0.7199** **	**0.6856***
	0.4006	0.3935	0.3954	0.4029	0.4018	0.4235	0.4389	0.4023	0.4215
CF		**0.39*** **	**0.3924*** **	**0.2376*** **					
		0.0712	0.0716	0.0655					
MVE			**-1.03E-06**	**1.68E-07**		**[-0.00000365]** **	**-3.02E-06**		
			1.91E-06	1.97E-06		2.08E-06	2.09E-06		
MB				**[-0.0603]*** **		**[-0.0614]*** **	**[-0.0551]*** **		**[-0.0632]*** **
				0.0108		0.0102	0.0102		0.0102
BE					**8.61E-06**				
					8.54E-06				
SID						**0.00338*** **	**0.00326*** **		**0.00291*** **
						0.000589	0.000597		0.000557
HI Asset							**8.0991*** **		
							1.936		
Size								**[0.000016]** **	**3.00E-06**
								7.35E-06	5.78E-06
AIC	1443.772	1443.772	1443.772	1443.772	1443.772	1438.365	1438.365	1443.772	1438.365
SC	1449.148	1449.148	1449.148	1449.148	1449.148	1443.737	1443.737	1449.148	1443.737

Table 20: Line of Credit (Probit Model)

I report the results for the probit model using (Sufi, 2009) bank line of credit sample in table 20. The dependent variable is the likelihood of obtaining line of credit. The likelihood of financially constraint firm is equal to 1 when firm has access to line of credit and it is 0 when the firm has no access to line of credit. Institutional ownership or PIH is measured as the total shares held by institutional investors divided by the total shares outstanding. MVE is the market value of equity, MB is the market –to-book ratio, BE is book value of equity, SID is the number of segments, HI_Asset is the Herfindahl Asset measured by total asset and MB is market to book ratio. For each variable, I report the coefficient estimate (in bold) and the standard error (in italic). The main result for the bank line of credit sample is presented in table 20. Using the likelihood of firm obtaining bank line of credit, I find that institutional ownership or PIH is positively related to the likelihood of firms obtaining line of credit. The results are significant at 1%, 5% and 10% level of significance. The results are also consistent across column after adding some control variables. Higher the likelihood of firm obtaining lines of credit implies higher supply of capital and indirectly it lower the financial constraints. In table E3, I replace the institutional ownership variable with the likelihood of institutional presence. The results are as following; institutional presence positively and highly significantly affects the likelihood of firms obtaining line of credit. The results suggest that both institutional ownership and presence mitigate financial constraints.

Notes Payable

Regression Analysis for Notes Payable

As an addition to the analysis, I also include notes payable to measure firms' liquidity and financial constraints. Notes payable is a form of short term debt used by many firms for capital and investment purposes. Using the same argument in Sufi (2009), notes payable is another form of capital to serve the purpose to provide liquidity to the firm. So, a less

financially constrained firm would have more access to notes payable. So, I expect that firm with higher institutional ownership will have a higher access to notes payable.

Intercept	**0.01174*** **	**0.01119*** **	**0.01125*** **	**0.01103*** **	**0.01172*** **	**0.01121*** **	**0.01019*** **	**0.01094*** **
	0.00040819	0.00041756	0.00041681	0.00041749	0.00043417	0.00047278	0.00056238	0.00058317
IO	**[-0.00813]***	**[-0.00867]***	**[-0.00831]***	**[-0.00823]***	**[-0.00783]***	**[-0.00883]***	**[-0.00911]***	**[-0.00947]***
	0.00468	0.00467	0.00467	0.00467	0.00466	0.00467	0.00467	0.00467
MVE		**0.0000*** **		**-2.28E-08**	**-2.01E-08**	**-2.18E-08**	**-1.69E-08**	
		1.43E-08		2.11E-08	2.11E-08	2.11E-08	2.11E-08	
NCTA				**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
				2.08E-08	2.08E-08	2.1342E-08	2.13E-08	1.50E-08
NW					**[-0.00217]*** **	**[-0.00219]*** **	**[-0.00226]*** **	**[-0.00297]*** **
					0.00038395	0.00038423	0.00038463	0.00041101
BE			**0.0000*** **					
			2.94E-08					
SID						**0.0000*** **	**0.0000*** **	**0.0000** **
						0.00000254	0.00000255	0.00000255
HI Asset							**0.03861*** **	**0.03716*** **
							0.01154	0.01151
MB								**[-0.00013624]*** **
								0.0000283
R-Square	0.0002	0.0026	0.0023	0.0058	0.0079	0.0084	0.0092	0.0106
Adj R-Sq	0.0001	0.0024	0.0022	0.0056	0.0076	0.0081	0.0088	0.0102

Table 21: OLS Regression with Notes Payable (Firm-Year Sample)

Intercept	1.4893***	1.2154***	1.2154***	1.4858***	0.9575***	1.26***	0.9211***	0.9177***	1.1372***
	0.0157	0.0799	0.08	0.0887	0.0732	0.0926	0.1094	0.0737	0.0896
Pb PIH	0.1164*	0.4003***	0.4004***	0.4479***	0.5835***	0.3361***	0.2923***	0.528***	0.4298***
	0.0689	0.1049	0.1054	0.108	0.0999	0.1093	0.11	0.1007	0.1062
CF		0.0774***	0.0774***	0.0582***		[-0.00000547]***	0.0477***		
		0.00789	0.00791	0.00801		3.98E-06	0.00788		
MVE			-2.93E-08	1.96E-06		-5.47E-06	-3.95E-06		
			3.73E-06	3.85E-06		3.98E-06	4.00E-06		
MB				[-0.108]***		[-0.0936]***	[-0.0859]***		[-0.1089]***
				0.0143		0.014	0.0136		0.0132
BE					0.000059**				
					2.50E-05				
SID						0.00752***	0.00709***		0.00726***
						0.00117	0.00116		0.00118
HI Asset							15.2321***		
							2.9149		
Size								0.000092***	0.000048**
								2.20E-05	1.90E-05
AIC	27084.207	2420.321	2422.321	2345.056	2345.056	2268.038	2233.988	2527.615	2314.106
SC	27100.718	2437.852	2445.696	2374.276	2445.696	2303.082	2274.873	2545.146	2343.309

Table E3: Probit Model Line of Credit and the likelihood of instituional presence

In table 21, I report the result for ordinary least square regression for firm-year sample. The dependent variable is notes payable. Notes payable is divided by total asset to control for firm size. The independent variables are market value of equity (MVE), non-cash total asset (NCTA), net worth (NW), book value of equity (BE), number of segments (SID), and Herfindahl Index (HI_Asset) measured using total asset and market-to-book ratio (MB). For each variable, I report the coefficient estimate (in bold) and the standard error (in italics). Using notes payable as the measurement for liquidity and financial constraint, I find that institutional ownership is negatively related to institutional ownership. However, I find that the coefficient estimates are only significant at 10% level of significance. So, institutional ownership negatively and weakly significantly affect institutional ownership. The evidence suggest that institutional ownership lowers the likelihood of firm obtaining notes payable which contradicts the hypotheses. The contradiction might be contributed by the fact that notes payable is a form of short term debt and it may simply reflect that debt is due in one year for majority of the firms. So, this suggests that notes payable may not be a good indicator of financial constraint.

Next, I assign the likelihood of firm with high notes payable using median as the benchmark. The likelihood of firm with high notes payable is equal to 1 if firm has high notes payable and 0 if firm has low notes payable. Firms with high notes payable are known as less constrained firms because they have more access to capital in term of short term debts. Using the likelihood of firm of firm with high notes payable as the dependent variable, I find that institutional ownership (PIH) is positively and highly significantly affects the likelihood of notes payable. This is consistent with the results using bank line of credit data. The evidence suggests that higher the likelihood of firm with high notes payable implies higher supply of capital. With high supply of capital in the firm, it indirectly implies lower financial constraint.

Intercept	**[-1.1545]*** **	**[-1.3319]*** **	**[-1.338]*** **	**[-1.3784]*** **	**[-1.3945]*** **	**[-1.5727]*** **	**[-1.7444]*** **	**[-1.292]*** **
	0.022	0.0237	0.0238	0.0241	0.0259	0.0287	0.0339	0.0473
PIH	**1.573*** **	**1.4779*** **	**1.5111*** **	**1.4552*** **	**1.4506*** **	**1.2456*** **	**1.212*** **	**1.1679*** **
	0.2341	0.2377	0.2374	0.2388	0.239	0.2437	0.2463	0.2486
MVE		**0.000027*** **		**0.000005969*** **	**0.000005888*** **	**0.000006451*** **	**0.000007361*** **	
		1.34E-06		1.76E-06	1.76E-06	1.76E-06	1.78E-06	
NCTA				**0.000036*** **	**0.000036*** **	**0.000024*** **	**0.000025*** **	**0.000032*** **
				2.78E-06	2.78E-06	2.73E-06	2.76E-06	1.90E-06
NW					**0.0487*** **	**0.0389**	**0.0268**	**[-0.239]*** **
					0.0274	0.0278	0.0274	0.0356
BE			**0.000065*** **					
			3.21E-06					
SID						**0.00241*** **	**0.0023*** **	
						0.000137	0.000137	
HI Asset							**6.064*** **	
							0.6074	
MB								**[-0.128]*** **
								0.0113
AIC	17406.201	16642.564	16627.846	16423.485	16421.829	16043.105	15946.787	15751.965
SIC	17421.485	16665.49	16650.772	16454.052	16460.039	16088.923	16000.242	15805.42

Table 22: Probit Model with Notes Payable (Firm-Year Sample by Median)

The table above reports the probit model for firm-year sample with notes payable. The dependent variable is the likelihood of obtaining notes payable. The likelihood of obtaining notes payable is equal to 1 when notes payable is above median and equal to 0 when notes payable is below median. The independent variables are market value of equity (MVE), non-cash total asset (NCTA), net worth (NW), book value of equity (BE), number of segments (SID), and Herfindahl Index (HI_Asset) measured using total asset and market-to-book ratio (MB). For each variable, I report the coefficient estimate (in bold) and the standard error (in italics).

1.7 Conclusion

Using KZ index (LPS, 2001) as the financial constraint measurement and bank line of credit (Sufi, 2009) as liquidity measurement, I find evidence which support the hypotheses that firms with institutional presence and higher institutional ownership exhibit lower KZ index. I find that firms with institutional investors' presence and higher institutional ownership exhibit lower KZ index. While institutional presence mitigates financial constraint, the importance of institutional ownership is more evident for highly constrained firms. After redefining the sample into a group of highly constrained and less constrained firms using median as the benchmark, I find that institutional ownership negatively and highly significantly affects KZ index. The results appear to be consistent even after controlling for endogeneity. Using the second financial constraint measurement, which is line of credit (Sufi, 2009), I find firms with institutional presence and higher institutional ownership exhibit higher access to bank line of credit. Since institutional investors are financial institution themselves, their presence can benefit the firm in terms of obtaining line of credit which mitigates the financial constraint condition in a firm.

This research can be extended by examining the impact of institutional presence in the long run. In the long run, not only the presence of institutional investors may provide the firm with more access to capital and different sources of capital but institutional investors may benefit the firm via monitoring.

Chapter 2

2.1 Introduction

Institutional investors' share ownership has increased significantly over the past decades through funds like pension and mutual funds. This makes institutional investors one of the largest shareholders in publicly traded firms. The role of institutional investors has been investigated by many researchers. As has been noted, institutional investors play an important role in monitoring the firm (Shleifer and Vishny, 1986, Maug, 1998). Institutional investors are also known to be better informed compared to individual investors (Gomper and Metrick, 2001). Given different focus and objectives, researchers have classified institutional investors into short term and long term institutional investors. Bushee (1998, 2001) has classified institutional investors into 3 categories, the transient investor (short term investor), quasi-indexer, and dedicated investors (the last 2 categories are classified as long term investors). Bushee (2004) summarizes that transient investors are investors who exhibit high portfolio turnover, high liquidity and have good past performance in terms of stock return and earnings. Quasi-indexer investors are infrequent traders, own small stakes in a company and prefer large and mature firms with low risk. Dedicated investors also show similar preference for mature and low risk firms and provide stability in individual firms.

There are some theories which suggest reasons why ownership structure and payout policy might be related. The free cash flow theory by Jensen (1986) asserts that with enhanced monitoring, firms are more likely to pay out their free cash flow. This is then followed by Allen, Bernardo and Welch (2000) who suggest that institutional investors prefer dividends due to prudent-man rule and because of the comparative tax advantage that they will gain in receiving dividends. Since institutional investors are better informed, they can provide monitoring role for the firm.

In another model by Brennan and Thakor (1990), given adverse selection problems, this might lead uninformed investors (individual investors) to prefer dividends over share repurchases. However, large and informed investors (institutional investors), because they are more informed compared to individual investors, prefer share repurchases.

I wish to argue that since long term investors stay longer in a firm, they focus more on their monitoring role compared to trading activity. Chen, Harford and Li (2007) find evidence that long term institutional investors focus more on its monitoring role compared to trading activity. From Allen, Bernardo and Welch (2000) ownership clientele model, firms issue dividend to attract institutions because of their ability to monitor. This suggests that the firm might attract long term institutional investors because they focus more on their monitoring role.

However, Brennan and Thakor (1990) assert that informed trader (institutional investors) can benefit from share repurchase by selling stocks when stocks are overvalued. Since long term institutional investor stay longer in the firm to exert influence to the management, they are unlikely to participate in selling their shares because of the ownership. While short term investors focus more on gaining short term profit and not ownership, they are more likely to benefit from selling their shares. So, short term institutional investors are more likely to prefer share repurchase. Bushee (2001) finds evidence which suggests that short term investors focus more on short term gain.

