Do Institutional Investors Alleviate Agency Problems by Influencing Payout Policy in Firms with Poor Investment Opportunities?

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Received: July 3, 2014 Accepted: July 20, 2014 Online Published: July 21, 2014

doi:10.5430/afr.v3n3p43 URL: http://dx.doi.org/10.5430/afr.v3n3p43

Abstract

This paper seeks to determine if institutional investors influence corporate payout policies. Specifically, this study tests whether institutional investors encourage higher payouts in firms with higher free cash flow and poor growth opportunities. Firm and year fixed effect regressions examining the effect of changes in institutional investor levels to subsequent changes in payout levels are used. For robustness, difference-GMM regressions and regressions for different time periods are performed on the same relationship. Increased institutional ownership leads to increases in total payouts, especially in firms with high free cash flow and poor investment opportunities (low *q*). According to agency-based free cash flow theory, stockholders should prefer that the management of firms with higher free cash flow and poor investment opportunities increase payouts to shareholders. The results indicate that institutional shareholders reduce agency costs by encouraging management to raise payouts, thus benefiting institutional investors and non-institutional shareholders.

Keywords: Corporate governance, Corporate finance, Dividends, Repurchases, Agency costs

1. Introduction

Corporations have been using purposeful payout policies for quite some time, despite the fact that, in theory, payouts should have no effect on shareholder wealth, except for perhaps negative tax consequences (Lintner, 1956; Poterba & Summers, 1984). Furthermore, repurchases and dividends are theoretically equivalent methods of payouts except where tax differentials favor one method over the other. Still, it is known that corporate payout policies vary widely, but what forces shape corporate payout decisions?

One force that appears to influence the payout decisions of corporate managers is institutional investors. Institutions have become the dominant force in corporate ownership. They owned 24% of all U.S. stocks in 1980. Now, institutions own over 70% of the shares of U.S. corporations (Gaspar, Massa, Matos, Patgiri, & Rehman, 2013). Institutional investors are also important internationally. For example, institutional investors hold 50 to 60 percent of large listed European companies (Brossard, Lavigne, & Sakinç, 2013). The predominance of institutional investors underscores the importance of the relationship between institutional investors and corporate financial policies.

Institutional investors have been shown to affect corporate governance in many areas (Becht, Bolton, & Röell, 2003). Institutional investors should be better corporate stewards than individual investors because they are more informed and influential. On the other hand, institutional investors are agents that may take actions for their own benefit at the expense of their principals. One example in which institutional investors seem to have failed their principals as monitors is executive compensation. Institutional ownership has grown rapidly since 1980. In the meantime, the average U.S. corporate chief executive's salary has grown from 42 times to 400 times an average worker's salary without an accompanying improvement in firm performance (Bogle, 2010).

Institutional investors must actively monitor management to influence financial policies effectively, but institutions with different characteristics have different incentive levels to expend costly effort to monitor. Institutional investors are likely to fill one or more of three roles in monitoring management: active monitoring, passive monitoring, or cooperating with management at the expense of other shareholders (Elyasiani & Jia, 2010). Since institutions are likely to be better informed and have larger holdings than other investors, engaging in active monitoring and positively influencing corporate governance is likely to lead to improved firm performance (Shleifer & Vishny, 1986). Passive institutional owners such as index funds and many short-term traders are likely to have little effect on corporate

governance or firm performance. Chung and Zhang (2011) find that institutional investors gravitate to companies with pre-existing good governance to minimize monitoring costs. Cooperating with management to exploit other shareholders is likely when the institution has a business relationship (e.g. an investment banking relationship) with the firm (Cornett, Marcus, Saunders, & Tehranian, 2007).

Easterbrook (1984) and Jensen (1986) develop an agency-based theory which implies that higher payouts keep managers in the capital markets where monitoring costs are lower than those alternatively incurred by current shareholders. Therefore, payouts reduce agency costs. Agency-based theory recognizes that investment policies and payout policies are not independent. Payouts serve to prevent management from investing excess free cash flow in marginal or value-reducing projects. According to agency-based theory, better informed investors, such as institutions, should encourage higher payouts in firms that are likely to overinvest. Based on this theory, I test a prediction that institutional investors will encourage firms to pay out more of their free cash flow, especially in firms with high free cash flow and poor investment opportunities.

My results provide support for agency-based theory. I find that an increase in institutional ownership leads to a rise in a firm's total payout in the subsequent year, especially in firms with high free cash flow and poor investment opportunities (low q). This indicates that institutional investors reduce agency costs by inducing managers to make payouts in firms which are likely to overinvest.

This paper has six sections. The introduction discusses the purpose of the paper. Section 2 is a literature review. Section 3 discusses the development of the two central hypotheses. In section 4, the data and methods employed are explained. Empirical results are presented in section 5. A discussion of the results and suggestions for future research are included in section 6.

2. Literature Review

Institutional investors can influence management through methods such as proxy votes, shareholder proposals, publicity generation and the threat of "voting with their feet" by selling their shares. Graham, Harvey, and Rajgopal (2005) survey and interview CFOs who view institutional investors as the most important marginal investors. Many CFOs in their study declare that institutional investors are important because they can lower a stock's price by herding out of a stock after an earnings miss. Additionally, many of the CFOs assert that institutional investors can provide more accessible and lower cost capital if they are pleased with firm management.

Research has provided evidence that the influence of institutional investors can improve corporate governance. In a study of companies from 23 countries, Aggarwal, Erel, Ferreira, and Matos (2011) find that higher institutional ownership increases the likelihood that poorly performing Chief Executive Officers (CEOs) will be terminated and that firm valuation will improve. Also, institutional investors help to control earnings management (Hadani, Goranova, & Khan, 2011).

