

The Impact of Institutional Ownership on Stock Valuation

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Abstract—This paper studies the relationship between institutional ownership and firm valuation. Using a panel data of all listed companies in the United States from 1980 to 2016, I find that firm valuation increases with the level of and the change in institutional ownership, both in the cross-section within an industry and in the time-series within a firm. Specifically, when institutional ownership increases by 1%, firm valuation increases by 0.413% in the cross section and 0.418% in the time-series. Additionally, breaking the sample into a period with an overall growth in institutional ownership in the market (1980–2005) and that with stable institutional ownership (2006–2017), I find that the relationship is stronger during the period with growing institutional ownership than afterwards. Additionally, the marginal increase of institutional ownership led to a faster positive movement of firm valuation. When the changes of institutional ownership increase by 1 percent, firm valuation would increase by 0.544% in the cross section and 0.569% in the time-series over the whole sample period. These results potentially suggest that the behavior of institution investors lay positively impact on the firm valuation. Institution investors tend to grab more information on the market and are more professional in analyzing the firms, which could also be the reason for the herding behavior of individual investors.

Index Terms—Institutional ownership, stock valuation, shareholding, herding behavior

I. INTRODUCTION

Institutional investor plays a very important role in stock market. Institutional investors have a large scale and can have a huge impact on the stock price when they buy and sell. In the United States, the average proportion of institutional investors increased from 16.33% in 1980 to 43.99% in 2016. Institutional investors managed more than 45 billion financial assets, including 20 billion in stock investment (Doğan, 2020). So institutional investors are becoming more and more important in the process of firm decisions.

Two important changes have taken place in the internal structure of institutional investors in the US stock market. One is that the proportion of pension fund in the 1970s-1980s was significantly expanded. It is mainly due to the reform of the American pension system in the 1970s, which promoted the rapid development of the second and third industry. Investment into the market has become an important way to maintain and increase the value of these pensions, and the core force to promote the institutionalization of the American stock market. The second is the significant expansion of fund holdings from 1990 to 2010. After the policy adjustment and the expansion of pension scale, the requirements for asset management ability have improved, and the pension fund allocation has increased. Investors can be classified to

individual investors and institutional investors. Among them, CDA Spectrum divides US institutional investors into five categories, respectively: bank trust departments, insurance companies, mutual funds, independent investment advisors, and other institutional investors including pension funds, university endowments foundations.

The investment behavior of institutional investor provides effective information for individual investors to make investment decisions (Barberis and Shleifer, 2003). Individual investors may invest according to the buy and sell behavior of institutional investors, which mainly because institutional investors tend to have more information. Studying the shareholding situation of institutional investors can also be meaningful to institutional investors. They can better adjust trading behavior, make investment decisions more accurately and predict the future trend of stock prices.

This paper mainly studies the impact of institutional ownership and its changes on stock valuation from a broader time horizon and sample data. All the data are collected from CDA/Spectrum, a firm hired by the Securities and Exchange Commission to process 13F filings. Institutional investors are those with more than 100 million U.S dollar in securities and are required to report their holdings to the SEC quarterly based on SEC Form 13F by the U.S. Securities and Exchange Act.

All listed companies in the United States from 1980 to 2016 are selected, and the samples are divided into two categories according to the institutional ownership in order to learn the difference between those two periods: growing period and stable period. To analyze the relationship between institutional ownership and stock valuation, this paper makes several assumptions: 1) The institutional ownership has positive effect on stock valuation; 2) The changes of institutional ownership have a positive relationship with stock valuation; 3) the positive relationship between the changes of institutional ownership and the changes of stock valuation is stronger than that between institutional ownership and stock valuation. This paper contains four main sections. The research background is introduced in the first part. The studies regarding institutional investors are summarized in the second part. The fixed effect OLS regression models are established in the methodology part, followed by the last part on regression results. The empirical results confirm the positive effect of institutional ownership on valuation as well as the changes of institutional ownership on the changes of stock valuation. Besides, it is also found that the positive relationship between institutional ownership and stock valuation during 1980–2005 when the INST kept increasing from 16%–42% is stronger than the relationship during 2006–2016 when the INST stays stable around 45%. This paper applies fixed effect regression to eliminate the effect of time, industry, and company to the results. Also, the empirical results are robust with industry and company specific characteristics controlled.