So in this paper, I wish to investigate the relationship between different types of institutional investors which have different investment agenda, horizon and payout policy. Prior literature has examined the relationship between payout policy, individual investors and institutional investors, but no research has investigated whether certain type of payout policy is related to certain type of institutional investors. Brennan and Thakor (1990) investigate the relationship between institutional investors and individual investors with certain types of

payout which are share repurchases but they did not specify the type of institutional investors. Allen, Bernardo and Welch (2000) also looked into the relationship between institutional investors in general but investigates only dividend as the method of payout policy. Both findings suggest there is a relationship between institutional investors and payout policy. Another contribution that can be made in this research is by taking into account both share repurchase and dividend as the method of payout policy and not restricted to only one type of payout policy.

With the findings, firms are able to attract and identify which type of institutional investors they want in their firm. Since institutional investors play a vital role in the firm, it is important to be able to distinguish and identify the types of institutional investors firms are attracting. This is especially important for firms which require monitoring.

The findings of my research will also indirectly contribute to the literature on impact of institutional investors'. As mentioned earlier, institutional investors have gained much importance not only in corporate finance but in other fields such as investment due to the significant increase in firm participation by institutional investors. From the findings, I hope that we can further understand how specific type of institutional investors behave or affect firms' policy. By recognizing whether certain type of payout policy is related to certain type of institutional investors, hopefully firms are able to make payout policy decisions which are aligned with firms' objectives.

Brennan and Thakor (1990) argue from information asymmetry point of view where institutional investors are better informed compared to individual investors. On the other hand, Allen, Bernardo and Welch (2000) argue from monitoring role played by institutional investors' point of view. Both find that institutional investors are related to payout policy (share repurchases and dividends) respectively. The findings in this research can interlink between both theories and findings for better understanding regarding payout policy

decisions in a firm. We can also link it between the permanent nature of dividend and the flexible nature of share repurchases with institutional investors. Jagannathan, Stephens and Weisbach (2000) find that dividends are paid and used by firms with higher permanent operating cash flows while share repurchases are paid by firms with higher temporary non-operating cash flows.

At the end of this research, the findings can also help to answer how informative dividend or share repurchases announcements are after controlling for observables. Institutional investors not only play a role in monitoring, but also they have information advantage (Demiralp et al, 2011). They have the accessibility to databases and are able to hire analyst to monitor firms' performance compared to individual investors. O'Brien and Bhushan (1990) find that analyst and institutional investors in a firm are related. In this paper, they argue that institutional investors motivates analyst to follow firms. Healy and Palepu (1992) find positive earnings changes when a firm initiate dividend while there is evidence that firms which omit dividends has negative earnings subsequent to the announcement. This suggest that issuing dividend signals that firm is doing well and in contrast omitting dividend signals bad news for the firm.

In section 2.2, I will be discussing the literature reviews related to my questions. In section 2.3, I derive the hypothesis and the empirical predictions. In section 2.4, I will be presenting the methodology, section 2.5 describes the data and the sources and section 2.6 I present the results for my analysis.

2.2Literature reviews

There is no direct theory or model which suggests the relationship between certain classification of institutional investors and certain type of payout policy. However, there is empirical evidence which links institutional investors and payout policy, institutional

investors and monitoring theory, and monitoring theory and payout policy. I will discuss findings by previous researchers that link institutional investors and payout policy, institutional investors and monitoring, and monitoring and payout policy. I will end the discussion with literature which discusses types of institutional investors and their objectives.

Institutional investors and payout policy

Allen, Bernardo and Welch (2000) tax clientele model argue that institutions have a relative advantage to monitor firms or to detect firms' quality, so firms issue dividend to attract large institutions. This is due to comparative tax advantages that institutions will gain for dividends.

One competing theory which predicts different outcomes is Brennan and Thakor (1990). Using the adverse selection model, they argue that large share institutions prefer share repurchases compared to dividends. In the model, they assume that large institutions (institutional investors) are more informed compared to small shareholders (individual investors). So, institutional investors will take advantage by tendering offer when the share repurchase price is too high and will bid when the share repurchases is low. Since individual investors will participate indiscriminately, as a result, they will be left with a large portion of share in the firm when the repurchase price is too high and small portion of share when the repurchase price is too low. They argue that share repurchases activity is associated with the distribution of wealth between the large institution and small shareholders.

Grinstein and Michaely (2005) examine the relationship between institutional holdings and payout policy in US public firms and find that institutions prefer firms that repurchase shares and regular repurchases over non-regular repurchases. They also find that higher institutional holdings do not increase firms' payout policy. Jain (2007) examines institutional and

individual preference for dividends and share repurchases. He finds that institutional investors prefer firms that engage in large repurchases while individual investors do not prefer share repurchases. These findings are consistent with the adverse selection model in Brennan and Thakor (1990).

Given mixed evidences to support both theories, this might suggest that there could be different type of institutional investors which have preferences for different type of payout policy that drives these different results.

Institutional Investors and Monitoring

Some of theoretical works which look into the role of institutional investors and monitoring are by Shleifer and Vishny (1986). They argue that large shareholders can increase the value of the firm by monitoring the firm which provides partial solution for the free-rider problem. They also consider the possibility of the differential valuation of shares by individual and institutional investors in the presence of dividend taxes and capital gains. They argue that since institutional investors can enjoy the tax benefits, they would prefer dividend as their payout while individual investors are optimal when there is no dividend being paid.

Maug (1998) examine the incentives of institutional investors to monitor public corporation. Maug (1998) investigates 2 views on the impact of market liquidity towards the benefits of monitoring for institutional investors. The first view is that liquidity will reduce the monitoring benefits for large shareholders because they are able to sell their stocks easily. The second view is that market liquidity will make it less costly to hold larger stakes in firm and it will be easier for institutional investors to buy additional shares. They find that market liquidity is beneficial because they make corporate governance more efficient.

Some of empirical evidences on the role of institutional investors on monitoring are as following. Agrawal and Mandelker (1990) find evidence for active monitoring hypothesis which is consistent with Shleifer and Vishny (1986). Demiralp et al (2011) find evidence on the monitoring benefits from institutional investors by examining the relationship between institutional ownership and stock price and operating performances following seasoned equity offerings. They find that announcement returns are positive and significantly related to active institutional investors' level and concentration.

Interconnection between Monitoring Theory and Payout Policy

Gugler (2003) investigates the relationship between dividends payout policy and the ownership and control structure of the firm. The author finds that state controlled firms participate in dividend smoothing activity while family controlled firms do not. There is evidence that family controlled firms chooses lower target payout ratio. Consistent with this result, they also find that state controlled firms are most hesitant when it comes to cut dividends while the family controlled firms are least hesitant to cut dividend when they are in the situation where cuts are warranted. Banks and foreign controlled firm exhibit dividend behaviour which is in between state controlled firms and family controlled firms.

Hansen, Kumar and Shome (1994) investigate the monitoring explanation for controlling agency costs using Easterbrook (1984) and Rozeff (1982) framework. They investigate the monitoring mechanism by examining regulated electric utility industry to find industry effect. They argue that if there is monitoring mechanism in issuing dividend, it should be more evident in the utility industry compared to other industrial firms. Their argument is that utility stockholders have the added need to obtain monitoring of the regulators. They find evidence to support the monitoring mechanism where firms use

dividend-equity financing to overcome stockholder-regulators and stockholders-managers conflict.

In Rozeff (1982) and Easterbrook (1984) model, they also include the monitoring role played by capital market players to reduce agency cost which we have discussed earlier.

Types of institutional investors and their role

Most literatures on institutional investors focus on their monitoring role and its benefits. Then, researchers identify that there exist different types of institutional investors. In one of his earlier work, Bushee (1998) classifies institutional investor as transient, quasi-indexer and dedicated investors. In this paper, he examines whether institutional investors create or reduce incentives for corporate managers to reduce investment in research and development to meet short term earning. He finds evidence that short term institutional investors engage in momentum trading and are involved with firms which have high turnover ratio. While other institutional investors play a role in monitoring by putting pressure in managers to reduce myopic behaviour. Since then, he has been developing institutional investor classification data which is now available via website.

Woidtke (2002) examines the valuation effects associated with the incentives structures of different types of institutional investors using ownership variable. She finds that valuation effect vary according to the objective functions of institution administrators. Yan and Zhang (2009) argue that institutional investors are heterogeneous. They have different investment horizon due to the differences in their investment objective. Kahn and Winton (1998) examine the role of institutional investors in trading and monitoring. They show how these 2 roles can be connected to each other. They show that institutional investors' decision to monitor not only depends on the direct benefit they obtain from monitoring but also the impact of monitoring on the institutions trading profits.

By classifying the institutional investors, this has spark interest in many researchers to study the roles of short term and long term institutional investors. Chen, Hartford and Li (2007) using the cost benefit framework, find evidence that long term investors focus on monitoring activity rather than trading activity. They suggest that the long term institutional investors make long term portfolio adjustment and only sell in advance if the firm is very bad. In his later paper, Bushee (2001) examines whether certain type of institutional investors show preferences towards short run earnings compared to long run earnings. He finds that transient investors are positively (negatively) related to short term (long term) earnings. This evidence suggests that short term institutional investor's focus on short term gain and trading compared to monitoring activities. Yan and Zhang (2009) find evidence that positive relationship between institutional ownership and future stock return are mainly driven by short term institution investors.

2.3 Hypotheses Development

Bushee (1998) classifies institutional investors as transient, quasi-indexer and dedicated investors. Transient investors or short term institutional investors are investors who prefer companies with high liquidity and high portfolio turnover. This type of investors will focus more on trading for short term profit (Bushee, 2001). The quasi indexer investors are investors who prefer firms with low share turnover and they focus on long horizon with buy and hold type of investment strategy. Dedicated investors or long term institutional investors are long term investors who provide stability in the firm and they prefer firms with low portfolio turnover. Dedicated investors are known to play the monitoring role in the firm and usually stay in the firm longer. By staying longer in the firm, dedicated institutional investors are able to exert influence in the management.

In the payout policy literatures, there are 2 competing theories which are related to payout policy and institutional investor. From Allen, Bernardo and Welch (2000) ownership clientele model, firms issue dividend to attract institutional investors because of their role to monitor. This suggests that the firm might attract long term institutional investors because institutional investors are more likely to engage in monitoring role compared to short term institutional investors. So far, there is lack of empirical evidence which supports the theory that firms pay dividend to attract institutional investors for monitoring. Grinstein and Michaely (2005) find little evidence which support Allen, Bernardo and Welch (2000) ownership clientele model and concludes that examining the institutional investors as a whole has little effect on dividend policy. They suggest that by looking at a small number of institutional investors (which are strong monitors) might have an affect towards dividend policy. I argue that firms which issue dividends are more likely to be associated with long term institutional investors. Jagannathan, Stephens and Weisbach (2000) also find evidence that firms which pay dividends are linked to higher permanent operating cash flow and the nature of dividend payments are steady and increases over time. The dividend increment is also followed by good performance in the firm. These firm characteristics might be associated with the benefits of monitoring role played by the long term institutional investors. The ability to distinguish which type of institutional investors is beneficial to the firm since institutional investors plays a vital role in the firm.

So, my first hypotheses is as following; firms with higher percentage of long term institutional investors and the likelihood of having long term institutional investors are positively related to the likelihood of firm paying dividend and the magnitude of dividend because long term institutional investors focus on monitoring and not trading for short term profit.

However, according to Brennan and Thakor (1990), institutional investors are more likely to sell when stock is overvalued. The focus of long term institutional investors is to monitor and to provide stable ownership. So, they are unlikely to participate in selling their shares. Since short term institutional investors are frequent traders and focus on short term profit, the adverse selection model in Brennan and Thakor (1990) is more likely to benefit and fit the focus of short term institutional investors, not the long term institutional investors. Bushee (2001) finds evidence that short term investors are more interested in short term earning compared to long term earnings. Lowenstein (1988) asserts that the objective and focus for short term performance leads to more aggressive strategies (such as market timing) at the expense of buy and hold investment strategies. This suggests that short term investors are more interested in trading for short term profit. In a survey, Brav et al (2008), find that managers favour share repurchases because share repurchases are viewed as being more flexible compared to dividend and can be used in an attempt to time the equity market. This is also consistent with short term institutional investors because they are more likely to participate in market timing compared to long term institutional investor who is more likely to stay longer in the firm and monitor the firm performance. Jagannathan, Stephens and Weisbach (2000) also find evidence that firms which pay share repurchases are linked to higher temporary non-operating cash flow and have a much more volatile cash flows and distributions. These firm characteristics are more likely to be associated with the characteristics of short term institutional investors.

This led us to my second hypotheses; firms with higher percentage of short term institutional investors and the likelihood of having short term institutional investors are positively related to the likelihood of firms undertaking share repurchases and the magnitude of share repurchases because short term institutional investors focus on trading and not monitoring.

2.4. Methodology

To test the hypotheses, I am using a probit regression type of model and the models are as following;

Model 1

$$Pb(Div)_{i,t} = \alpha + \beta_1 Pb(Ded)_{i,t} + \beta_2 Pb(Tra)_{i,t} + \beta_3 Size_{i,t} + \beta_4 NOI_{i,t} + \beta_5 CE_{i,t} + \beta_6 MB_{i,t} + \beta_7 LEV_{i,t}$$

where

$Pb(Div)$ = Probability of firm issuing dividend,

$Pb(Ded)$ = Indicator variables for presence of dedicated institutional investors,

$Pb(Tra)$ = Indicator variables for presence of transient institutional investors,

$Size$ = Firm Size,

NOI = Non-operating income,

CE = Capital expenditures,

MB = Market to book ratio.

Model 1 is limited to investigate whether the nature of payout is related to the type of institutional investor where it is limited to measure only the presence of institutional investors.

The following models are taking into account the magnitude of ownership with different types of institutional investors and the magnitude of payout.