Several studies have found a relationship between institutional investors and payout policies. Jagannathan, Stephens, and Weisbach (2000) find higher institutional ownership in firms that are increasing payouts, especially if the increased payout comes in the form of dividends. They explain that tax-exempt institutions that do not share in the tax benefits of repurchases may be behind the preference for increased dividends. Moser (2007) differentiates between classes of institutional investors and finds that firms increase the percentage of payouts that go towards repurchases as tax-disfavored (by dividends) institutional ownership increases, but decrease the percentage as tax-favored institutional ownership increases. The information advantage enjoyed by institutional owners reduces opportunities for companies to repurchase stock at bargain prices (De Cesari, Espenlaub, Khurshed, & Simkovic, 2012). Evidence is provided by Desai and Jin (2011) that management alters dividend policy to cater to institutional shareholders.

3. Hypotheses

Shareholders incur agency costs when a firm's management uses its superior knowledge of the firm's business activities to make decisions that benefit management at the expense of shareholders. Agency-based free cash flow theory suggests that firms with higher free cash flow and poor growth opportunities should have higher payouts through higher dividends or stock repurchases (Easterbrook, 1984; Jensen, 1986). The higher payouts serve to prevent management from using discretionary funds to invest in projects that provide less benefit to shareholders than the higher payouts do. Therefore, institutional shareholders should attempt to reduce agency costs by encouraging management to raise payouts.

Agency-based theory predicts that higher payouts force managers into capital markets to raise funds which lower the monitoring costs of current shareholders. Agency-based theory recognizes that payouts reduce managerial ability to engage in empire building by investing excess free cash flow in projects that reduce the value of the firm. Therefore,

informed investors should seek to influence management to increase payouts in firms that have high free cash flow and poor investment opportunities as indicated by a low *q* ratio.

There is empirical support for agency-based theories. Easterbrook (1984) and Jensen (1986) propose that payouts can be used to mitigate potential overinvestment or empire building problems. Grullon and Michaely (2004) find that repurchase announcements get a more positive reaction among firms that are likely to overinvest. Similarly, Officer (2011) finds that dividend initiation announcements lead to higher short-term returns in firms with poor investment opportunities and high cash flow.

Agency-based theory implies that larger institutional investor holdings will lead to higher payouts. Therefore, I state my first hypothesis as:

H1: Greater institutional investor holdings will lead to higher payouts through dividends or stock repurchases.

The relationship predicted by *H1* should be stronger in firms with high free cash flow and poor investment opportunities. My second hypothesis is derived from the agency-based theory:

H2: The relationship between greater institutional investor holdings and higher payouts will be stronger in firms with high free cash flow and poor investment opportunities.

The relationship between institutional investors and payout policy is an endogenous one. Therefore, it is important to show a causal relationship to support these hypotheses. The causal relationship in the agency-based theory predicts that institutional investor changes influence total payout (dividends and stock repurchases) policy changes.

4. Data, Methods, and Summary Statistics

4.1 Data

I gather institutional and insider ownership data on U.S. listed companies from CDA / Spectrum Compact Disclosure for each year from 1990 to 2005. I exclude financial firms and utilities because they are highly regulated by the government. The ownership data is then merged with Compustat data. The final sample consists of 10,668 firms and 79,890 firm-years. Some firms are missing data or not present in the sample for enough firm-years to perform certain analysis. In such cases, these firms are not used.

Annual dividends and stock repurchases are measured in dollars and scaled by the dollar book value of assets. Repurchases are defined as the dollar amount of stock repurchases minus the dollar amount of stock issues. If stock issues are greater than stock repurchases, the repurchase amount is set to zero. Changes in repurchases are measured as the repurchases of the current year minus repurchases of the previous year, divided by the book value of assets from the previous year. Changes in dividends are measured similarly. Total payout is defined as the sum of the dollar value of common dividends and repurchases.

Fama and French (2001) find in a study of U.S. firms that dividends are trending through time. They also find that firm profitability, size and growth opportunities are related to dividends. Therefore, I control for differences across firms using variables that control for these relationships. I use earnings before interest and taxes scaled by total assets as a proxy for profitability. Size is controlled for by using the logarithm of market value and the logarithm of revenue. I use *q* to control for growth opportunities. Following Dlugosz, Fahlenbrach, Gompers, and Metrick (2006), I calculate the variable *q* as the ratio of the market value of assets to the book value of assets where market value is calculated as the sum of the book value of assets and the market value of common stock less the book value of common stock and deferred taxes. All regressions include dummy variables for each year of the data sample to control for time effects on the relationship between institutional ownership and payouts.

DeAngelo, DeAngelo, and Stulz (2006) report a strong association between a company's earned/contributed equity mix, which they use as a proxy for the life-cycle stage of a company, and dividends. Therefore, I follow them by using the earned/contributed equity mix defined as retained earnings to the book value of total equity to control for the life-cycle stage of the firm. Firm stock turnover is included as a control because Banerjee, Gatchev, and Spindt (2007) find that turnover is related to dividends. Jensen (1986) proposes debt can substitute for dividends, so firm debt to asset ratio is included.

I use net income plus depreciation and amortization minus capital expenditures as a measure of cash flow. Notably, this cash flow measure does not subtract dividends or repurchases as many measures of cash flow do. This is done to simplify the analysis of dividends, repurchases or payouts as a percentage of free cash flow. I divide this cash flow measure by total book value of assets to provide scale. The detailed definitions of all variables are shown in Table 1.