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At present, scholars' research on institutional investors mainly focuses on the three aspects. The first main topic is the Institutional ownership and stock price fluctuation. The behavior of institutional investors increases stock price volatility: From the perspective of behavioral finance, positive feedback trading strategy cannot stabilize market. Herding among investors can also exacerbate share price volatility. Wermers (1999) found that investors have herding behavior, the majority of institutional investors obtain similar information and have the similar research ability. With the same amount of information and similar investment model, they are very likely to make similar investment strategy, which could lead to herding behavior and increase price volatility. Some scholars also believe that institutional investors can maintain price stability. With strong research ability, institutional investors can make professional investment decisions, better explore the intrinsic value of listed companies, eliminate the irrational behaviors of individual investors in the market, and thus maintain market stability. Herding effect does not necessarily lead to stock price fluctuations. With the advantage of information and strong professional research ability, institutional investors can accurately judge whether the stock value is undervalued or overvalued, so as to buy the undervalued stocks and sell the overvalued ones and stabilize the stock market.

Studies are also interested in the institutional ownership and stock returns. Some researchers think there is a positive correlation between institutional ownership and stock returns: Gompers and Metrick (1998) studied the relationship between institutional ownership and stock returns from supply and demand respectively. In 2001, it was found by Metrick that the trading behavior of institutional investors could predict the stock returns in the short term. Nofsinger and Sias (1999) also believed that there was a positive correlation between them by studying the stock holding of American funds from 1977 to 1996, they believed that institutions could obtain more information and the change of their shareholding could predict the future stock returns to a certain degree. There are papers talking about the institutional ownership and company performance. Pound (1988) proposed three hypotheses for the relationship between institutional ownership and corporation performance, and explained the positive and negative correlations respectively. At present, scholars have different findings on the relationship between institutional ownership and corporate performance, but there is no unified conclusion. There are relatively few studies on the impact of institutional ownership on stock valuation.

To take a closer look at the institutional ownership, researchers analyze the specified institutions and from the aspect of different time horizon. Nofsinger and Sias (1999) find that changes in institutional ownership forecast next year's returns, suggesting that institutional trading contains information about future returns. Campbell and Ramadorai (2009) prove that daily institutional trades respond positively to recent daily returns but negatively to longer-term past daily returns. In contrast, Cai and Zheng (2004) find that institutional trading has negative predictive ability for next quarter's returns.

II. METHODOLOGY

A. Data

Data used in this article are from CDA/Spectrum, a firm hired by the Securities and Exchange Commission to process 13F filings. The U.S. Securities and Exchange Act requires institutions with more than 100 million U.S. dollar in securities to report their holdings to the SEC and report them on a quarterly basis in SEC Form 13F. This study is limited to common stocks from CRSP's monthly filings, including all stocks listed on NYSE, AMEX, and NASDAQ. The sample of this paper is all stocks listed on the three major American exchanges from 1980 to 2016, with a total of 167,431 sample data. CDA/Spectrum divides institutional investors into the following five categories: bank trust departments, insurance companies, mutual funds, independent investment advisers, and other institutional investors including pension funds, university endowments foundations.

The time series of institutional ownership is described in Fig. 1. The average institutional holding is 31.9% between 1908–2016. The institutional stock holding keep increasing since 1908 and stays stable during 2005–2016. To analyze the impact of INST to stock valuation, this paper divides the sample into two categories according to the development time phases, which are growth period and stable period. Before conducting empirical analysis, the statistical characteristics of the main variables in the sample are described and analyzed, which are shown as the sample mean, median, standard deviation, quantile, and the number of the variables.