Model 2

$$Pb(Div)_{i,t} = \alpha + \beta_1 PIH(Tra)_{i,t} + \beta_2 PIH(Ded)_{i,t} + \beta_3 Size_{i,t} + \beta_4 NOI_{i,t} + \beta_5 CE_{i,t} + \beta_6 MB_{i,t} + \beta_7 Lev_{i,t}$$

where

$PIH(Tra)$ = Ownership for transient institutional investors,

$PIH(Ded)$ = Ownership for dedicated institutional investors.

In the third model, I am taking into account the magnitude of dividend or the dividend yield.

Model 3

$$DY_{i,t} = \alpha + \beta_1 Pb(Tra)_{i,t} + \beta_2 Pb(Ded)_{i,t} + \beta_3 PIH(Tra)_{i,t} + \beta_4 PIH(Ded)_{i,t} + \beta_5 Size_{i,t} + \beta_6 NOI_{i,t} + \beta_7 CE_{i,t} + \ldots$$
$$\ldots \beta_8 MB_{i,t} + \beta_9 Lev_{i,t}$$

where

DY = Dividend yield.

In the fourth model I am taking into the magnitude of share repurchases.

Model 4

$$SP_{i,t} = \alpha + \beta_1 Pb(Tra)_{i,t} + \beta_2 Pb(Ded)_{i,t} + \beta_5 NOI_{i,t} + \beta_6 CE_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 LEV_{i,t} + \beta_9 MB$$

where

SP = share repurchases,

$Size$ = Firm Size,

NOI = Non-operating income,

CE = Capital expenditures,

MB = Market to book ratio,

$Debt$ = Leverage.

I am also taking into account the likelihood of firms issuing share repurchases as the dependent variable.

Model 5

$$Pb(SP)_{i,t} = \alpha + \beta_1 Pb(Tra)_{i,t} + \beta_2 Pb(Ded)_{i,t} + \beta_3 Size_{i,t} + \beta_4 NOI_{i,t} + \beta_5 CE_{i,t} + \beta_6 MB_{i,t} + \beta_7 LEV_{i,t}$$

where

$Pb(SP=1)=$ If firm is issuing share repurchases,

$Pb(SP=0)=$ If firm is not issuing share repurchases.

To take into account firms that issue both dividend and share repurchases, I am using the following model,

Model 6

$$Pb(\_D\_SP)_{i,t} = \alpha + \beta_1 Pb(Type_k)_{i,t} + \beta_2 PIH(Type_k)_{i,t} + \beta_3 Size_{i,t} + \beta_4 NOI_{i,t} + \beta_5 CE_{i,t} + \ldots$$
$$\ldots \beta_6 MB_{i,t} + \beta_7 LEV_{i,t}.$$

where

$Pb(\_D\_SP)=$ Probability of dividend and share repurchases according to rank,

$Pb(Type)=$ Probability of certain type k institutional investor,

$PIH(Type)=$ Ownership of certain type k institutional investor,

$k=$ Transient or dedicated institutional investor.

Endogeniety issue

Endogenous self-selection model and Heckman's (1979) approach

There are possibilities that firms' decision to issue dividend or share repurchases can affect the types of institutional ownership. We are looking into possibilities that the presence of certain type of institutional investors motivates firms to choose certain type of payout policy. Specific type of institutions can self-select into firms based on whether they pay dividends or undertake share repurchases. So, payout policy can affect the types of institutional investors in a firm. In this case, there is a potential endogeneity issue which might arise in this research. To address this problem, I am using the endogenous self-selection model and Heckman's (1997) model.

The first stage model is as following,

$$L(m)_{i,t-1} = \alpha_i + \beta_i R_{i,t-1} + \gamma_i PP_{i,t-1}$$

where

$L =$ Institutional investor type indicator,

(where $m = 0$ if there is no dedicated or transient institutional presence, $m = 1$ if there is dedicated or transient institutional presence)

$R =$ Control variable for institutional investors,

$PP =$ payout policy variables .

From the first stage model, I obtain the Inverse Mills ratio and use it in the second stage model.

The second stage model is as following,

$$PP_{i,t} = \sigma_0 + II_{i,t} + Y_{i,t} + IM_{i,t}$$

where

$II =$ Type of institutional investors variables,

Y = Control variables for payout policy variables,

IM = Inverse Miller ratio from the first stage model.

2.5 Data

I am considering 3 samples for the analysis. The first sample is the dividend and non-dividend paying firms. The second sample is the share repurchases and non-share repurchases paying firms and the third sample consist of firms which issue both dividend and share repurchases. The study period spans from 1981 until 2010.

Ownership data

Following Bushee's (1998, 2001) method of classifying institutional investors based on their observed investment and trading behaviour, institutional investors will be categorized as transient, quasi-indexer and dedicated investors. Institutional investor classification data from 1981 to 2010 can be obtained from Bushee website. To calculate the percentage ownership by each type of institution in each firm, the classification data has to be merged with the spectrum database from the Thomson Reuters Institutional (13F) Holdings database (previously known as Spectrum). According to SEC regulation, they require all institutional investors with investment discretion over portfolios exceeding $100 million in equity securities to report their holdings in 13(f) filings at the end of each quarter. In the institutional investor classification data, spectrum manager number is the fund manager number used in Thomson Reuters Institutional (13F) Holdings database. For the manager number version, Bushee assigns a new version of number every time there is more than 2 quarter break in holdings information for a manager number. This is done because (13F) database recycles

manager numbers. Bushee also provides updated permanent key to allow researcher to merge 13F data with any mutual fund data. Previously, Spectrum provided this variable but recently they discontinue providing the permanent key. Year is denoted as the calendar year of the classification. In classifying the institutions, he computes averages across the four holdings reports for each calendar year. The legal type of institutional investor which are available are the bank trust (BNK), insurance company (INS), investment company (INV), independent investment advisor (IIA), corporate (private) pension fund (CPS), public pension fund (PPS), university and foundation endowment (UFE) and miscellaneous (MSC). Each is assigned with specific Spectrum type code. BNK, INS, INV, IIA, CPS, PPS, UFE and MSC are 1, 2, 3, 4, 5, 5, 5, and 5 respectively. The type code has also been updated. For new institution, he assigns a type code based on searches for information about the fund manager. In his research, type 3 is merged into one group. For different types of institutional investors, the following codes are used, dedicated (DED), quasi-indexer (QIX) and transient (TRA). This classification scheme is different from Bushee (1998) paper because the momentum variables are eliminated. He also extends this classification by applying the factor loadings reported in the earlier papers (Bushee, 2001, Bushee and Noe, 2001) to more recent data to compute factor scores. For data which has no classification, there are 3 possibilities. The first possibility is that the data could be missing. The second possibility is that the fund has a small portfolio (e.g. there are fewer than 4 stocks available in the CRSP and Compustat data). The third possibility could be due to the fact that the fund has not been listed on Spectrum for more than 2 years.

Dividend and Share Repurchases events data

Dividend events can be obtained via Compustat. Compustat provides the ratio of gross annual cash dividends per share in $ during the year (Compustat Data Item 26). CRSP/Compustat merged database also records security monthly dividend event. Alternatively, I am also considering data set from CRSP where we can obtain the list of firms with dividend return and without dividend return.

I use 3 different methods to measure share repurchases. For the first method, I use purchases of common stock (Compustat Item #115) by Jagannathan, Stephens and Weisbach (2000). For the second method, I use tender offer measurement by Jain (2007). For share repurchases events, we can identify firms which issue share repurchases via tender offers with distribution codes 6261 and 6561. For the third method, I use open share repurchases measurement. For open market share repurchases, I use Stephens and Weisbach (1998) method of measuring share repurchases. We are able to identify share repurchases events via open market by first identifying non-share repurchases activities such as stock splits, dividend reinvestment plan and tender offer activities. Then by eliminating the non-share repurchases events and share repurchases events via tender offer, the sample represents the share repurchases events via open market.

Control variables

Firm size is measured as the book value of total asset (Compustat item #6) following Jagannathan, Stephens and Weisbach (2000). Alternatively, it can be measured as the market value of common equity at the end of each year (CRSP) or log market value of equity following Jain (2007) and Bushee (2001). This is to control for the size of firm where large size firms have the ability to issue higher dividends and share repurchases compared to small size firms. Operating income is the average ratio of operating income (Compustat item #13)

to total asset (Compustat item #6) following Jagannathan, Stephens and Wiesbach (2000) or JSW (2000). A firm with higher income has the ability to pay out more than lower income firm. The same applied to the non-operating income. The non-operating income is the average ratio of non-operating income (Compustat item #61) to total asset (Compustat item #6) following JSW (2000). Standard deviation of operating income is the standard deviation of the ratio of operating income to total assets. Lagged dividend payout ratio is the prior year's ratio of total dividends (Compustat item #21) to net income available to common shareholders (Compustat item #237). Market to book ratio is the proxy for investment opportunity where it is measured as the average ratio of the market value of equity given by the year end price per share (Compustat item #24) multiply by the number of shares outstanding (Compustat item #25) to the book value of equity (Compustat item #62) following JSW (2000). If the market to book value for a firm is higher, this increases the firms' ability to payout. The debt ratio is the average ratio of long term debt (Compustat item #9) to total asset (Compustat item #6) following Jaganathan et al (2000). If the firm is highly leveraged, this increases the ability for the firm to payout. Capital expenditures is the average ratio of capital expenditures (Compustat item #128) to total asset (Compustat item #6) following JSW (2000).

Other issues (Tax Law Changes)

In 2003, US congress passed the Jobs and Growth Tax Relief Reconciliation Act. In this act, dividends are taxed at the same rate with capital gains. For individuals, the statutory dividend tax rate drop from 38.6% to 15%. At the same time, capital gain tax also decreases from 20% to 15%. The cut on tax rate provides researchers a good opportunity to test on tax effect on dividend and share repurchases. The dividend tax cut in the Jobs and Growth Tax Relief Reconciliation Act in 2003 has a significant effect towards payout policy. Post 2003, there

are significant evidences which shows that dividend activity increases. Blouin, Raedy and Shackelford (2011) find evidence that insiders such as directors and managers rebalance their portfolio to benefit from the tax cut. However, they find no evidence individual investors rebalance their portfolio post tax cut. They also find evidence that firms with large individual ownership increase the dividend portion of their payout. Chetty and Saez (2004) find evidence a 20% increase in dividend payments by nonfinancial and nonutility publicly traded corporation after the tax cut. There is also evidence of a large number of firms initiating dividends. As a result, the number of firms issuing dividend post 2003 increases after we have seen a decline in dividend payments for the past few years. The authors find that strongest effect on tax cut comes from firms which are affected most by the tax cut such as large taxable institutional owners and independent directors with large shareholdings. For firms with large non-taxable financial institution, they find that these firms do not change their payout policy.

Brown, Liang and Weisbenner (2007) test whether the 2003 dividend tax cut has any implications on the dividends by examining the changes of dividend from the perspective of executive stock ownership. Executive with higher ownership are more likely to increase dividends after the tax cut which occur in 2003. There is also evidence of substitution effect between share repurchases and dividend. The authors find evidence that firms which initiated dividends in 2003 are more likely to reduce share repurchases.

One way to control for this effect is to divide that data into 2 samples where the first sample is the sample prior to 2003 and the second sample is the post 2003 sample. We can examine these 2 samples separately.

2.6 Analysis

Table 23 is the summary statistics of sample firms grouped according to industry. The non-utilities and non-financial firms comprises of agriculture, forestry and fishing, mining and construction, manufacturing, transportation, wholesale and retail trade, real estate and holding companies, services, and public administration. Column 2 is the SIC codes which corresponds to the type of industry for each firm in the sample. Column 3 and 4 are the number of firms and the percentage of firms for all firms in the sample. Column 5 and 6 are the number of dividend paying firms and the percentage of dividend paying firms. Column 7 and 8 correspond to the number of non-dividend paying firms and the percentage of non-dividend paying firms. The total number of firms for non-utilities and non-financial firms is 272,327 firms.

The summary statistics for utilities and financial companies are also reported and located in table 23. However, these firms will be excluded from my sample to avoid any sample bias. The utility firms are highly regulated firms while the financial firms are highly leveraged firms. These exclusions help to mitigate any sample biasness that can affect our results from the analysis. For both dividend and non-dividend paying firms, the highest number of firms comes from the manufacturing industry with 40% and 41% respectively and the lowest number of firms comes from the agriculture, forestry and fishing with 0.448% and 0.449% respectively.

In table 24, the sample is divided into share repurchases and non-share repurchases samples, both dividend and share repurchases sample and both non-dividend and non-share repurchases sample. Consistent with previous table, manufacturing firms dominate the sample with 39% and 40% in both dividend and share repurchases sample and both non-dividend and non-share repurchases sample respectively. Meanwhile, agriculture, forestry and fishing industry has the lowest number of firms with 11.86% and 11.22% in both

dividend and share repurchases sample and both non-dividend and non-share repurchases sample respectively.

Industry	SIC Codes	All firms		Dividend paying firms only		Non Dividend paying firms	
		No of firms	% of firms	No of firms	% of firms	No of firms	% of firms
Non utilities and non-financial							
Agriculture, forestry and fishing	100-999	1219	0.447624	204	0.44276599	1015	0.4486128
Mining and construction	1000-1999	30132	11.06464	4056	8.80322959	26076	11.525151
Manufacturing	2000-3999	113635	41.72741	18726	40.6433129	94909	41.948173
Transportation	4000-4799	7555	2.774238	1987	4.31262751	5568	2.4609618
Wholesale and retail trade	5000-5999	28274	10.38237	2890	6.27251812	25384	11.219299
Real estate and holding cos	6500-6999	38589	14.1701	14854	32.2394409	23735	10.490469
Services	7000-8999	48475	17.80029	3118	6.76737422	45357	20.047027
Public Administration	9000-9999	4448	1.633331	239	0.51873074	4209	1.8603068
Total for non-utilities and non-financials		272327		46074		226253	
Utilities	4800-4999	24806	37.75417	7649	27.3051797	17157	45.520151
Financials	6000-6499	40898	62.24583	20364	72.6948203	20534	54.479849
Total for utilities and financial		65704		28013		37691	

Table 23: Summary statistics of sample firms by industry.