Table 1. Variable Definitions

Variable	Description	Definition
Panel A: Summary Statistics and Correlation Table Variables		
N	Number of Firms	The number of firms.
Inst	Institutional Ownership	The fraction of shares owned by institutions.
MktCap	Market Capitalization	The dollar market value of common stock in millions.
LifeCycle	Firm Life-cycle	The ratio of retained earnings to total equity.
q	Investment Opportunities	Market value of assets to the book value of assets
CashFlow	Free Cash Flow	Free cash flow to total assets.
Div	Dividend Ratio	Dividends to book value of assets.
Payout	Payout Ratio	Total payout divided by book value of assets.
Repurch	Stock Repurchase Ratio	Stock repurchases to book value of assets.
PayIncr	Payout Increases	The percentage of firms which increased their total payout per share.
PayDecr	Payout Decreases	The percentage of firms which decreased their total payout per share.
RepIncr	Stock Repurchase Increases	The percentage of firms which increased their repurchases per share.
RepDecr	Stock Repurchase Decreases	The percentage of firms which increased their repurchases per share.
Panel B: Regression Dependent Variable(Measured as changes in values from year $t-1$ to t.)		
Payout	Payout Ratio	Total payout divided by book value of assets.
Panel C: Regression Independent Variables (Measured as changes in values from year $t-2$ to $t-1$.)		
Inst	Institutional Ownership	The fraction of shares owned by institutions.
CashFlow	Free Cash Flow	Free cash flow to total assets.
q	Investment Opportunities	Market value of assets to the book value of assets
Debt	Debt Ratio	Debt to assets.
Turnover	Stock Turnover	Firm common stock turnover.
LifeCycle	Firm Life-cycle	The ratio of retained earnings to total equity.
MktCap	Market Capitalization	The dollar market value of common stock in millions.
ROA	Return on Assets	Earnings before interest and taxes divided by total assets.
Insider	Insider Ownership	The fraction of shares owned by insiders.
Insider2	Insider Ownership Squared	The squared value of Insider.
Revenue	Revenue	The logarithm of firm revenue.
All data is yearly data from 1990-2005. Institutional and insider ownership data from CDA / Spectrum Compact Disclosure. All other data is from Compustat. Detailed descriptions in article text.		

4.2 Methods

If there is a relationship between institutional investors and payouts, it is difficult to discern if institutional investors influence payouts or if payouts influence institutional investors or both. Therefore, I adopt a regression methodology which accounts for endogeneity and establishes causality.

To help address this causality issue, I run regressions on changes in dependent variables from year $t-1$ to t on changes in independent variables from $t-2$ to $t-1$ to establish causality. All regressions use firm fixed effects. Firm fixed

effect regressions are useful because they control for all stable characteristics of a firm (including industry), whether measured or not. This appealing feature of firm fixed effects regressions combined with the use of yearly dummy variables to control for time-varying omitted characteristics helps to control for endogeneity issues in my analysis. Using the yearly dummy variables with fixed effects effectively gives each year its own intercept. Intercepts in fixed effects regressions are calculated as an average value of the unobserved fixed effects for each firm. The intercept values and yearly intercept values are not relevant to my analysis. Therefore, they are not reported in my regression results.

For robustness and to further address potential endogeneity, I use a difference generalized method of moments (GMM) methodology that is based on the methodology employed in Holtz-Eakin, Newey, and Rosen (1988) with refinements and validity tests developed by Arellano and Bond (1991). I implement the methodology using the Stata command xtabond2. I use methods described in Roodman (2009).

Difference GMM removes fixed effects and uses lagged values of the dependent variable and independent variables of interest as instruments. This method avoids endogeneity problems associated with using fixed-effects when there is autocorrelation in the dependent variable. It also corrects for any concurrent endogeneity problems associated with the inclusion of lagged independent variables.

Many notable research papers have used difference GMM in their analysis, including Brown, Fazzari, and Petersen (2009) and Brossard et al. (2013). Almeida, Campello, and Galvao (2010) assess the performance of difference GMM and find that its results conform to theoretical expectations in regressions that use data which contains firm fixed effects and heteroskedasticity.

This methodology is ideal for use in panel samples with a limited number of time periods and a large number of firms. My data consists of a maximum of 16 years of data for over 10,000 firms. Difference GMM is also designed to be implemented in situations with the following characteristics: a dependent variable that depends on past realizations of itself, independent variables that are not strictly exogenous, and firm fixed effects (Roodman, 2009). If conceptually and statistically sound instruments for endogenous independent variables are available, firm fixed effects regressions using those instruments would be preferable to using difference GMM. Unfortunately, I was unable to find valid instruments. Difference GMM uses lags of the endogenous regressors as instruments. This shrinks the size of the dataset because at least one year of data has to be dropped for each firm. In my implementation of difference GMM, only one year has to be dropped for each firm.

The dependent variables in my regressions depend on past realizations of the dependent variable because current payout policy is largely dependent on past payout policy. In my robustness checks that use difference GMM, the independent variables of interest are assumed to be endogenous. In fact, the main purpose of my difference GMM robustness checks is to control for the potential (and likely) endogenous relationship between payout policy and institutional ownership.

My implementation of difference GMM starts with the following basic model which will be transformed by the difference GMM process.

$$Policy_{it} = Policy_{it-1} + Inst_{it-1} + \beta \bullet Control_{it-1} + \nu_i + \varepsilon_{it} \quad (1)$$

In this model, $Policy_{it}$ represents the change in the firm payout (or repurchases or payout composition) policy. $Policy_{it-1}$ represents the change in firm payout policy in the previous year. The independent variable $Inst_{it-1}$ represents the change in institutional ownership percentage in the previous year. $Control_{it-1}$ represents a vector of time-varying firm level control variables. Year dummies are included as control variables to remove time-related shocks that affect all firms. Firm-specific (fixed effects) errors and time-varying observation-specific errors are represented by ν_i and ε_{it}, respectively.