Fig. 1. The yearly average institutional ownership of all listed stocks in the U.S.

The data description of whole sample period is shown in Table I–IV describe the contribution of variables during 1980–2005 and 2006–2016. The average value of INST in the sample is 31.89%, indicating that institutional investors hold a high proportion of shares in the American stock market. The institutional holdings are 27% and 45.5% during growth and stable period respectively. The average change of inst is 1.9% during 1980–2005, and does not change much after then. The asset of all listed companies is increasing exponentially since 1980 with mean value of 2826 during growth period and 15,294 during stable period. As shown in the results, the firm leverage ratio and stock volatility during stable period is lower than the growth period. The

profitability of all listed firms as a whole shows downward trend, which is demonstrated by return on asset. The average share turnover doubles in the stable period, which indicating the higher liquidity in stock market.

B. Regression Model

This paper studies the relationship between the institutional ownership and the stock valuation. Two indicators are selected to measure institutional shareholding, which are institutional ownership and the change of institutional ownership (current year institutional ownership previous year institutional ownership) (Cai, Gautam, and Lu, 2000). Tobin’s Q is used to measure the stock valuation. The main explanatory variables used in this paper are the institutional ownership inst and changes of institutional ownership instchange. $inst_{m,i,t}$ refers to (the number of shares held by institutional investors in the annual report of industry_m company_i in year_t) / (the total shares outstanding of the company). $Instchange_{m,i,t}$ measures the net change of institutional ownership, calculated by the fomula: $(inst_{m,i,t} - inst_{m,i,t-1})$.

Stock valuation is influenced by multiple factors, among which the core factors are the performance of the company and growth. Referring to the research of Gompers and Metrick (2001) and Roulstone *et al.* (2004), this paper selected the following factors as control variable indexes to exclude the influence of these variables on stock valuation. Asset is used to control for the firm size. Debt to asset ratio is chosen to control for the firm leverage. Stock price volatility is for risk control, which is measured by standard deviation. The low volatility of the stock price indicates that the company is performing and operating well (Sias, Starks, and Titman, 2006). Return on asset ratio is for profitability control. Turnover ratio, market to book ratio and Sales growth are used to control for liquidity, market expectation and firm growth respectively (Bennett and Sias *et al.*, 2003). The calculation and the detailed processing steps are shown in Table I.

TABLE I: DESCRIPTIVE STATISTICS OF ALL THE VARIABLES (1980–2016)

	Mean	Median	SD	P25	P75	N
lnq	0.563	0.354	0.919	0.019	0.895	173924
-1/q	-1.832	-0.702	155.230	-0.981	-0.409	173924
inst	0.319	0.243	0.281	0.067	0.530	125454
instchange	0.015	0.004	0.102	-0.019	0.043	109962
asset	5345	134	59415	19	916	203043
lev	0.289	0.222	0.282	0.057	0.413	201633
vol	0.575	0.471	0.406	0.319	0.708	140835
roa	0.095	0.092	41.2	0.015	0.164	197704
turnover	1.238	0.701	1.775	0.323	1.501	136193

TABLE II: DESCRIPTIVE STATISTICS OF ALL THE VARIABLES (1980–2005)

	mean	median	sd	p25	p75	N
lnq	0.533	0.336	0.854	0.012	0.868	136186
-1/q	-0.909	-0.715	35.238	-0.988	-0.420	136186
inst	0.270	0.196	0.248	0.056	0.437	92397
instchange	0.019	0.006	0.097	-0.014	0.047	78949
asset	2826	93	26396	15	585	162009

lev	0.294	0.231	0.280	0.063	0.421	160756
vol	0.591	0.486	0.415	0.328	0.730	114656
roa	0.188	0.097	41.912	0.016	0.169	157921
turnover	1.038	0.603	1.549	0.291	1.210	110012