SIC Codes	Share Repurchases firms		Non Share Repurchases firms		Share repurchases and dividend paying firms		Non share repurchases and non dividend paying firms	
	No of firms	% of firms	No of firms	% of firms	No of firms	% of firms	No of firms	% of firms
100-999	275	0.1071	944	0.4444	53	0.3389	1166	0.4542
1000-1999	4938	1.9237	25194	11.8614	1318	8.4271	28814	11.2253
2000-3999	28892	11.2557	84743	39.8971	8738	55.8696	104897	40.8657
4000-4799	1793	0.6985	5762	2.7128	689	4.4054	6866	2.6749
5000-5999	8162	3.1797	20112	9.4687	1326	8.4783	26948	10.4984
6500-6999	3858	1.5030	34731	16.3514	1888	12.0716	36701	14.2980
7000-8999	11518	4.4872	36957	17.3994	1534	9.8082	46941	18.2873
9000-9999	487	0.1897	3961	1.8648	94	0.6010	4354	1.6962
	59923		212404		15640		256687	
4800-4999	7471	13.3047	17335	35.8509	3722	38.9697	21084	37.5474
6000-6499	9880	17.5948	31018	64.1491	5829	61.0303	35069	62.4526
	17351		48353		9551		56153	

Table 24: Summary statistics of sample firms by industry and according to the distribution of share repurchases, non-share repurchases, both share repurchases and dividend paying and both non-share repurchases and non-dividend paying firms.

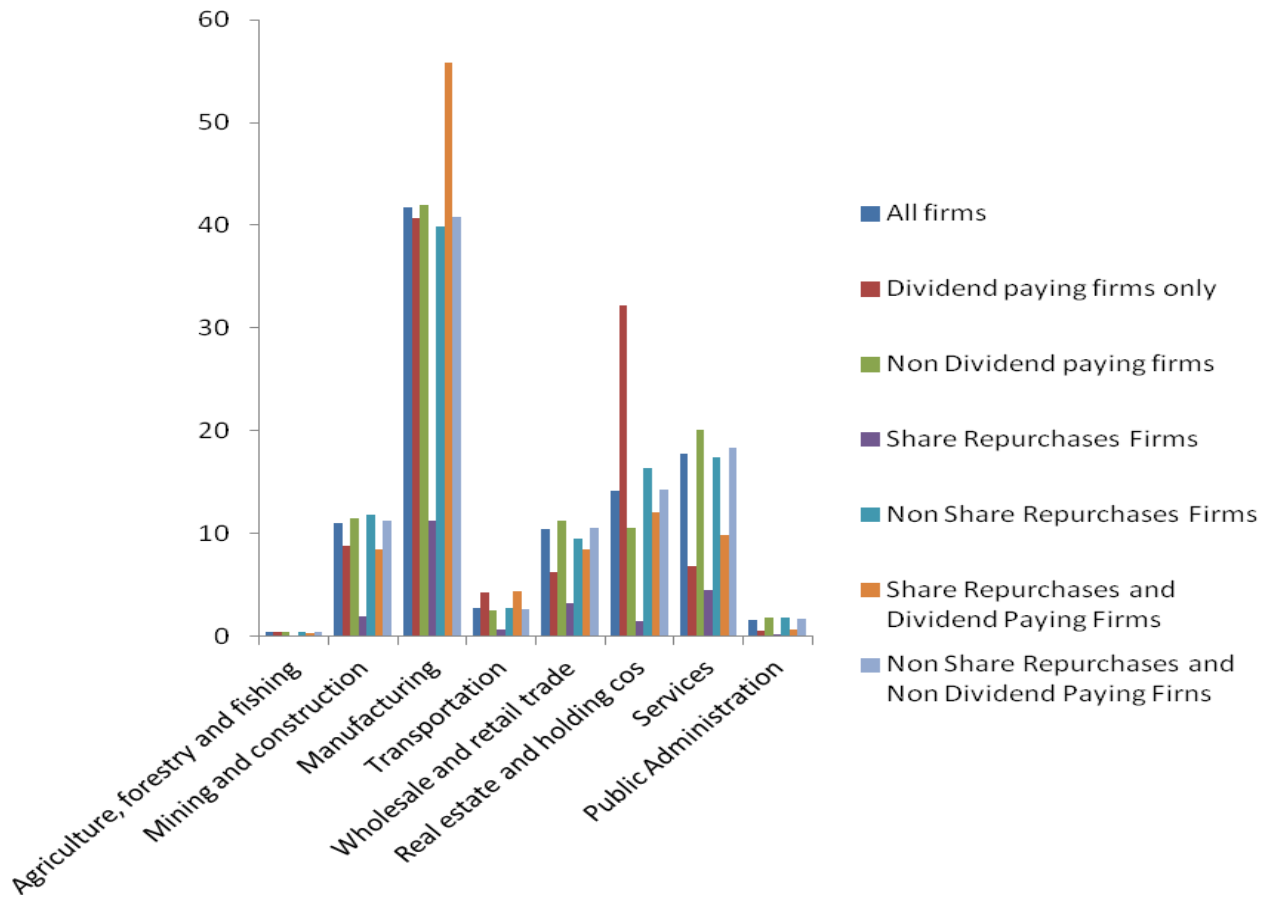

Figure 1: Sample firms by industry

This figure illustrates the distribution of dividend and non-dividend paying, share repurchases, non-share repurchases, both share repurchases and dividend paying and both non-share repurchases and non-dividend paying firms based on Standard Industrial Classification (SIC) codes. The sample period spans from 1981 until 2011. This figure draws the same conclusion from the previous table where I find that manufacturing firms dominate the sample.

Variable	Mean	Stud Dev	Minimum	Maximum
Pb DED	0.02592	0.1589	0	1
Pb TRA	0.10283	0.30374	0	1
Pb QIX	0.23516	0.4241	0	1
SIZE	47.6743	530.441	0	37712
LEV	0.2831	7.38291	0	2176
NOI	-0.0825	48.5865	-258.75	12.99
CE	0.0725	0.82234	-2.7717	341
MB	18.0948	338.96	-35.807	70176.57

Table 25: Summary statistics of institutional investors by types and corresponding control variables.

Table 25 presents the summary statistics of the types of institutional investors and its control variables. The type of institutional investors consists of the dedicated (DED), quasi indexer (QIX) and transient (TRA) institutional investors where dedicated institutional investors are considered as long term institutional investors, quasi indexer as both long and short term institutional investors and transient as short term institutional investors. Using Bushee's institutional investors' classification and data, dedicated, quasi indexer and transient are measured in terms of probability where 1 is the probability of being either a dedicated, a quasi-indexer or a transient institutional investor and 0 is the probability of being neither a dedicated, a quasi-indexer nor a transient institutional investor. However, in our data set, since we are not interested in a quasi-indexer institutional investor, I am omitting the variable in our analysis. The purpose of including quasi-indexer institutional investor in this summary statistics is just to show that institutional investors can be heterogeneous in terms of type. Since institutional investors are known as sophisticated investor, this heterogeneous classification demonstrates how sophisticated they can be. The ability to act as both short and

long term institutional investors requires great knowledge, skills, ability and resources. The control variables are size (SIZE), leverage (LEV), non-operating income (NOI), capital expenditure (CE) and market to book ratio (MB). In table 25, quasi indexer institutional investors on average are higher compared to dedicated and transient institutional investors with the average of 0.23 or 23%. Dedicated institutional investors have the lowest average with 0.02 or 2%. The result is also consistent for the standard deviation with quasi indexer institutional investors demonstrate the highest standard deviation with 0.42 or 42%. Meanwhile, dedicated institutional investors have the lowest standard deviation with 0.16 or 16%. The mean and standard deviation for firm size measured as the log of total asset are 4767.43 (in ‘00) and 53044.1 (in ’00) respectively. The minimum value is 0 and the maximum value is 37,712 (in ’00). The mean and standard deviation for leverage measured as total debt are 0.28 and 0.42 respectively. The minimum value is 0 and the maximum value is 2176. The mean and standard deviation for non-operating income are -0.0.08 and 48.59 respectively. The minimum value is -258.75(in ‘00) and the maximum value is 12.99 (in ’00). The mean and standard deviation for capital expenditure are 0.07 and 0.82 respectively. The minimum value is -2.77 and the maximum value is 341. The mean and standard deviation for market to book ratio are 18.09(‘00) and 338.96(‘00) respectively. The minimum value is -35.80(in `00) and the maximum value is 70176.57 (in `00).

	PB DIV	LEV	SIZE	NOI	CE	MB
PB DIV	1.0000					
PB DED	0.5400					
LEV	-0.0068	1.0000				
SIZE	0.0873	-0.0013	1.0000			
NOI	0.0012	0.0005	0.0002	1.0000		
CE	-0.0113	-0.0045	-0.0045	-0.0012	1.0000	
MB	0.0114	-0.0046	-0.0046	-0.0017	0.0025	1.0000

Table 26: Correlation matrix between the important variables in the dividend and non-dividend sample

	PB_SP	LEV	SIZE	OI	NOI	CE	MB
PB_SP	1.0000						
LEV	-0.0076	1.0000					
SIZE	0.0469	-0.0013	1.0000				
NOI	0.0013	0.0005	0.0002		1.0000		
CE	-0.0069	-0.0112	-0.0045		-0.0012	1.0000	
MB	0.0001	-0.0004	-0.0046		-0.0017	0.0025	1.0000

Table 27: Correlation matrix between the important variables in the share repurchases and non-share repurchases sample

Table 26 and 27 are the correlation matrix for dividend and non-dividend paying firms and share repurchases and non-share repurchases firms. Table 28 below is the correlation matrix for both share repurchases and dividend paying firms and both non-share repurchases and non-dividend paying firms.

	PB_SP_DIV	LEV	SIZE	OI	NOI	CE	MB
PB_SP_DIV	1.0000						
LEV	-0.0035	1.0000					
SIZE	0.0765	-0.0013	1.0000				
NOI	0.0009	0.0005	0.0002		1.0000		
CE	-0.0092	-0.0112	-0.0045		-0.0012	1.0000	
MB	0.0042	-0.0004	-0.0046		-0.0017	0.0025	1.0000

Table 28: Correlation matrix between the important variables in the share repurchases and dividend paying firms and non-share repurchases and non-dividend paying sample

In my first hypotheses, I argue that the presence of long term institutional investors increases the likelihood of dividends and magnitude of dividends. This is followed by the second hypotheses; higher ownership by long term institutional investors increases the likelihood and magnitude of dividend. Firms with higher ownership of long term institutional investors and the likelihood of having long term institutional investors are positively related to the likelihood of firm paying dividend and the magnitude of dividend because long term institutional investors focus on monitoring and not trading for short term profit.

Intercept	**[-1.2805]*** **	**[-1.3346]*** **	**[-1.311]*** **	**[-1.3085]*** **	**[-1.305]*** **	**[-1.1607]*** **
	0.00421	0.00466	0.0053	0.00531	0.00634	0.0128
Pb DED	**0.4406*** **	**0.4759*** **	**0.461*** **	**0.4592*** **	**0.23098*** **	**0.3843*** **
	0.0266	0.0277	0.0278	2.78E-02	0.033	0.0557
Size		**0.000008755*** **	**0.000008693*** **	**0.000008656*** **	**0.000007779*** **	**0.000198*** **
		2.37E-07	2.36E-07	2.36E-07	2.48E-07	3.35E-06
Lev			**[-0.1124]*** **	**[-0.111]*** **	**-0.0189**	**0.0551** **
			0.013	0.0131	0.00571	0.0221
NOI				**0.000688**	**0.000782**	**-0.00136**
				0.000775	0.000836	0.0073
CE				`	**[-2.2463]*** **	**-0.4888**
					0.0653	0.0957
MB						**4.23E-07**
						3.69E-07
AIC	355259.97	302400.52	300367.26	298856.85	264806.36	71972.394
SIC	355281.43	302432.27	300409.58	298909.71	264869.43	72036.014

Table 29: Probit Regression for dividend and non-dividend sample (Model 1)

In table 29 is the results for probit regression analysis which corresponds to model 1. The dependent variable is the probability of firm issuing dividend where the probability is equal to 1 if the firm in our sample issues dividend to their shareholders and it is equal to 0 if the firm in our sample does not issue dividend to their shareholders. The probability of firm issuing dividend is regressed against the indicator variable for presence of dedicated institutional investors, (Pb DED) and the control variables. The probability of firm with dedicated institutional investor is equal to 1 if the firm has dedicated institutional investor and equal to 0 if the firm has no dedicated institutional investor. The control variables are firm size, leverage, non-operating income, capital expenditure and market to book ratio. For all tables in this chapter, * corresponds to a coefficient estimate which is statistically significant at 10% significance level, ** corresponds to a coefficient estimate which is significant at 5% significance level and *** corresponds to a coefficient estimate which is significant at 1% significance level. This is consistent for all tables in this essay. In table 29, the coefficient for the indicator variable for presence of dedicated institutional investors is positive and highly significant. In the first column, even when we omit the control variables, the probability of a firm having a dedicated institutional investor is positive and highly statistically significant at 1%, 5% and 10% significance level. In column 3 until column 7, after adding some control variable, the coefficient for probability of a firm having a dedicated institutional investor is still positive and statistically significant at 1%, 5% and 10% significance level. So, when the dependent variable is the likelihood of firm issuing dividend, the presence of dedicated institutional investors (Pb Ded) positively and highly significantly affects the likelihood of firm issuing dividend. This result supports our first hypotheses which posit that the presence of dedicated institutional investors increases the likelihood of dividends.