Several econometric problems which are endemic to model C-1 can be corrected by difference GMM. The change in institutional ownership percentage ($Inst_{it-1}$) is assumed to be endogenous. Therefore, it is instrumented with lagged changes in institutional ownership. This predetermines the institutional ownership variable thus rendering it uncorrelated with the error term. Similarly, the use of the lagged dependent variable ($Policy_{it-1}$) as an independent variable leads to autocorrelation. This variable is also instrumented with lags of itself. Firm fixed effects are contained in the error term ν_i. The difference GMM methodology uses first-differences to transform model C-1 thus removing the firm fixed effects error term because it is time invariant. The new model is shown in model 2.

$$\Delta Policy_{it} = \Delta Policy_{it-1} + \Delta Inst_{it-1} + \beta \bullet \Delta Control_{it-1} + \Delta \varepsilon_{it} \quad (2)$$

The transformed model addresses potential causation and endogeneity problems that may exist in the relationship between the payout policy and institutional ownership. Firm fixed effects are differenced out. Institutional ownership changes predate payout policy changes indicating causation. I control for previous payout policy changes. This decreases the probability that coefficients for changes in institutional ownership are simply a result of previous payout policy changes. Potentially endogenous independent variables are instrumented to control for endogeneity.

I was able to use the first lag of independent policy and institutional variables in all my regressions as an instrument. In the difference GMM model, efficiency can be improved by including additional lags. Including the additional lags introduces new information which is useful to the model. In conventional two-stage least squares regressions, including additional lags shrinks the sample size which means additional efficiency comes at a steep cost. Difference GMM does not suffer from this trade-off. In difference GMM, additional lags can be included as instruments when available without shrinking the sample size. Therefore, it is generally preferable to include as many lags as instruments as possible. I use this tactic.

Unfortunately, problems can result from including too many lags as instruments. Too many instruments can result in over-identification of the model invalidating its results. Therefore, if tests indicate that a model is over-identified, I reduce the number of lags used until the tests no longer indicate that the model is over-identified.

I employ two important tests of difference GMM model validity which are strongly recommended by Roodman (2009): the Hansen-Sargan *J*-test and the Arellano-Bond test for second-order autocorrelation in differenced residuals. For both tests, a higher *p*-value indicates a valid model while *p*-values of less than 0.10 indicate an invalid model.

The null hypothesis of the Hansen-Sargan *J*-test is that the instruments as a group are exogenous. A rejection of this null hypothesis indicates an invalid model. Therefore, I do not use any model in which the *p*-value for the *J*-test is less than 0.10.

The *J* statistic's ability to detect over-identification can be weakened by too many instruments. A general rule of thumb is that the number of firms in the panel should outnumber the number of instruments used in a difference GMM regression. The minimum number of firms for any of my regressions is 1,489, while the maximum number of instruments is 208 indicating that the *J* statistic should retain its ability to detect over-identification in all of these regressions.

AR(1) autocorrelation in differenced residuals is expected. This is because the difference between an error term (ε_{it}) and the error term from the year before (ε_{it-1}) is expected to be related to the difference between the error term from the year before (ε_{it-1}) and the error term from two years before (ε_{it-2}) because both differences contain the error term from the year before (ε_{it-1}). The Arellano-Bond test for second-order autocorrelation is more important because AR(2) autocorrelation indicates an invalid model. The null hypothesis is that there is no autocorrelation. Therefore, I do not use any models in which the null is rejected at the 10% level.

4.3 Summary Statistics

Table 2 displays selected firm characteristics for my sample. Panel A includes all firms in the sample and panel B includes only firms that have a payout (either dividends or stock repurchases or both). Statistics are shown for two time periods, 1990 – 1997 and 1998 – 2005, and for the total sample. Means are shown and medians are shown in parentheses below.

Some patterns appear in the data for all firms and in firms with a payout. Institutional investor ownership (*Inst*) increases over time. Firm size (*MktCap*) and *q* increase from the first time period to the next as well. Retained earnings to total equity (*LifeCycle*), a proxy for firm life-cycle, indicates that firms included in the sample are less mature in later years. The median of firm retained earnings to total equity is positive. This demonstrates that firms are mature enough to have earned positive earnings during their lifetime in most firm-years. In contrast, average retained earnings to total equity is negative indicating a skewness towards the large minority (over 38%) of the firm-years with negative retained earnings.

Firms with a payout have higher institutional ownership, a larger size and a lower *q* than those without a payout. Firms that have a payout have a higher median and slightly lower mean in retained earnings to total equity.

Table 2. Summary Statistics

Panel A: All Firms

Years	*N*	*Inst*	*MktCap*	*LifeCycle*	*q*	*CashFlow*
1990 - 1997	37 492	28.9%	2 106	-0.69	2.81	-0.16
		(23.6%)	(163)	(0.29)	(1.85)	(0.01)
1998 - 2005	42 398	33.3%	4 891	-0.53	4.68	-0.39
		(25.8%)	(350)	(0.18)	(1.86)	(0.01)
Total	79 890	31.3%	3 603	-0.61	3.81	-0.28
		(24.6%)	(239)	(0.24)	(1.85)	(0.01)
Panel B: Firms with a Payout						
1990 - 1997	13 934	37.9%	4 858	0.46	2.07	0.03
		(38.0%)	(547)	(0.64)	(1.75)	(0.04)
1998 - 2005	15 716	42.8%	10 806	-1.49	2.22	0.02
		(43.9%)	(1146)	(0.57)	(1.75)	(0.04)
Total	29 650	40.5%	8 030	-0.57	2.15	0.02
		(40.4%)	(816)	(0.61)	(1.75)	(0.04)

Panel C: All Firms

Years	*Div*	*Repurch*	*PayIncr*	*PayDecr*	*RepIncr*	*RepDecr*
1990 - 1997	0.81%	0.60%	24.80%	18.70%	13.66%	12.79%
1998 - 2005	0.66%	1.04%	24.57%	20.65%	17.56%	16.58%
Total	0.73%	0.83%	24.67%	19.78%	15.82%	14.89%
Panel D: Firms with a Payout						
1990 - 1997	2.21%	1.64%	65.60%	33.06%	35.82%	21.84%
1998 - 2005	1.80%	2.82%	64.70%	34.83%	45.65%	26.90%
Total	2.00%	2.26%	65.10%	34.04%	41.29%	24.66%

Panels A and B, show means on the first row and medians in parentheses on the second row. In Panels C and D, means are shown.