TABLE III: DESCRIPTIVE STATISTICS OF ALL THE VARIABLES (2006–2016)

	mean	median	sd	p25	p75	N
lnq	0.671	0.422	1.114	0.049	0.989	37738
-1/q	-5.165	-0.656	326.435	-0.952	-0.372	37738
inst	0.455	0.466	0.320	0.142	0.737	33057
instchange	0.003	0.000	0.113	-0.031	0.034	31013
asset	15294	646	120801	89	3197	41034
lev	0.268	0.185	0.289	0.034	0.377	40877
vol	0.502	0.413	0.356	0.289	0.609	26179
roa	-0.277	0.076	38.241	0.010	0.142	39783
turnover	2.080	1.506	2.332	0.679	2.678	26181

In this paper, the fixed effect regression is adopted to test the influence of institutional investors on stock valuation. In order to keep the data consistency, this paper conducts logarithmic processing on asset. This paper adopts Winsorization processing at 1% level for continuous variables market to book ratio and firm growth. To test the relationship between institutional ownership and stock valuation, some assumptions have been made:

1) *The institutional ownership has positive effect on stock valuation*

TABLE IV: THE DETAIL OF ALL VARIABLES

Name	Detail	Processing
Tobin’s q	The index of stock valuation, which is the market value to assets’ replacement cost.	Calculated as the log of q; Calculated as the negative inverse q
The changes of Tobin’s q	The Tobin’s q of current year minus that of previous year	Calculated as the log of changes of q; Calculated as the negative inverse changes of q
Institutional ownership	The cumulative institutional ownership of the company each year	\
The changes of institutional ownership	The institutional ownership of current year minus that of previous year	\
Firm size	Total asset	log
Leverage Ratio	The ratio of total debt to total asset	log
Stock Volatility	Annualized stock price volatility	winsorized
ROA	The index of profitability	winsorized
Turnover Ratio	Monthly average turnover ratio×12	\
Growth rate	The sales growth over the last year	winsorized

2) *The changes of institutional ownership has a positive relationship with stock valuation.*

3) *The positive relationship between the changes of INST and the changes of stock valuation is stronger than the positive relationship between INST and valuation.*

In order to verify the three hypotheses proposed above. After controlling the relevant variables as well as industry

and year factors, the Ordinary Least Square regression is conducted. The following two regression models have been established to test the assumptions.

$$\ln q_{m,i,t} = \text{inst}_{m,i,t} + \text{Control variables}_{m,i,t} + \text{Year}_t + \text{Industry}_m + \epsilon_{m,i,t} \quad (1)$$

$$\text{Changes of } \ln q_{m,i,t} = \text{instchange}_{m,i,t} + \text{Control variables}_{m,i,t} + \text{Year}_t + \text{Industry}_m + \epsilon_{m,i,t} \quad (2)$$

where $\ln q_{m,i,t}$ is the logarithm of Company i 's valuation index q in year t ; $\text{inst}_{m,i,t}$ is the Company m,i 's institutional ownership in year t ; $\text{instchange}_{m,i,t}$ shows the change of company m,i 's institutional ownership in year t compared with the previous year. My analysis control for the following variables across firm. The first is firm size as proxy by firm asset. Then, leverage across firm and risk level across firm as mentioned by leverage and volatility. Profitability as mentioned by return on asset. $\ln \text{asset}$ is the logarithmic processing of operational indicators. In this paper, Winsorize processing is carried out for m2b indicator. wgrowth is Winsorize processing for growth indicator of the firm. Year_t and Industry_m absorb the time and industry effect respectively. $\epsilon_{m,i,t}$ represents the residual value.

Furthermore, I run the analysis in two ways. One is controlling for year industry and year fixed effect, this allows me to observe the cross section differences in firm valuation. It still controls for the fluctuation in valuation across the years, and differences in valuation cross industry. Second, I run the analysis control for firm and year fixed effect, this allows me to observe differences in valuation within the firm and control for difference changes in valuation in the overall market across the years.