Since there are possibilities that the firm's decision to issue dividend affect the type of institutional investors, we need to control for the endogeniety. In table 30, I present the endogeneity test results for the probit regression analysis using Heckman's (1979) 2 stage model. At the first stage, the indicator variable for presence of dedicated institutional investors in the prior year is regressed against the probability of a firm issuing dividend together with the control variables controlling for institutional presence in the prior year (t-1). At this stage, I obtain the inverse Miller ratio (IMR) and I am going to use this IMR in our second stage regression. In the second stage, the probability of a firm issuing dividend is regressed against the indicator variable for presence of dedicated institutional investors and the control variables. I find that even after controlling for endogeneity, the coefficient for the indicator variable for presence of dedicated institutional investors is still positive and highly significant. So, the presence of dedicated institutional investors (Pb Ded) positively and highly significantly affects the likelihood of firm issuing dividend.

First Stage						
Intercept	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **
	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
lag Pb div	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **
	0.0121	0.0121	0.0121	0.0121	0.0121	0.0121
lag size	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Second Stage						
Intercept	**39.5802*** **	**39.5099*** **	**39.9636*** **	**40.0314*** **	**36.0583*** **	**26.188*** **
	1.1982	1.2169	1.22E+00	1.2213	1.3133	2.4673
Pb Ded	**0.4418*** **	**0.4288*** **	**0.4236*** **	**0.4222*** **	**0.1911*** **	**0.3511*** **
	0.0281	0.0282	0.0283	0.0283	0.0335	0.0557
Size		**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0001*** **
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0
Lev			**[-0.0922]*** **	**[-0.0909]*** **	**[-0.0162]*** **	**0.0777*** **
			0.0124	0.0125	0.0053	0.0235
NOI				**6.00E-04**	**7.00E-04**	**-0.0018**
				8.00E-04	9.00E-04	0.0072
CE					**[-2.1855]*** **	**[-0.4127]*** **
					0.0673	0.0951
MB						0.0000
						0.0000
IMR	**[-52.085]*** **	**[-52.0138]*** **	**[-52.5649]*** **	**[-52.6487]*** **	**[-47.576]*** **	**[-34.7722]*** **
	1.5274	1.5513	1.5537	1.5569	1.6741	3.1443
AIC	296321.3002	287579.4591	287042.2728	285804.5772	254755.3304	70707.5426
BIC	296352.965	287621.5574	287094.8836	285867.6784	254828.5289	70780.079

Table 30: Endogeneity test results for model 1

Intercept	**[-0.8173]*** **	**[-0.8406]*** **	**[-0.827]*** **	**[-0.8255]*** **	**[-0.822]*** **	**[-0.6642]*** **
	0.00256	0.0028	0.00314	0.00315	0.00368	0.00759
Pb DED	**0.2971*** **	**0.3175*** **	**0.3083*** **	**0.3073*** **	**0.1688*** **	**0.2636*** **
	0.0161	0.0167	0.0168	1.68E-02	0.0192	0.0332
Pb TRA	**0.421*** **	**0.4163*** **	**0.4127*** **	**0.4115*** **	**0.4098*** **	**0.404*** **
	0.00852	0.00901	0.00904	9.04E-03	0.00957	0.0172
Size		**0.000002201*** **	**0.000002193*** **	**0.000002188*** **	**0.000001988*** **	**0.000052*** **
		8.42E-08	8.41E-08	8.41E-08	9.09E-08	1.09E-06
Lev			**-0.0641*** **	**-0.0633*** **	**-0.0101*** **	**0.0524*** **
			0.00718	0.00719	(0.00292)	0.0143
NOI				**0.000428**	**0.000485**	**-0.00184**
				0.000455	0.000494	0.00428
CE					**-1.3142*** **	**-0.3552*** **
					0.0352	0.055
MB						**2.52E-07**
						1.93E-07
AIC	352875.92	301200.93	299193.33	297693.03	263582.77	74263.07
SIC	352908.11	301243.27	299246.22	297756.47	263656.35	74335.779

Table 31: Probit Regression for dividend and non-dividend sample (Model 1)

First Stage						
Intercept	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **
	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
lag Pb div	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **
	0.0121	0.0121	0.0121	0.0121	0.0121	0.0121
lag size	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Second Stage						
Intercept	**39.9375*** **	**39.8664*** **	**40.3152*** **	**40.3915*** **	**36.4181*** **	**26.6771*** **
	1.2029	1.2214	1.22E+00	1.2257	1.3177	2.4778
Pb Ded	**0.5053*** **	**0.4903*** **	**0.485*** **	**0.4836*** **	**0.2519*** **	**0.4202*** **
	0.0282	0.0283	0.0283	0.0283	0.0335	0.0558
Pb Tra	**0.6784*** **	**0.6452*** **	**0.6411*** **	**0.6395*** **	**0.644*** **	**0.6387*** **
	0.0151	1.52E-02	1.52E-02	1.52E-02	1.62E-02	0.0287
Size		**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0001*** **
		0.0000	0.0000	0.0000	0.0000	0.0000
Lev			**[-0.0842]*** **	**[-0.0828]*** **	**[-0.0142]*** **	**0.08*** **
			0.0122	0.0122	0.005	0.0236
NOI				**6.00E-04**	**7.00E-04**	**-0.0018**
				8.00E-04	9.00E-04	0.0073
CE					**[-2.2759]*** **	**[-0.4498]*** **
					0.0685	0.0967
MB						**0.0000**
						0.0000
IMR	**[-52.6213]*** **	**[-52.546]*** **	**[-53.0926]*** **	**[-53.1873]*** **	**[-48.1057]*** **	**-35.4811**
	1.5334	1.5569	1.5594	1.5625	1.6797	3.1577
AIC	294426.5257	285889.452	285374.194	284147.5709	253293.007	70226.8067
BIC	294468.7454	285942.0749	285437.327	284221.1889	253376.6624	70308.4101

Continuation from previous table….

…..Table 32: Endogeneity test results for model 1.

Table 31 and table 32 are the result for probit model using model 1 and the endogeneity test result for the probit model respectively. The difference between these tables and the previous tables is that another variable is added as the independent variable which is the indicator variable for presence of transient institutional investor (Pb TRA). Even after including this variable, the result remains the same. The coefficient estimate for the presence of dedicated institutional investors (Pb DED) is still positive and highly significant across column. However, the coefficient estimate for the presence of transient institutional investor (Pb TRA) is also positive and highly significant. The result suggest that the presence of dedicated and transient institutional investors positively and highly significantly affects the likelihood of firm issuing dividend. The likelihood of firm having transient institutional investors (Pb Tra) is also positively related to the dependent variable could suggest that firms may undertake both dividends and share repurchases since in this sample I am not controlling for firms which undertake share repurchases. Even after controlling for the endogeniety in table 32, the results persist for both dedicated and transient institutional investors.

Intercept	**[-0.3819]*** **	**[-0.4006]*** **	**[-0.4158]*** **	**[-0.4178]*** **	**[-0.4178]*** **	**[-0.4311]*** **	**[-0.4234]*** **
	0.00399	0.0042	0.00547	0.00546	0.00546	0.00692	0.0125
PIH DED	**0.3194*** **	**0.335*** **	**0.3304*** **	**0.3345*** **	**0.3345*** **	**0.2434*** **	**0.7272*** **
	0.0718	0.0733	0.0733	7.35E-02	0.0735	0.0765	0.1695
Size		**0.000001577*** **	**0.000001583*** **	**0.000001583*** **	**0.000001588*** **	**0.000001399*** **	**0.000042*** **
		9.82E-08	9.84E-08	9.84E-08	9.86E-08	1.01E-07	1.32E-06
Lev			**0.0804*** **	**0.0804*** **	**0.0916*** **	**0.3237*** **	**0.1817*** **
			0.0193	0.0193	0.0192	0.0209	0.0357
NOI					**0.0125**	**0.1179*** **	**-0.1003**
					0.0117	0.0124	0.1465
CE						**[-1.8144]*** **	**-0.1256**
						0.0682	0.0999
MB							**3.39E-07**
							2.86E-07
AIC	136118.36	125642	124974.07	124974.07	124775.47	111828.19	35365.509
SIC	136137.49	125670.47	125012	125012	124822.88	111884.65	35423.23

Table 33: Probit Regression for Model 2

First Stage					
Intercept	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **
	0.0063	0.0063	0.0063	0.0063	0.0063
lag Pb div	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **
	0.0121	0.0121	0.0121	0.0121	0.0121
lag size	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***
	0.0004	0.0004	0.0004	0.0004	0.0004
Second Stage					
Intercept	**36.5169*** **	**38.4844*** **	**38.4264*** **	**34.0955*** **	**26.067*** **
	1.8085	1.8207	1.82E+00	1.947	3.5286
PIH Ded	**0.5766*** **	**0.6295*** **	**0.6346*** **	**0.48*** **	**1.772*** **
	0.1219	0.1236	0.124	0.1289	0.3217
Size		**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
		0.0000	0.0000	0.0000	0.0000
Lev		**0.2588*** **	**0.278*** **	**0.8225*** **	**0.1407*** **
		0.0328	0.0328	0.0348	0.0596
NOI			**0.0908*** **	**0.3006*** **	**-1.92E-01**
			0.0204	2.02E-02	2.38E-01
CE				**[-3.2627]*** **	**-0.235**
				0.1213	0.17
MB					**0.0000**
					0.0000
IMR	**[-47.3473]*** **	**[-49.9355]*** **	**[-49.8954]*** **	**[-44.4174]*** **	**[-34.2427]*** **
	2.3052	2.3232	2.3252	2.4817	4.4968
AIC	123311.327	121841.614	121662.639	109297.0405	33725.8524
BIC	123339.735	121888.942	121719.424	109362.8056	33791.7225

Table 34: Endogeneity Test for Model 2

In table 33 and table 34 I present the results for the probit model using model 2 and the endogeneity test result for the probit model. The difference between these tables compared to tables 31 and 32 is that the indicator variable for presence of dedicated institutional investor (Pb DED) is being replaced with the ownership of dedicated institutional investors (PIH Ded). The general magnitude (PIH) is measured as the ratio of total shares held by institutional investors and the total shares outstanding. Then I identify the institutional ownership according to type (PIH Type) using Bushee's Institutional Investor Classification. After replacing the presence of dedicated institutional investor with the ownership of institutional investors (PIH Ded), the result remains the same. The coefficient estimate for the ownership of dedicated institutional investors (PIH Ded) is still positive and highly significant across column. The result suggests that the ownership of dedicated institutional investors (PIH Ded) positively and highly significantly affects the likelihood of firm issuing dividend. Even after controlling for endogeniety in table 34, the results persist where the ownership for dedicated institutional investors (PIH Ded) positively and highly significantly affects the likelihood of firm issuing dividend.

Table 35 is the probit regression analysis result for model 2 with the inclusion of the institutional ownership of transient institutional investor (PIH TRA). Table 36 is the endogeneity test result for this probit regression model. I find that the results are consistent with the previous results using both presence of dedicated institutional investor (Pb DED) and presence of transient institutional investor (Pb TRA), where both coefficient estimates are positive and highly significant. Even after controlling for the endogeneity in table 36, the results remain the same. The results suggest that the ownership of dedicated and transient institutional investors positively and highly significantly affects the likelihood of firm issuing dividend. I find that using both measures; the ownership of certain type of institutional investors and the presence of certain type of institutional investors gives us the same result.

Intercept	**[-0.3942]*** **	**[-0.4148]*** **	**[-0.43]*** **	**[-0.432]*** **	**[-0.4449]*** **	**[-0.4566]*** **
	0.00414	0.00437	0.0056	0.00559	0.00701	0.0127
PIH DED	**0.34*** **	**0.3589*** **	**0.3543*** **	**0.3584*** **	**0.2698*** **	**0.8006*** **
	0.0721	0.0736	0.0736	7.38E-02	0.0767	0.1731
PIH TRA	**0.5488*** **	**0.5946*** **	**0.5963*** **	**0.5965*** **	**0.6897*** **	**1.7464*** **
	0.0491	0.0499	0.0502	5.02E-02	0.0531	0.1095
Size		**0.000001587*** **	**0.00000159*** **	**0.000001596*** **	**0.000001407*** **	**0.000043*** **
		9.84E-08	9.85E-08	9.87E-08	1.01E-07	1.32E-06
Lev			**0.0803*** **	**0.0914*** **	**0.3241*** **	**0.1772*** **
			0.0193	0.0192	0.0209	0.0359
NOI				**0.0122**	**0.1178*** **	**-0.1426**
				0.0115	0.0124	0.1481
CE					**[-1.8632]*** **	**[-0.2274]** **
					0.0686	0.1009
MB						**4.33E-07**
						3.50E-07
AIC	135993.13	125498.35	124830.72	124631.99	111654.92	35067.122
SIC	136021.81	125536.3	124878.14	124688.88	111720.79	35133.09

Table 35: Probit Regression for Model 2

First Stage						
Intercept	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **
	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
lag Pb Div	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **
	0.0121	0.0121	0.0121	0.0121	0.0121	0.0121
lag size	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Second Stage						
Intercept	**36.7179*** **	**38.7029*** **	**38.6826*** **	**38.6466*** **	**34.3246*** **	**26.9885*** **
	1.8098	1.8221	1.82E+00	1.8257	1.9489	3.547
PIH Ded	**0.6139*** **	**0.6701*** **	**0.6674*** **	**0.6752*** **	**0.5238*** **	**1.9789*** **
	0.1225	0.1243	0.1243	0.1247	0.1296	0.3301
PIH Tra	**0.8988*** **	**0.9532*** **	**0.9489*** **	**0.9492*** **	**1.1142*** **	**3.1067*** **
	0.0822	8.29E-02	8.28E-02	8.29E-02	8.83E-02	0.1868
Size		**0.0000**** **	**0.0000**** **	**0.0000**** **	**0.0000**** **	**0.0001*** **
		0.0000	0.0000	0.0000	0.0000	0.0000
Lev			**0.2575**** **	**0.2763*** **	**0.8232*** **	**0.1366** **
			0.0329	0.0329	0.0348	0.06
NOI				**0.0897*** **	**0.3004*** **	**-0.259**
				2.05E-02	2.02E-02	0.2428
CE					**[-3.3473]*** **	**[-0.4152]** **
					0.1222	0.173
MB						**0.0000**
						0.0000
IMR	[-47.6302]***	[-50.213]***	[-50.2451]***	[-50.2045]***	[-44.7375]***	[-35.4906]***
	2.3069	2.3226	2.325	2.3271	2.4841	4.5204

Continuation from previous table……

AIC	123191.523	121904.4855	121602.7835	121530.5226	109135.654	33418.6377
BIC	123229.401	121951.8204	121651.3461	121596.7722	109210.814	33492.7416

Table 36: Endogeneity test results for model 2.