Table 3. Correlations

	Payout	*Repurch*	*Inst*	*MktCap*	*LifeCycle*	*q*
Repurch	0.6528*					
Inst	0.0801*	0.0957*				
MktCap	0.0539*	0.0332*	0.0865*			
LifeCycle	0.0008	0.0004	0.0013	0.0009		
q	-0.0025	-0.0023	-0.0135*	-0.0019	0.0013	
CashFlow	0.0032	0.0024	0.0232*	0.0023	-0.0008	-0.4194*

* indicates two-tailed significance at 5%.

Table 2 also displays summary statistics for payout-related variables in Panels C and D. Only means are shown because medians are zero for almost all of the variables. As expected, all payout variables are lower in Panel C, which includes all firms, than in Panel D, which only includes firms that have a payout. Consistent with (Fama & French, 2001), dividends to assets (*Div*) goes down over time as repurchases to assets (*Repurch*) goes up. Total payout increases (*PayIncr*) outnumber total payout decreases (*PayDecr*). The percentage of firms increasing repurchases per share (*RepIncr*) is higher than the percentage of firms decreasing repurchases per share (*RepDecr*). A correlation table for selected firm variables is presented in Table 3.

5. The Effect of Institutional Owners on Total Payouts

According to the agency-based free cash flow theory, current institutional owners positively influence future total payouts (dividends and repurchases). Institutional investor ownership and payout levels are almost certainly

endogenously related. Firms with higher payout levels tend to have higher institutional ownership levels, so I need to combat the effect that this endogenous relationship has on my analysis. Therefore, I test the effect that changes in institutional ownership have on subsequent changes in payouts rather than looking at their levels.

To test the effect that changes in institutional ownership have on changes in payouts in the subsequent year, the following firm and year fixed effects model is estimated.

$$Payout_{it} = Year_t + Firm_i + Inst_{it-1} + \beta \bullet Control_{it-1} + \varepsilon_{it} \quad (3)$$

$Payout_{it}$ represents the firm's payout to asset ratio. $Year_t$ represents year fixed effects and $Firm_i$ represents firm fixed effects. $Inst_{it-1}$ is the percentage of the firm's shares owned by institutional investors. $Control_{it-1}$ represents a vector of time-varying firm level control variables (q, debt, stock turnover, retained earnings to total equity, logarithm of market capitalization, ROA, insider ownership, insider ownership squared, and logarithm of revenue), and ε_{it} is the error term.

The independent variables are measured as the change from year $t - 2$ to year $t - 1$. The dependent payout variable is measured as the change from year t - 1 to year t.

Table 4. Institutional Ownership and Payouts

	(1) All Firms	(2) All Firms	(3) No Payout at year t - 2	(4) Payout at year t - 2
	Payout	*Payout*	*Payout*	*Payout*
Inst		0.0106***	0.0072**	0.0182
		(2.75)	(2.19)	(1.63)
q	-0.0005***	-0.0004***	-0.0002**	-0.0063***
	(3.21)	(3.16)	(2.03)	(2.68)
Debt	-0.0114***	-0.0115***	-0.0031**	-0.1961***
	(3.08)	(3.01)	(2.21)	(4.64)
Turnover	0.0000	-0.0000	0.0000	-0.0043**
	(0.56)	(0.33)	(0.27)	(2.13)
LifeCycle	-0.0000	-0.0000	-0.0000	-0.0000*
	(0.95)	(1.05)	(0.15)	(1.82)
MktCap	0.0081***	0.0073***	0.0031***	0.0456***
	(6.48)	(6.58)	(3.11)	(6.16)
ROA	-0.0012**	-0.0012**	-0.0003	-0.0395***
	(2.16)	(2.25)	(1.03)	(3.10)
Insider	-0.0196*	-0.0205*	-0.0141	-0.0271
	(1.88)	(1.95)	(1.63)	(1.01)
Insider2	0.0137	0.0146	0.0158*	0.0189
	(1.29)	(1.36)	(1.72)	(0.68)
Revenue	-0.0014	-0.0015	-0.0018	-0.0090
	(1.19)	(1.24)	(1.32)	(1.64)
Observations	45 418	44 933	25 794	19 096
Firms	7782	7759	6239	4244
R-squared	0.06	0.16	0.34	0.17

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

This table reports estimates of firm and year fixed effect regressions of changes (from year t - 1 to t) in total payout divided by book value of assets (*Payout*). All independent variable values are calculated as changes in that independent variable from year t - 2 to t - 1. Regressions 1 and 2 include all firms. Regression 3 includes only firms that had no payout in year t - 2 and regression 4 includes only firms that had a payout in year t - 2.

Table 4 reports on the effect that a change in institutional ownership has on the subsequent year's total payout to assets ratio (*Payout*). The first regression only uses the control variables as independent variables. The statistically significant coefficients indicate that payouts increase as *q* decreases, debt decreases, market capitalization increases, and return on assets decreases. Payouts also increase for small decreases in insider ownership. Control variable results remain largely consistent throughout the regressions reported in the table.