To test the robustness of results, another valuation index is implemented in the two regression models. The valuation index Tobin's Q is processed by negative inverse. Independent variable and control variables keep the same. The model absorbs the year and industry effect as well. Test models are established as Eqs. (3) and (4).

$$\frac{1}{q_{m,i,t}} = \text{inst}_{m,i,t} + \text{Control variables}_{m,i,t} + \text{Year}_t + \text{Industry}_m + \epsilon_{m,i,t} \quad (3)$$

$$\text{Changes of } \frac{1}{q_{m,i,t}} = \text{instchange}_{m,i,t} + \text{Control variables}_{m,i,t} + \text{Year}_t + \text{Industry}_m + \epsilon_{m,i,t} \quad (4)$$

III. RESULTS

A. Empirical Test of Institutional Ownership

The explanatory variables in the regression model is institutional ownership and the log of Q is applied for dependent variable. Q is defined as that the market value of a company divided by its assets' replacement cost, which describe the relationship between market value and its intrinsic

value. To analyse the relationship of institutional ownership and stock valuation, industry and firm fixed effect are controlled separately (Chen, Hong, and Stein, Stein).

Table V shows the regression results controlling for industry and time fixed effect. The industry fixed effect would be for the cross section of firm within the industry and only the firms with the same industry are evaluated. For the whole sample period, the firm with larger institutional ownership tend to have higher stock valuation compared with the firm with lower institutional ownership within the same industry. Specifically, when the firm is 1% higher in institutional ownership, the valuation of the firm would increase by over 0.4%. The regression result shows obvious relationship between INST and stock market value. The results for control variables shows that institution investors tend to invest growing companies because the negative relationship between firm size and valuation. Small firm with large institutional holdings conveys a positive signal on the company valuation (Dasgupta, Prat, and Verardo, 2011). Combined with the positive coefficients sales growth, stock valuation is strongly affected by the company's profitability and performance. Turnover regression coefficient is positive at the significance level of 1%. The higher the turnover rate of stocks and the more frequently the stock trades, the stock is more popular in the market (Gompers and Metrick, 2001).

For the growing period between 1980–2005 and stable period between 2006–2016. The result demonstrates the same positive relationship between explanatory variables and valuation as the whole sample period. However, the degree of the relationship over the two period worth discussing.

TABLE V: DESCRIPTIVE STATISTICS OF ALL THE VARIABLES (2006–2016)

	Dependent Variable: Log(Q)		
	1980–2016 (1)	1980–2005 (2)	2006–2016 (3)
INST	0.413*** (0.053)	0.468*** (0.062)	0.297*** (0.064)
Firm Size	-0.0441*** (0.009)	-0.0505*** (0.010)	-0.0322*** (0.009)
Leverage Ratio	0.0219 (0.046)	-0.0145 (0.055)	0.142* (0.070)
Stock Volatility	-0.161*** (0.031)	-0.141*** (0.030)	-0.226*** (0.048)
ROA	0.109 (0.167)	0.0392 (0.145)	0.289 (0.312)
Share Turnover	0.0473*** (0.008)	0.0621*** (0.012)	0.0248** (0.008)
Growth	0.170*** (0.020)	0.168*** (0.019)	0.147*** (0.029)
Industry Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	No
Year Fixed Effects	Yes	Yes	Yes
Observations	88,824	66,499	22,323
R2	0.296	0.295	0.369
Adjusted R2	0.2936	0.2915	0.3611

The value in parentheses indicate robust standard errors. Industry based on 3-digit SIC codes. ***, **, and * represent $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively.

On average, a change in valuation by 1% would improve valuation by 0.413%. This effect is more pronounced during the grow period in overall institutional ownership. Between 1980 and 2005, an increase in institutional ownership by 1% would increase valuation by approximately 0.5%. Where in the subsequent period, from 2006 to 2016, an increase in institutional ownership by 1% would increase valuation by only 0.3%. The changes in valuation for growing period is higher than that of stable period, indicating a stronger positive relationship between institutional holdings and firm valuation during 1980–2005.