Intercept	**2.40423*** **	**2.21997*** **	**2.0287*** **	**1.91528*** **	**1.88371*** **	**1.07855*** **
	0.05977	0.06165	0.07101	0.05049	0.06711	0.09124
PIH DED	**2.28566** **	**2.64063*** **	**2.64423*** **	**2.73211*** **	**2.67614*** **	**4.63812*** **
	0.98261	1.00045	1.00241	7.12E-01	0.76145	1.09785
Size		**0.00000203*** **	**0.00000207*** **	**0.0000022*** **	**0.00000195*** **	**0.00001923*** **
		7.61E-07	7.62E-07	5.41E-07	5.85E-07	3.29E-06
Lev			**0.9995*** **	**1.13262*** **	**2.33895*** **	**1.96842*** **
			0.18266	0.13007	0.17247	0.26662
NOI				**0.00922**	**0.87029*** **	**2.09182***
				0.01145	0.10799	1.1073
CE					**[-5.48]*** **	**-0.55033**
					0.6112	0.7401
MB						**-2.27E-07**
						1.24E-06
R2	0.0001	0.0002	0.0007	0.0016	0.0045	0.004
Adj R2	0.0001	0.0002	0.0006	0.0016	0.0044	0.0038

Table 37: Ordinary Least Square (OLS) Regression for Model 3

First Stage						
Intercept	**[-1.9469]*** **	**[-1.9469]*** **	**[-1.9469]*** **	**[-1.9469]*** **	**[-1.9469]*** **	**[-1.9469]*** **
	0.007	0.007	0.007	0.007	0.007	0.007
lag DY	**-0.0001**	**-0.0001**	**-0.0001**	**-0.0001**	**-0.0001**	**-0.0001**
	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
lag size	**0.0000****	**0.0000****	**0.0000****	**0.0000****	**0.0000****	**0.0000****
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**	**0.0008**
	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Second Stage						
Intercept	**[-248.64273]*** **	**[-373.04794]** *	**[-403.40738]** **	**[-427.20284]** **	**[-356.34697]** *	**-899.5857**
	70.81312	195.47371	1.95E+02	188.75787	202.98736	637.53601
PIH Ded	**3.66876*****	**3.66905*****	**3.672*****	**3.61846*****	**3.74857****	**1.53299**
	1.40419	1.40588	1.40551	1.35707	1.46425	1.79958
Size		**-1.5800E-06**	**-1.8900E-06**	**-2.0700E-06**	**-1.5200E-06**	**0.00000179**
		0.0000	0.0000	0.0000	0.0000	0.00001215
Lev			**1.59956*****	**1.70511*****	**2.32569*****	**2.75434*****
			0.20938	0.20745	0.22687	0.28522
NOI				**1.92E+00**	**4.05E-01**	**0.47078**
				1.21E+00	1.47E+00	1.09338
CE					**[-5.6719]*****	**-0.26835**
					0.92211	0.80419
MB						**-4.95E-08**
						0.0000
IMR	**320.94385*****	**480.11468** *	**518.56441****	**548.91559****	**458.38818** *	**1152.11598**
	90.58946	250.09525	250.08992	241.50134	259.70538	815.72199
R2	0.0005	0.0005	0.0021	0.0025	0.0046	0.0084

Continuation from previous table…….

Adj R2	0.0005	0.0005	0.002	0.0023	0.0044	0.008

Table 38: Endogeneity test results for model 3.

Next, I replace the dependent with dividend yield instead of the probability of firm issuing dividend. Dividend yield is measured as the ratio of gross annual cash dividends per share in $ during the year (Compustat Data Item 26). Table 37 is the result for the ordinary least square (OLS) regression with ownership of dedicated institutional investors (PIH DED) as the independent variable. Consistent with our previous results, the coefficient estimate for ownership of dedicated institutional investors (PIH DED) is positive and highly significant for column 3,4,5,6 and 7. The coefficient estimate for ownership of dedicated institutional investors (PIH DED) in column 2 is positive and significant at 5% and 10% level of significance. Table 38 is the endogeneity test for this OLS regression. After controlling for endogeneity, the results remain the same across column. The coefficient for PIH DED is positive and highly significant (at 1%, 5% and 10% level of significance).

In the following table (table 39), a variable representing the ownership for transient institutional investors (PIH TRA) is added in the regression model. We find that the ownership of dedicated institutional investors (PIH DED) remains positive and highly significant across column. But the most notable result that I obtain from this analysis comes from the coefficient estimate for ownership of transient institutional investor (PIH TRA). The coefficient estimate for ownership of transient institutional investor (PIH TRA) is no longer significant. I find that the ownership of dedicated institutional investors positively and highly significantly affects dividend yield while the ownership of transient institutional investors is insignificant. This result remains the same even after controlling for endogeneity in table 40. Using dividend yield as the dependent variable, I find stronger support for my hypotheses. As the ownership of dedicated institutional investors increases, the dividend yield increases after controlling for transient investors.

Intercept	**2.41214*** **	**2.21676*** **	**2.02587*** **	**1.90671*** **	**1.88191*** **	**1.06761*** **
	0.06168	0.06369	0.07277	0.05174	0.06792	0.09223
PIH DED	**2.27383** **	**2.64543*** **	**2.6485*** **	**2.745*** **	**2.67911*** **	**4.66318*** **
	0.98288	1.00075	1.00271	7.12E-01	0.76165	1.09829
PIH TRA	**-0.37676**	**0.1467**	**0.13101**	**3.96E-01**	**0.09666**	**0.61754**
	0.72439	0.73132	0.73669	5.23E-01	0.56105	0.75831
Size		**0.00000203*** **	**0.00000207*** **	**0.00000221*** **	**0.00000195*** **	**0.00001933*** **
		7.61E-07	7.63E-07	5.41E-07	5.85E-07	3.29E-06
Lev			**0.99937*** **	**1.13224*** **	**2.3388*** **	**1.96703*** **
			0.18266	0.13007	0.17248	0.26663
NOI				**0.0092**	**0.8702*** **	**2.07663***
				0.01145	0.108	1.10747
CE					**[-5.48424]*** **	**[-0.58317]**
					0.6117	0.7412
MB						**[-2.17E-07]**
						1.24E-06
R2	0.0001	0.0002	0.0007	0.0016	0.0045	0.004
Adj R2	0.0001	0.0002	0.0006	0.0016	0.0044	0.0038

Table 39: Ordinary Least Square (OLS) Regression for Model 3

First Stage						
Intercept	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **	**[-2.0863]*** **
	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
lag div	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **	**0.197*** **
	0.0121	0.0121	0.0121	0.0121	0.0121	0.0121
lag size	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
lag lev	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***	**0.0007***
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Second Stage						
Intercept	**[-248.77665]*** **	**[-373.13489]** **	**[-403.47815]*** **	**[-427.32514]*** **	**[-355.98354]** **	**-892.42486**
	70.81946	195.47722	1.95E+02	188.76103	202.99317	638.08929
Pb Ded	**3.67323*** **	**3.67339*** **	**3.6756*** **	**3.62518*** **	**3.73933** **	**1.54631**
	1.40451	1.4062	1.40583	1.35739	1.46455	1.80029
Pb Tra	**0.13789**	**1.3377E-01**	**1.1086E-01**	**2.0676E-01**	**-3.0356E-01**	**0.24763**
	0.89973	9.03E-01	9.03E-01	8.72E-01	9.33E-01	0.90286
Size		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.00000195**
		0.0000	0.0000	0.0000	0.0000	0.00001216
Lev			**1.59948*** **	**1.70482*** **	**2.32583*** **	**2.75442*** **
			0.20938	0.20745	0.22687	0.28522
NOI				**1.92E+00**	**0.41194*** **	**0.46705**
				1.21E+00	1.47E+00	1.0935
CE					**[-5.65828]*** **	**-0.28078**
					0.92307	0.80549
MB						**0.0000**
						0.0000
IMR	**321.11206*** **	**480.22289** **	**518.65246** **	**549.06747** **	**457.92886***	**1142.94911**
	90.59732	250.09968	250.09434	241.50533	259.71272	816.43059
R2	0.0005	0.0005	0.0021	0.0025	0.0046	0.0084

Adj R2	0.0004	0.0004	0.002	0.0023	0.0044	0.0079

Continuation from previous table….

…..Table 40: Endogeneity test results for model 3.

In third hypotheses, I argue that the presence of short term institutional investors increases the likelihood and the magnitude of share repurchases. This is followed by the fourth hypotheses where higher institutional ownership by short term institutional investors increase the likelihood and magnitude of share repurchases. I argue that firms with higher ownership of short term institutional investors and the likelihood of having short term institutional investors are positively related to the likelihood of firms undertaking share repurchases and the magnitude of share repurchases because short term institutional investors focus on trading and not monitoring. For the analysis, the dependent variable will be share repurchases and the independent variables will be the types of institutional investors and control variables. I am adopting 3 types of measurements for share repurchases. The first measure is using Jagannathan, Stephens and Weisbach (2000) measurement for share repurchases which is the purchases of common and preferred stock (Compustat Item #115). Second measurement for share repurchases is a measurement for tender offer events obtained from CRSP with distribution codes 6261 and 6561. According to CRSP manual, share repurchases with code 6261 are common shares decreased through companies own tender offer with tax-status unknown. Share repurchases with code 6561 is defined as common shares reduced through company's own exchange offer with tax status unspecified and not applicable. The third measurement is using Stephens and Weisbach (1998) measurement for open share repurchases. From the sample, I identify distribution events such as stock splits, dividend and tender offers. These events will then be omitted from the sample. Next, I identify firms that experience a decrease in number of shares outstanding. We are assuming that the decrease in number of shares outstanding is due to open share repurchases events.

Intercept	**31.35594*** **	**17.15167*** **	**17.12375*** **	**17.12872*** **	**17.33831*** **	**6.05132*** **
	0.92334	0.85833	0.86154	0.8618	0.87234	2.01936
Pb Tra	**22.24568*** **	**16.90065*** **	**16.94984*** **	**16.94142*** **	**17.15619*** **	**13.43775** **
	3.32135	3.07748	3.08226	3.08E+00	3.11666	5.90611
Size		**0.00338*** **	**0.00338*** **	**0.00338*** **	**0.0034*** **	**0.01404*** **
		1.63E-05	1.63E-05	1.63E-05	1.67E-05	1.18E-04
Lev			**-0.03528**	**-0.03529**	**-0.04052**	**[-8.04883]***
			0.10754	0.10756	0.11935	3.63065
NOI				**0.0011**	**0.0011**	**0.21021**
				0.01608	0.01612	1.38044
CE					**-0.47099**	**-2.82125**
					0.98206	4.63711
MB						**1.16E-05**
						5.48E-05
R2	0.0002	0.1418	0.1422	0.1422	0.1396	0.1885
Adj R2	0.0002	0.1418	0.1421	0.1421	0.1395	0.1884

Table 41: Regression for Model 6 Jaganathan et al (2000) Purchases of common and preferred stock (Dep prstkc)

First Stage						
Intercept	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **
	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
lag prstkc	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag size	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**
	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Second Stage						
Intercept	**[-18262]*** **	**[-1133.12498]*** **	**[-1138.8154]*** **	**[-1138.85248]*** **	**[-946.15443]*** **	**-1078.49595**
	319.16518	311.57637	3.12E+02	312.34674	314.63195	722.5736
Pb Tra	**19.9586*** **	**16.74603*** **	**16.7634*** **	**16.75855*** **	**17.10277*** **	**17.29149*** **
	4.03484	3.74839	3.75114	3.75164	3.79155	6.79009
Size		**0.00355*** **	**0.00355*** **	**0.00355*** **	**0.00358*** **	**0.01524*** **
		0.0000	0.0000	0.0000	0.0000	0.00013486
Lev			**-0.06369**	**-0.0637**	**-0.07123**	**[-8.2964]** **
			0.12334	0.12335	0.13881	3.87777
NOI				**1.13E-03**	**1.13E-03**	**0.57244**
				1.74E-02	1.74E-02	2.36658
CE					**-0.39559**	**-2.32516**
					1.08268	4.83197
MB						**1.15E-05**
						0.0001
IMR	**24391*** **	**1535.77559*** **	**1543.38557*** **	**1543.44151*** **	**1286.8128*** **	**1443.07884**
	425.4709	415.39214	416.36848	416.42236	419.46992	963.36026
R2	0.0162	0.1511	0.1512	0.1512	0.1481	0.2103
Adj R2	0.0162	0.1511	0.1512	0.1512	0.1481	0.2102

Table 42: Endogeneity Test for Model 6

In table 41, I present the results for the regression analysis to test for third and fourth hypotheses using the first measurement for share repurchases. The dependent variable is the purchases of common and preferred stock (prstkc). This variable is regressed against the indicator variable for presence of transient institutional investors (Pb TRA), size, leverage, non-operating income, capital expenditure and market to book ratio. I find that the coefficient estimate for the indicator variable for presence of transient institutional investors (Pb TRA) is positive and highly significant. This result supports our hypotheses, where the magnitude of share repurchases is positively related to the likelihood of firm with short term institutional investors. Next, I control for endogeneity problem for this problem and the result is presented in table 42. After controlling for endogeneity, I find that the presence of transient institutional investors remain positive and highly significant.