The second regression includes the variable (*Inst*) representing the change in the percentage of institutional ownership. The statistically significant coefficient shows that an increase in institutional ownership leads to an increase in payout levels in the subsequent year.

Statistical significance is important to my analysis, but practical (or economic) significance is as well. Therefore, I use an example to give some perspective as to the magnitude of the effect of institutional ownership on payouts. For this example, I use a hypothetical firm with an institutional ownership percentage of 40% and a payout to assets ratio of 1.900%. These values are quite close to the sample median for firms with payouts. It is important to note for this analysis that the institutional ownership percentage is measured from 0% to 100% (or 0 to 1). Using the coefficient in the second regression (0.0106), a rise from 40% to 50% institutional ownership should lead to an addition of 0.106% to the payout ratio, all else being equal. In this example, the firm's payout ratio would subsequently increase from 1.900% to 2.006%.

Table 5. Institutional Ownership, Payouts and, Investment Opportunities

	Low *q*	Medium *q*	High *q*
	Payout	*Payout*	*Payout*
Inst	0.0173*	0.0188***	0.0080
	(1.91)	(2.97)	(1.07)
CashFlow	-0.0016	-0.0059*	0.0051***
	(1.15)	(1.72)	(3.28)
q	0.0058**	-0.0021***	-0.0004***
	(2.15)	(2.60)	(2.76)
Debt	-0.0132	-0.0296***	-0.0033*
	(1.42)	(2.61)	(1.95)
Turnover	-0.0000	-0.0014***	-0.0009**
	(0.12)	(2.86)	(2.44)
LifeCycle	-0.0000	0.0000	-0.0000
	(0.94)	(0.81)	(0.31)
MktCap	0.0046*	0.0209***	0.0073***
	(1.74)	(5.06)	(4.07)
ROA	0.0019	-0.0031	-0.0057***
	(0.28)	(0.55)	(3.80)
Insider	-0.0119	-0.0435**	0.0047
	(0.40)	(2.12)	(0.30)
Insider2	0.0094	0.0416*	-0.0154
	(0.34)	(1.95)	(0.72)
Revenue	-0.0023	-0.0063	0.0003
	(0.60)	(1.24)	(0.24)
Observations	13004	18829	12403
Number of Firms	3971	5504	3793
R-squared	0.25	0.25	0.42

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

This table reports estimates of firm and year fixed effect regressions of changes (from year *t* - 1 to *t*) in total payout divided by book value of assets (*Payout*). All independent variable values are calculated as changes in that independent variable from year *t* - 2 to *t* - 1. Sample firms used in regressions 1, 2, and 3 include only Low, Medium and High *q* firms, respectively. Low, Medium and High *q* groups include the lowest three, middle four, and highest three *q* deciles from year *t* - 1, respectively. Deciles are formed on a yearly basis.

Institutional ownership percentages are higher in firms with payouts than in firms without payouts. Therefore, the results discussed thus far could be influenced by the tendency of institutional investors to invest more in firms that had a payout. To attenuate that influence, the third regression only uses firms that did not have a payout in year $t - 2$. Regression 3 shows that institutional owners have a significantly positive effect on future payouts in firms that did not have a payout in the previous year. The fourth regression shows that an increase in institutional ownership leads to an increase in payouts among firms that had a payout in the previous year as well. In this case, the t-statistic shows that the coefficient falls just a little short of the 10% significance level (with a p-value of 0.103).

Table 6. Institutional Ownership, Payouts, and Free Cash Flow

	(1) Low *CashFlow*	(2) Medium *CashFlow*	(3) High *CashFlow*
	Payout	*Payout*	*Payout*
Inst	0.0003	0.0093*	0.0271**
	(0.04)	(1.86)	(2.14)
CashFlow	-0.0008	-0.0002	0.0005
	(0.90)	(0.10)	(0.35)
q	-0.0003	-0.0008**	-0.0025***
	(1.50)	(2.42)	(3.24)
Debt	-0.0003	-0.0643***	-0.0788*
	(0.54)	(4.54)	(1.75)
Turnover	-0.0000	-0.0006**	-0.0027
	(0.19)	(2.17)	(1.63)
LifeCycle	-0.0000	-0.0000	0.0000
	(0.08)	(0.48)	(1.00)
MktCap	0.0033	0.0076***	0.0260***
	(1.60)	(5.26)	(4.76)
ROA	0.0003	-0.0009	-0.0217***
	(0.37)	(0.17)	(2.61)
Insider	-0.0075	-0.0129	-0.0229
	(0.25)	(0.80)	(1.33)
Insider2	0.0010	0.0089	0.0155
	(0.03)	(0.53)	(0.80)
Revenue	-0.0010	-0.0038**	-0.0061
	(0.62)	(1.98)	(0.81)
Observations	11014	18905	14317
Number of Firms	4530	5591	4457
R-squared	0.47	0.43	0.25

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

This table reports estimates of firm and year fixed effect regressions of changes (from year t - 1 to t) in total payout divided by book value of assets (*Payout*). All independent variable values are calculated as changes in that independent variable from year t - 2 to t - 1. Sample firms used in regressions 1, 2, and 3 include only Low, Medium and High *CashFlow* firms, respectively. Low, Medium and High *CashFlow* groups include the lowest three, middle four, and highest three *CashFlow* deciles from year t - 1, respectively. Deciles are formed on a yearly basis.

According to agency-based theory, institutional investors should not only encourage higher payouts, they should encourage higher payouts primarily in firms with poor investment opportunities. I test this prediction using q as a proxy for investment opportunities. I sort the sample of firms each year into investment opportunity deciles. I assign each

firm-year to one of three groups. Firms in the bottom three deciles (Low *q*) have poor investment opportunities, those in the next four deciles (Medium *q*) have moderate investment opportunities, and those in the highest three deciles (high *q*) have good investment opportunities.

I then execute regressions using the firm and year fixed effects model 1 that show the effect that an institutional ownership change has on the subsequent year's total payout to assets ratio (*Payout*). I add a new control variable, free cash flow (*CashFlow*), to the model because of its importance to the agency-based theory. Regressions are performed on the low *q*, medium *q*, and high *q* groups separately based on which group a firm is in during year $t - 1$. The results are shown in Table 5.

The first and second regressions include only firms with poor and moderate investment opportunities, respectively. Both regressions have a significantly positive coefficient for the variable *Inst*. This indicates that an increase in institutional ownership leads to an increase in payouts for these groups. The third regression indicates that institutional owners do not have a significant effect on payouts in firms with good investment opportunities. This pattern is consistent with the agency-based theory.

Agency-based theory also predicts that institutional investors should encourage higher payouts primarily in firms with high free cash flow. I test this prediction by assigning each firm-year to one of three groups: low cash flow (bottom three deciles), moderate cash flow (middle four deciles), and high cash flow (top three deciles). Once again, I use the firm and year fixed effects model 3 to access the impact institutional ownership has on payouts in the subsequent year. The results are shown in Table 6.

Table 7. Payouts and Time Periods

	(1) 1990 - 1997	(2) 1998 - 2005
	Payout	*Payout*
Inst	0.0118**	0.0138**
	(2.21)	(2.43)
q	0.0000	-0.0007***
	(0.30)	(5.14)
Debt	-0.0501***	-0.0080**
	(3.60)	(2.47)
Turnover	-0.0000*	-0.0012***
	(1.77)	(2.87)
LifeCycle	0.0000	-0.0000
	(1.27)	(1.14)
MktCap	0.0040*	0.0098***
	(1.88)	(6.74)
ROA	-0.0034**	-0.0018***
	(2.07)	(2.94)
Insider	-0.0243	-0.0184
	(1.39)	(1.24)
Insider2	0.0281	0.0037
	(1.64)	(0.23)
Revenue	0.0005	-0.0014
	(0.36)	(0.89)
Observations	17682	27251
Firms	4809	6128
R-squared	0.13	0.22

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at1%

This table reports estimates of firm and year fixed effect regressions of changes (from year t - 1 to t) in total payout divided by book value of assets (*Payout*) by time period. All independent variable values are calculated as changes in that independent variable from year t - 2 to t - 1. Regression 1 includes the years from 1990 to 1997. Regression 2 includes the years from 1998 to 2005.

The first regression shows that institutional owners have no effect on payouts in firms with low free cash flow. Higher payouts are encouraged by institutional owners in firms with moderate cash flow. In the group of firms with the highest cash flow, institutional investors have the strongest positive influence on total payouts. Consistent with agency-based theory, the pattern indicates that an increase in institutional ownership leads to a stronger increase in payouts as free cash flow increases.

The results in Table 7, Table 8, and Table 9 provide robustness and support for the agency-based theory. Table 7 provides evidence that an increase in institutional ownership leads to an increase in total payout for the first eight (1990 - 1997) and the last eight years of the sample.

Table 8. Payouts, Investment Opportunities, and Free Cash Flow

	(1) High *CashFlow* Low *q*	(2) High *CashFlow* High *q*	(3) Low *CashFlow* Low *q*	(4) Low *CashFlow* High *q*
	Payout	*Payout*	*Payout*	*Payout*
Inst	0.0305**	0.0059	0.0033	0.0080
	(2.00)	(0.61)	(0.54)	(1.20)
CashFlow	-0.0005	0.0122**	-0.0039	0.0019*
	(0.53)	(2.50)	(1.63)	(1.72)
q	0.0038	-0.0021***	0.0005	-0.0004
	(0.87)	(4.21)	(0.42)	(1.54)
Debt	-0.0638*	-0.1122***	-0.0075	0.0000
	(1.82)	(5.66)	(1.46)	(0.01)
Turnover	-0.0054	-0.0016***	0.0000	-0.0010*
	(1.30)	(3.07)	(0.52)	(1.90)
LifeCycle	-0.0000	0.0000	0.0000	0.0000
	(0.95)	(0.29)	(0.39)	(0.11)
MktCap	0.0128**	0.0225***	0.0062*	0.0043**
	(2.37)	(7.20)	(1.96)	(2.09)
ROA	-0.0156	-0.0356***	0.0043	-0.0022**
	(0.93)	(2.76)	(0.73)	(2.09)
Insider	-0.0082	-0.0134	0.0047	0.0027
	(0.53)	(0.73)	(0.17)	(0.18)
Insider2	0.0087	0.0016	-0.0043	-0.0006
	(0.51)	(0.07)	(0.16)	(0.04)
Revenue	-0.0010	0.0055	-0.0071*	-0.0003
	(0.18)	(1.45)	(1.73)	(0.21)
Observations	10924	13122	11558	8632
Number of Firms	3757	3831	4565	3496
R-squared	0.49	0.20	0.42	0.77

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

This table reports estimates of firm and year fixed effect regressions of changes (from year t - 1 to t) in total payout divided by book value of assets (*Payout*). All independent variable values are calculated as changes in that independent variable from year t - 2 to t - 1. Sample firms used in regressions1, 2, 3, and 4 include only firms that are in the High *CashFlow* and Low *q*, High *CashFlow* and High *q*, Low *CashFlow* and Low *q*, and Low *CashFlow* and High *q* groups, respectively. Low *CashFlow* and High *CashFlow* groups include the lowest five and highest five *CashFlow* deciles, respectively. Low *q* and High *q* groups include the lowest five and highest five *q* deciles from year t - 1, respectively. Deciles are formed on a yearly basis.