Next, using the same model, I add another variable for institutional investor measuring the likelihood of long term institutional investors (Pb DED). I find that the presence of transient institutional investors remain positive and highly significant while the presence of dedicated institutional investors is insignificant in table 43. In table 44, I present the result after controlling for endogeneity using the same model. Even after controlling for endogeneity, the presence of transient institutional investors remains positive and highly significant. The results suggest that the presence of transient institutional investors positively and highly significantly affects share repurchases and the presence of dedicated institutional investors is insignificant.

Intercept	**31.68474*** **	**17.35384*** **	**17.32585*** **	**17.33091*** **	**17.53979*** **	**6.19166*** **
	0.93305	0.86735	0.87063	0.8709	0.88146	2.04221
Pb TRA	**21.91688*** **	**16.69922*** **	**16.74856*** **	**16.74006*** **	**16.9557*** **	**13.2997*** **
	3.32403	3.07998	3.08478	3.09E+00	3.11919	5.91374
Pb DED	**[-15.86641]*** **	**-9.72766**	**-9.68181**	**-9.69E+00**	**-9.68342**	**-5.29812**
	6.48152	6.00547	6.0125	6.01E+00	6.07913	11.4952
Size		**0.00338*** **	**0.00338*** **	**0.00338*** **	**0.0034*** **	0.01404***
		1.63E-05	1.63E-05	1.63E-05	1.67E-05	1.18E-04
Lev			**-0.03564**	**-0.03566**	**-0.04094**	**[-8.04677]** **
			0.10754	0.10756	0.11935	3.63068
NOI				**0.00111**	**0.00111**	**0.21005**
				0.01608	0.01612	1.38045
CE					**-0.4736**	**-2.82651**
					0.98205	4.63715
MB						**1.14E-05**
						5.48E-05
R2	0.0002	0.1419	0.1422	0.1422	0.1396	0.1885
Adj R2	0.0002	0.1418	0.1422	0.1421	0.1395	0.1884

Table 43: Regression for Model 6 Jaganathan et al (2000) Purchases of common and preferred stock (Dep prstkc)

First Stage						
Intercept	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **
	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
lag prstkc	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag size	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**
	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Second Stage						
Intercept	**[-18262]*** **	**[-1134.24713]*** **	**[-1140.01818]*** **	**[-1140.05538]*** **	**[-947.33876]*** **	**-1078.37805**
	319.16021	311.57526	3.12E+02	312.34571	314.63092	722.5791
Pb Tra	**19.5092*** **	**16.46718*** **	**16.48408*** **	**16.47917*** **	**16.82434*** **	**[17.11666]** **
	4.03822	3.75156	3.75432	3.75483	3.79474	6.79881
Pb Ded	**[-21.26929]*** **	**[-13.20496]***	**[-13.20395]***	**[-13.20705]***	**[-13.23045]***	**-6.74986**
	7.88663	7.33E+00	7.33E+00	7.33E+00	7.42E+00	13.24383
Size		**0.00355*** **	**0.00355*** **	**0.00355*** **	**0.00357*** **	**0.01524*** **
		0.0000	0.0000	0.0000	0.0000	0.00013487
Lev			**-0.06417**	**-0.06418**	**-0.07178**	**[-8.29206]** **
			0.12334	0.12335	0.13881	3.87781
NOI				**1.14E-03**	**1.14E-03**	**0.57082**
				1.74E-02	1.74E-02	2.3666
CE					**-0.39847**	**-2.33045**
					1.08268	4.83202
MB						**0.0000**
						0.0001
IMR	**24392*** **	**1537.64482*** **	**1545.36302*** **	**1545.41921*** **	**1288.76469*** **	**1443.15769**
	425.46437	415.39112	416.3676	416.42148	419.46904	963.36756
R2	0.0162	0.1511	0.1512	0.1512	0.1481	0.2103
Adj R2	0.0162	0.1511	0.1512	0.1512	0.1481	0.2101

Continuation from previous table….

….Table 44: Endogeneity Test for Model 6

Next, I am using the second measurement of share repurchases which is the tender offer. Tender offer is measured as events with distribution codes 6261 and 6561 from CRSP database. The dependent variable is the probability of a tender offer event, where the likelihood of firm issuing share repurchases via tender offer (Pb SP) is equal to 1 if there is any tender offer event and 0 if there is no tender offer event. In table 45, the independent variables are the indicator variable for presence of transient institutional investors (Pb TRA), size, leverage, non-operating income, capital expenditure and market to book ratio. I find that using tender offer as a measure of share repurchases, the coefficient estimate for the presence of transient institutional investors is not significant and in some cases, it is positive but significantly weak. The results could be driven by the fact that tender offers are less frequently traded compared to open market share repurchases. So, transient institutional investors might be involved in less tender offer activities compared to open share repurchases activities. There are also possibilities that the cost to purchases tender offer tend to be slightly higher compared to open market share repurchases since it is a closed bid-ask transaction. Short term institutional investors known for profiteering might not be in favour for tender offer share repurchases activities. After controlling for endogeneity for this probit model in table 46, I find that presence of transient institutional investors is insignificant. The results are consistent across column.

Next, I add another independent variable which measure the likelihood of long term institutional investors (Pb DED). The results are consistent with our previous results. In table 47, I find that the coefficient estimate for the presence of transient institutional investors is not significant and in some cases, it is positive and significantly weak. I also find that the coefficient estimate for the presence of dedicated institutional investors is not significant. After controlling for endogeneity (table 48), I find that both coefficient estimates for the presence of transient and dedicated institutional investors are insignificant.

Intercept	**[-3.5338]*** **	**[-3.5293]*** **	**[-3.5343]*** **	**[-3.5348]*** **	**[-3.5113]*** **	**[-3.5686]*** **
	0.0434	0.0468	0.0473	0.0474	0.0571	0.1373
Pb Tra	**0.187***	**0.2129****	**0.212****	**0.2122****	**0.163**	**-2.8375**
	0.0978	0.0996	0.0997	9.97E-02	0.1087	232.7
Size		**-1.91E-06**	**-1.90E-06**	**-1.91E-06**	**-1.37E-06**	**8.88E-07**
		3.96E-06	3.95E-06	3.96E-06	3.62E-06	5.65E-06
Lev			**0.0336**	**0.0397**	**0.0434**	**0.0526**
			0.0311	0.0331	0.0339	0.2807
NOI				**0.00832**	**0.0311**	**0.0538**
				0.0224	0.0789	0.1888
CE					**-0.2385**	**0.418**
					0.5334	0.2833
MB						**-2.00E-04**
						2.47E-04
AIC	882.546	806.627	807.687	809.334	756.779	147.847
SIC	903.008	836.996	848.16	859.911	817.009	209.601

Table 45: Probit Regression for tender offer share repurchases (6261, 6561)

First Stage						
Intercept	**[-1.1668]*** **	**[-1.1668]*** **	**[-1.1668]*** **	**[-1.1668]*** **	**[-1.1668]*** **	**[-1.1668]*** **
	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043
lag PbSP	**0.4349** **	**0.4349** **	**0.4349** **	**0.4349** **	**0.4349** **	0.4349**
	0.2109	0.2109	0.2109	0.2109	0.2109	0.2109
lag size	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**0.0039**	**0.0039**	**0.0039**	**0.0039**	**0.0039**	**0.0039**
	0.0113	0.0113	0.0113	0.0113	0.0113	0.0113
Second Stage						
Intercept	**-108.29**	**-116.812**	**-1.20E+02**	**-120.466**	**-299.445**	**-524.485**
	393.7477	458.8098	4.67E+02	466.9031	798.421	2188.018
Pb Tra	**0.4282**	**0.525**	**0.5277**	**0.5261**	**-0.1045**	**-23.6512**
	0.5503	0.556	0.5561	0.5564	0.7504	178596
Size		**0.0000E+00**	**0.0000E+00**	**0.0000E+00**	**0.0000E+00**	**0.0000**
		0.0000	0.0000	0.0000	0.0000	0.0000
Lev			**0.1421**	**0.1482**	**0.183**	**0.2763**
			0.1404	0.1443	0.1536	0.6321
NOI				**2.19E-02**	**1.20E-01**	**0.2649**
				1.09E-01	2.10E-01	0.7635
CE					**0.3909**	**0.9576**
					1.6523	0.8494
MB						**-2.00E-03**
						0.0021
IMR	**138.3041**	**150.0305**	**154.7837**	**155.0632**	**402.9345**	**715.0213**
	545.3979	635.5127	646.221	646.7215	1105.89	3030.559
AIC	436.8935	402.9779	404.4037	406.2625	355.043	90.6988
BIC	465.4476	440.8707	451.7442	463.0538	420.7604	156.1368

Continuation from previous table….

…..Table 46: Endogeneity Test for tender offer share repurchases (6261, 6561).

Intercept	**[-3.5238]*** **	**[-3.5187]*** **	**[-3.5237]*** **	**[-3.5243]*** **	**[-3.5019]*** **	**[-3.5572]*** **
	0.0436	0.0469	0.0474	0.0476	0.0572	0.1374
Pb TRA	**0.1769***	**0.2024****	**0.2016****	**0.2018****	**0.1535**	**-2.847**
	0.0979	0.0996	0.0998	9.98E-02	0.1087	232.2
Pb DED	**-2.6221**	**-2.6202**	**-2.6805**	**-2.68E+00**	**-2.689**	**-2.8584**
	97.1242	99.6916	118.5	1.19E+02	129.7	470.5
Size		**-1.94E-06**	**-1.94E-06**	**-1.95E-06**	**-1.41E-06**	**8.37E-07**
		3.99E-06	3.99E-06	4.00E-06	3.66E-06	5.66E-06
Lev			**0.0337**	**0.0399**	**0.0431**	**0.0529**
			0.0311	0.0332	0.0339	0.2781
NOI				**0.0083**	**0.0308**	**0.053**
				0.0224	0.0789	0.1895
CE					**-0.2361**	**0.4158**
					0.5317	0.2832
MB						**-2.10E-04**
						2.48E-04
AIC	881.742	806.009	807.071	808.715	756.502	149.314
SIC	912.436	846.502	857.663	869.408	826.769	219.89

Table 47: Probit Regression for tender offer share repurchases (6261, 6561)

First Stage						
Intercept	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **
	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
lag Pb Sp	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	00.0000	0.0000	0.0000	0.0000	0.0000
lag size	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**
	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Second Stage						
Intercept	**-109.224**	**-117.594**	**-1.22E+02**	**-121.851**	**-301.587**	**-520.742**
	393.9057	458.6158	4.68E+02	468.0432	800.1987	2193.722
Pb Tra	**0.3891**	**0.4854**	**0.488**	**0.4864**	**-0.14**	**-23.6913**
	0.5503	0.556	0.5561	0.5564	0.7504	178544.2
Pb Ded	**-21.9614**	**-2.1900E+01**	**-2.1910E+01**	**-2.1913E+01**	**-2.1914E+01**	**-23.8107**
	67612.15	6.86E+04	6.88E+04	6.89E+04	7.56E+04	365153.8
Size		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
		0.0000	0.0000	0.0000	0.0000	0.0000
Lev			**0.1447**	**0.1511**	**0.1817**	**0.2737**
			0.1387	0.1428	0.1535	0.6296
NOI				**2.20E-02**	**1.19E-01**	**0.2617**
				1.08E-01	2.10E-01	0.7637
CE					**0.3859**	**0.9498**
					1.6451	0.8483
MB						**-0.0020**
						0.0021
IMR	**139.6515**	**151.1687**	**156.7033**	**157.0355**	**405.9516**	**709.899**
	545.6167	635.2441	647.6843	648.3006	1108.353	3038.46
AIC	437.4114	403.6288	405.0462	406.9035	355.9121	92.3768
BIC	475.4834	450.9948	461.8549	473.1601	431.0176	165.9946

Table 48: Endogeneity Test for tender offer share repurchases (6261, 6561)

Using the third measurement, which is the open share repurchases measurement, the results are presented in tables 49-52. In this model, the independent variable is the likelihood of firm issuing open share repurchases where Pb SP is equal to 1 if there is any open share repurchases event and 0 if there is no open share repurchases event. Using the indicator variable for transient institutional investors (Pb TRA) as the independent variable, I find that the coefficient estimate for the presence of transient institutional investor is positive and highly significant except for column 1. After controlling for endogeniety, in table 50, I find that coefficient estimate for the presence of transient institutional investors is positive and highly significant across column. This evidence supports my hypotheses where the likelihood of firm having short term institutional investors is positively related to the likelihood of firm issuing share repurchases. The result suggests that the presence of transient institutional investors positively and highly significantly affects the likelihood of share repurchases.

Next, using the same model, I add another independent variable which measures the presence of long term institutional investor (Pb DED). The results are consistent with our previous results. The coefficient estimate for the presence of transient institutional investors remain positive and highly significant and the coefficient estimate for the presence of dedicated institutional investors is not significant across column. In column 2, the coefficient estimate for the presence of transient institutional investors is insignificant. However, after controlling for endogeneity in table 52, it becomes positive and significant. In other columns, the coefficient estimate remains positive and highly significant. The coefficient estimate for the presence of dedicated institutional investors remains insignificant across column. The results suggests that the presence of transient institutional investors positively and highly significantly affects the likelihood of share repurchases and the presence of dedicated institutional investors is insignificant.

Intercept	**[-3.8354]*** **	**[-3.6923]*** **	**[-3.6575]*** **	**[-3.6524]*** **	**[-3.4547]*** **
	0.1229	0.1818	0.2166	0.2171	0.2384
Pb Tra	**0.2002**	**0.9223*** **	**0.9201*** **	**0.9185*** **	**1.0257*** **
	0.2198	0.2922	0.2924	2.93E-01	0.3079
Size		**-3.81E-06**	**-3.87E-06**	**-3.96E-06**	**-3.37E-06**
		2.40E-05	2.40E-05	2.40E-05	2.10E-05
Lev			**-0.1461**	**-0.1468**	**-0.1987**
			0.5858	0.5868	0.6131
NOI				**-0.00007**	**-0.00006**
				0.0168	0.012
CE					**-3.7084**
					2.9572
MB					
AIC	128.945	74.084	75.919	77.804	77.053
SIC	147.479	97.666	107.309	116.952	123.691

Table 49: Probit Regression for open share repurchases

First Stage					
Intercept	**[-1.7121]*** **	**[-1.7121]*** **	**[-1.7121]*** **	**[-1.7121]*** **	**[-1.7121]*** **
	0.0213	0.0213	0.0213	0.0213	0.0213
lag Pb SP	**1.7659*** **	**1.7659*** **	**1.7659*** **	**1.7659*** **	**1.7659*** **
	0.6224	0.6224	0.6224	0.6224	0.6224
lag size	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**[-0.2575]*** **	**[-0.2575]*** **	**[-0.2575]*** **	**[-0.2575]*** **	**[-0.2575]*** **
	0.0625	0.0625	0.0625	0.0625	0.0625
Second Stage					
Intercept	**4.1956**	**4.5793**	**4.58E+00**	**4.5544**	**5.3961**
	17.5964	17.2568	1.72E+01	17.1709	16.8706
Pb Tra	**4.0527*** **	**3.8651*** **	**3.8626*** **	**3.8541*** **	**4.0036*** **
	1.2364	1.2378	1.2385	1.2386	1.2532
Size		**0.0000E+00**	**0.0000E+00**	**0.0000E+00**	**0.0000E+00**
		0.0001	0.0001	0.0001	0.0001
Lev			**0.0094**	**0.0092**	**0.0057**
			0.1978	0.1991	0.2173
NOI				**-3.00E-04**	**-2.00E-04**
				7.89E-02	6.12E-02
CE					**-7.4779**
					10.0934
MB					
IMR	**-18.1451**	**-18.0657**	**-18.0578**	**-17.9983**	**-18.4448**
	22.928	22.4909	22.4347	22.3812	21.9629
AIC	54.5595	54.7547	56.7113	58.6222	59.3783
BIC	78.102	84.4823	93.8248	103.0384	110.7574

Table 50: Endogeneity Test for open share repurchases

Intercept	**[-3.8239]*** **	**[-3.6897]*** **	**[-3.6547]*** **	**[-3.6495]*** **	**[-3.4528]*** **
	0.1232	0.1819	0.2167	0.2172	0.2384
Pb TRA	**0.1888**	**0.9197*** **	**0.9175*** **	**0.9158*** **	**1.0235*** **
	0.22	0.2923	0.2925	2.93E-01	0.308
Pb DED	**-2.4899**	**-2.2059**	**-2.3778**	**-2.38E+00**	**-2.3473**
	246.3	283.9	458.2	4.54E+02	456
Size		**-3.83E-06**	**-3.88E-06**	**-3.97E-06**	**-3.38E-06**
		2.40E-05	2.40E-05	2.40E-05	2.10E-05
Lev			**-0.1467**	**-0.1474**	**-0.1989**
			0.5851	0.5861	0.6123
NOI				**-0.00007**	**-0.00006**
				0.0167	0.012
CE					**-3.7022**
					2.9567
MB					
AIC	130.573	76.043	77.877	79.762	79.022
SIC	158.375	107.486	117.115	126.739	133.433

Table 51: Probit Regression for Open Share Repurchases

First Stage					
Intercept	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **	**[-1.4326]*** **
	0.0039	0.0039	0.0039	0.0039	0.0039
lag Pb Sp	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000
lag size	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **	**0.0000*** **
	0.0000	0.0000	0.0000	0.0000	0.0000
lag lev	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**	**-0.0019**
	0.0017	0.0017	0.0017	0.0017	0.0017
Second Stage					
Intercept	**4.1766**	**4.5594**	**4.56E+00**	**4.5339**	**5.3774**
	17.5925	17.2514	1.72E+01	17.1652	16.8648
Pb Tra	**4.0419*** **	**3.8536*** **	**3.851*** **	**3.8422*** **	**3.9936*** **
	1.2364	1.2378	1.2385	1.2385	1.2534
Pb Ded	**-19.5406**	**-1.9977E+01**	**-1.9985E+01**	**-2.0007E+01**	**-1.9895E+01**
	169992.3	2.06E+05	2.06E+05	2.06E+05	2.15E+05
Size		**0.0000**	**0.0000**	**0.0000**	**0.0000**
		0.0001	0.0001	0.0001	0.0001
Lev			**0.0093**	**0.0091**	**0.0056**
			0.1986	0.1999	0.2182
NOI				**-3.00E-04**	**-2.00E-04**
				7.84E-02	6.09E-02
CE					**-7.4634**
					10.0881
MB					
IMR	**-18.1065**	**-18.025**	**-18.0167**	**-17.9563**	**-18.4087**
	22.923	22.4839	22.4276	22.3738	21.9553
AIC	56.5384	56.7324	58.6888	60.5993	61.3595
BIC	87.9284	93.8918	103.225	112.4181	120.0785

Continuation from previous table…

…..Table 52: Endogeneity Test for open share repurchases

Previously, we are only considering samples with dividend and share repurchases separately. For robustness, I am taking into account firms which issue both dividend and share repurchases. Using dividend yield and purchases of common and preferred stock, I assign each firm with a certain criteria; high dividend firm, low dividend firm, high share repurchases firm and low share repurchases firm. The benchmark for defining high and low will be based upon the median of dividend yield and purchases of common and preferred stock where firms above median for the corresponding variable will be categorized as high and firms below median will be categorized as low. Then using the criteria, I assign the likelihood of high dividend firm, low dividend, high share repurchases or low share repurchases where the likelihood of the corresponding criteria is equal to 1 if the firm fits the criteria and 0 otherwise.

In table 53, I define the dependent variable as the likelihood of firm with high dividend and low share repurchases (Pb HDLSP). Pb HDLSP is equal to 1 if it is categorized as both high dividend and low share purchases firm and 0 otherwise. For the independent variables, I am taking into account both short and long term institutional investor using the likelihood of firm with long term institutional investors (Pb Ded) and firm with short term institutional investor (Pb Tra). I find that the presence of dedicated institutional investors (Pb DED) positively and highly significantly affects the likelihood of firm issuing high dividend and low share repurchases. I also find that the presence of transient institutional investors (Pb TRA) negatively and highly significantly affects the likelihood of firm issuing high dividend and low share repurchases. After substituting the independent variables with the ownership of dedicated institutional investors (PIH DED) and transient institutional investors (PIH TRA), the results hold. In terms of presence, the presence of dedicated institutional investors increases the likelihood of firm issuing high dividends and under low share repurchases. The same goes for transient institutional investors. The presence of transient institutional investors

decreases the likelihood of firm issuing high dividend and undertaking low share repurchases. In terms of magnitude, higher the dedicated institutional ownership, higher is the likelihood of firm issuing high dividend and low share repurchases. Meanwhile for transient institutional investors, higher the transient institutional ownership, lower is the likelihood of firm issuing high dividend and low share repurchases.

In the next table, I define the dependent variable as the likelihood of firm issuing low dividend and high share repurchase (Pb LDHSP). Pb LDHSP is equal to 1 if the firm is categorized as both low dividend and high share repurchases firm and it is 0 otherwise. In this table, I find that the presence of dedicated institutional investors (Pb DED) negatively and significantly affects the likelihood of firm issuing low dividend and high share repurchases. While the presence of transient of institutional investors (Pb TRA) positively and significantly affects the likelihood of firm issuing low dividend and high share repurchases. Using both dependent variables which measure firms issuing both dividends and share repurchases, we arrive at the same conclusion.

Intercept	**1.488*** **	**1.4221*** **	**1.4201*** **	**1.418*** **	**[-1.8844]*** **	**[-1.8686]*** **
	0.00328	0.0036	0.00363	0.00363	0.00675	0.0136
Pb Ded	**0.1815*** **	**0.0744*** **	**0.073*** **	**0.0753*** **	**0.0667* **	**0.1513*** **
	0.0216	0.0242	0.0243	2.43E-02	0.0354	0.0574
Pb Tra	**0.0615*** **	**[-0.1022]*** **	**[-0.1004]*** **	**[-0.0978]*** **	**[-0.058]*** **	**[-0.2165]*** **
	0.0105	0.012	0.0121	1.21E-02	0.0205	0.0395
Size		**[-0.00000224]*** **	**[-0.00000224]*** **	**[-0.00000223]*** **	**-1.49E-07**	**5.20E-07**
		7.68E-08	7.67E-08	7.67E-08	1.21E-07	6.20E-07
Lev			**0.00172**	**0.00172**	**0.000124**	**0.063*** **
			0.00137	0.00136	0.000872	0.0188
NOI				**-0.00071**	**0.000033**	**-0.00265**
				0.000556	0.000356	0.00627
CE					**[-1.3967]*** **	**[-0.2893]*** **
					0.0778	0.1086
MB						**[-0.00000349]*** **
						1.97E-06
AIC	191754.07	162480.24	161747.17	161124.14	62075.871	17225.535
SIC	191786.69	162522.58	161800.07	161187.58	62149.448	17298.244

Table 53: Sample firms with both dividend and share repurchases firms. (High Dividend and low share repurchases)

Intercept	**[-1.7323]*** **	**[-1.6295]*** **	**[-1.6266]*** **	**[-1.6235]*** **	**[-1.5316]*** **	**[-1.4389]*** **
	0.00385	0.00408	0.00417	0.00418	0.0052	0.0106
Pb Ded	**[-0.248]*** **	**[-0.1613]*** **	**[-0.1602]*** **	**[-0.1625]*** **	**[-0.1072]*** **	**-0.0401**
	0.0273	0.0294	0.0294	2.95E-02	0.0305	0.05
Pb Tra	**0.00333**	**0.1545*** **	**0.1537*** **	**0.1513*** **	**0.1665*** **	**0.0853*** **
	0.0118	0.0131	0.0132	1.32E-02	0.0135	0.0244
Size		**0.000002122*** **	**0.000002118*** **	**0.000002113*** **	**0.000002608*** **	**0.000015*** **
		7.30E-08	7.29E-08	7.28E-08	9.43E-08	5.11E-07
Lev			**[-0.0063]***	**[-0.00639]***	**[-0.00867]***	**0.0437*** **
			0.00376	0.00373	0.00454	0.0154
NOI				**0.000903**	**0.000897**	**-0.00281**
				0.000594	0.000604	0.00519
CE					**[-1.17]*** **	**[-1.1494]*** **
					0.0533	0.0987
MB						**0.0000004592***
						2.48E-07
AIC	133845.91	122214.48	121679.67	121450.95	117556.61	33719.382
SIC	133878.54	122256.83	121732.56	121514.38	117630.19	33792.091

Table 54: Sample firms with both dividend and share repurchases firms. (Low dividend and high share repurchases)

2.7 Conclusion

The main question in this essay is as following; is the firms' payout policy related to the presence of and the ownership in the hands of certain type of institutional investors? I classify the types of institutional investors using the Bushee institutional classification index and link it to payout policy. To be specific, I examine whether the presence and ownership of long- and short-term institutional investors affect the type and magnitude of the payout where I differentiate the payout as dividend and share repurchases. Repurchases are more volatile and temporary (Guay and Harford, 2000). Transient institutional investors are known for profiteering instead of monitoring in the firm. Since institutional investors are known for their role to monitor the firm, transient institutional investors demonstrate a different side of institutional investor. Long term institutional investors are known for their monitoring role in the firm and tend to stay longer The motivation of this research originated from the information advantage hypotheses (Brennan and Thakor, 1990) and monitoring role hypotheses (Allen, Bernardo and Welch, 2000) where they find that institutional investors prefer certain type of payout and firm payout policy attracts institutional investors. However, empirically, there is lack of evidence to support the monitoring role. This research is also motivated from the perspective of institutional investors' and the nature of payout policy. Bushee (1998, 2001, 2004) finds that different institutional investors have different investment profile and objectives. Jagannathan, Stephens and Weisbach (2000) document that the nature of dividend and share repurchases are different. Dividend are steadier and issued by firms with permanent cash flows while share repurchases are more volatile and temporary (Guay and Harford, 2000). The results support my hypotheses where the presence of and higher ownership by long term institutional investors increase the likelihood of firms paying dividends and the magnitude of dividends. Even after controlling for endogenity, I find that the results still hold. I also find that the presence of and higher ownership by short term

institutional investors increases the likelihood of firms undertaking share repurchases and the magnitude of share repurchases. Again, even after controlling for endogenity, I find that the results for this analysis still hold.

The evidence suggests that the presence and ownership of long term institutional investors affect dividend while the presence and ownership of short term institutional investors affect share repurchases.

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Vita

The author hails from the warm and sunny Malaysia, a country known for its diversity and good food. She received her early education in S.R.K. Convent (1) Bukit Nanas, Kuala Lumpur and Tunku Kurshiah College, Seremban. Later, she pursued her higher education in National University of Malaysia where she received a Bachelor of Science in Actuarial Science. She stayed in Nation*a*l University of Malaysia right after graduation, refusing to leave but this time not as a student, but as a tutor. In 2005, marks a history in her life when she is accepted to pursue her Masters in Mathematical Finance in University of Hull, United Kingdom. It was her lifelong dream to pursue her education overseas. After being awarded a Master of Science in Mathematical Finance in 2007, she continued to serve National University of Malaysia in the Department of Mathematical Sciences. In 2010, she was accepted to pursue Doctoral of Philosophy in Financial Economics, in University of New Orleans. The author loves to travel, reading and drawing during leisure time. Her home town is in Selangor, Malaysia and she lives with her husband and 2 daughters.