For the analysis displayed in Table 8, I separate the firms into four groups: High *CashFlow* and Low *q*, High *CashFlow* and High *q*, Low *CashFlow* and Low *q*, and Low *CashFlow* and High *q*. The Low *CashFlow* and High *CashFlow* groups include the lowest five and highest five *CashFlow* deciles, respectively. Low *q* and High *q* groups include the lowest five and highest five *q* deciles from year *t* - 1, respectively. Deciles are formed on a yearly basis.

Table 8 indicates that an increase in institutional investors leads to a stronger increase in payouts in firms with poor investment opportunities and high free cash flow. Institutional investors do not have an effect on payouts in firms with good investment opportunities or low free cash flow.

Table 9. Payouts, Investment Opportunities and Free Cash Flow (GMM)

	(1)	(2)	(3)	(4)	(5)
	All Firms	Low *q*	High *q*	Low *CashFlow*	High *CashFlow*
	Payout	*Payout*	*Payout*	*Payout*	*Payout*
Inst	0.0199**	0.0150**	0.0205	0.0127	0.0266**
	(2.37)	(2.19)	(1.56)	(1.48)	(2.33)
Payout	0.0755	0.0585	0.0809***	0.0492	0.1196***
	(2.35)	(1.35)	(2.56)	(1.38)	(3.30)
q	-0.0009	0.0004	-0.0005	-0.0006	0.0006
	(0.49)	(0.11)	(0.30)	(0.32)	(0.23)
Debt	-0.4795	-0.0518	-0.0003	0.0343	-0.0848
	(1.05)	(1.18)	(0.01)	(0.83)	(1.43)
Turnover	0.0000	-0.0000	-0.0041*	0.0000	-0.0000
	(0.15)	(0.24)	(1.70)	(0.61)	(0.51)
LifeCycle	-0.0001	-0.0000	-0.0001	-0.0001	-0.0001
	(0.93)	(0.87)	(0.93)	(1.11)	(0.84)
MktCap	-0.0069	-0.0164*	0.0041	-0.0122	0.0050
	(0.62)	(1.66)	(0.28)	(1.37)	(0.33)
ROA	0.0301	0.0318	0.0026	0.0408	0.0050
	(1.26)	(0.94)	(0.14)	(1.01)	(0.17)
Insider	-0.1504**	-0.0754	-0.1278	-0.0221	-0.1984
	(1.99)	(1.26)	(1.21)	(0.25)	(2.05)
Insider2	0.1619	0.0703	0.1386	-0.0092	0.2234*
	(1.50)	(1.01)	(0.82)	(0.08)	(1.77)
Revenue	-0.0544***	-0.0102	-0.0374***	-0.0218	-0.0986
	(4.07)	(0.91)	(3.04)	(0.89)	(4.29)
Observations	35255	18203	17052	16320	20387
Number of Firms	6796	4897	4532	5393	5129
Chi2 (*p*-value)	0.000	0.000	0.000	0.000	0.049
J p-value	0.161	0.899	0.106	0.530	0.182
AR(2) *p*-value	0.190	0.296	0.161	0.187	0.585
Inst lag limits	None	None	None	3	None
Payout lag limits	None	None	None	None	None

Robust z stats in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

This table reports estimates generated by difference GMM of changes (from year *t* - 1 to *t*) in total payout divided by book value of assets (*Payout*). All independent variable values are calculated as changes in that independent variable from year *t* - 2 to *t* - 1. Sample firms used in regressions 2 and 3 include only Low and High *q* firms (the lowest and highest five q deciles from year t - 1), respectively. Sample firms used in regressions 4 and 5 include only Low and High *CashFlow* firms (the lowest and highest five CashFlow deciles from year t - 1), respectively. *J* is the Hansen-Sargan test of overidentifying restrictions. AR(2) is the Arellano-Bond test of second-order autocorrelation in errors. Independent variables *Inst* and *Payout* are instrumented using GMM-type instrument lags. All available lags are used unless validity tests are rejected, in which case lags are restricted to the highest number of lags which produce a valid model.

I employ the Arellano and Bond (1991) difference linear GMM dynamic panel data methodology to obtain the results shown in Table 9. The results indicate that an increase in institutional shareholders leads to an increase in payouts, especially in firms with poor investment opportunities and high free cash flow.

My results provide evidence that an increase in institutional investors leads to a subsequent increase in total payout. Additionally, the evidence demonstrates that institutional investors use their influence to encourage higher payouts primarily in firms that are the most prone to agency problems, those with poor investment opportunities and high free cash flow. The results support the agency-based theory prediction that institutional owners encourage higher payouts to prevent management from misusing discretionary funds.

6. Discussion

Institutional investors own over 70% of public U.S. corporations. They have an informational advantage and the capability to be better monitors of corporate management than individual investors. Agency-based theory predicts that informed investors will prefer ownership of firms that choose to make payouts to shareholders rather than invest in value-destroying projects (Jensen, 1986). I find that higher institutional ownership leads to increases in total payouts, especially in firms with high free cash flow and poor investment opportunities as proxied by *q* offering support for agency-based free cash flow theory.

This study is limited to U.S. listed stocks and thus is only directly applicable to U.S. firms and the institutional investors that invest in them. Further research is required to see if the findings here can be expanded to include firms from other countries.

My finding that institutional owners influence payout policy is consistent with previous studies (De Cesari et al., 2012; Desai & Jin, 2011). My results provide evidence that institutional investors positively influence corporate payout policy by mitigating empire building by managers in firms with high free cash flow and poor investment opportunities. This should improve firm value and benefit all stockholders. Determining if firm value actually increases from the influence of institutional investors on payout policy is a subject for future research.

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