Besides, this paper is also trying to find the impact of institutional ownership within a firm. Table VI shows the regression results with firm and time fixed effect controlled. The result also indicates the positive relationship between institutional ownership and stock valuation. As the results, if the institutions increase their shareholdings by 1%, the valuation of the firm will increase by over 0.4%. The relationship between INST and stock valuation is stronger when excluding the firm effect both during growing and stable period.

TABLE VI: THE RELATIONSHIP BETWEEN THE INSTITUTIONAL OWNERSHIP AND STOCK VALUATION (USING LOG(Q)) FIRM FE

	Dependent Variable: Log(Q)		
	1980–2016 (1)	1980–2005 (2)	2006–2016 (3)
INST	0.418*** (0.044)	0.512*** (0.051)	0.325*** (0.057)
Firm Size	-0.220*** (0.013)	-0.234*** (0.015)	-0.291*** (0.020)
Leverage Ratio	0.179*** (0.033)	0.179*** (0.039)	0.220*** (0.068)
Stock Volatility	-0.116*** (0.024)	-0.117*** (0.025)	-0.0569 (0.042)
ROA	0.930*** (0.067)	0.909*** (0.067)	0.857*** (0.117)
Share Turnover	0.0397*** (0.006)	0.0533*** (0.012)	0.0142*** (0.003)
Growth	0.0913*** (0.007)	0.0918*** (0.007)	0.0559*** (0.014)
Industry Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	87,293	65,045	21,892
R2	0.702	0.719	0.811
Adjusted R2	0.6677	0.6797	0.7816

The value in parentheses indicate robust standard errors. Industry based on 3-digit SIC codes. ***, **, and * represent $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively.

B. Empirical Test of the Changes of Institutional Ownership

In order to further study the relationship between institutional ownership and stock valuation, this paper explores the impact of the changes in institutional ownership on the changes of stock valuation. The samples are divided into two groups according to the institution holding

developing periods: growing period and stable period. The period from 1980 to 2005 when the institutional ownership keeps increasing is categorized as growing period. The period between 2006–2016 is stable period when the institutional ownership is fluctuating around 45%. Regression analysis is conducted respectively. Besides, I run the analysis in two ways. One way is to control for year industry and year fixed effect, this allows me to observe the cross-section differences in firm valuation. It still controls for the fluctuation in valuation across the years, and differences in valuation cross industry. Another way is to run the analysis control for firm and year fixed effect, this allows me to control for changes in valuation in the overall market across the years and observe differences in valuation within the firm.

Firstly, industry and time fixed effect is controlled. The changes of institutional ownership are positively correlated with the changes of stock valuation and the result is significant at the 1% level. For the period from 1980 to 2016, the firm with higher changes in institutional ownership tend to have larger impact on the changes of the firm valuation (Grinblatt, Titman, and Wermers, 1995). Specifically, in the cross section, the changes in institutional ownership increase by 1% would affect 0.544% increase in the changes of valuation. For the growing period between 1980–2005, the result demonstrates the same positive relationship between explanatory variables and valuation as the whole sample period. An increase in the changes of institutional ownership by 1% would increase the increasing of valuation by approximately 0.7%. For the stable period between 2006–2016, the positive relationship between the changes of institutional ownership and firm valuation is relatively weaker. When the changes of institutional ownership increase by 1 percent, the changing speed of firm valuation would increase by about 0.25%. The marginal impact of institutional changes is stronger during growing period than stable period.

Table VIII shows the impact of institutional ownership within a firm. The firm and time fluctuation have been excluded. The result indicates the positive relationship between the changes of institutional ownership and the changes of stock valuation over the whole sample period between 1980 and 2016. On average, 1% increase in the changes of institutional ownership would affect the 0.57% increase in the changing of firm valuation. For growing period between 1980 to 2005 and stable period between 2006 and 2016, the marginal impact of institutional ownership changes is both positive to the marginal movement of valuation. This positive is over two times stronger during growing period (from 1980 to 2006) than stable period (from 2006 to 2016). To be specific, an increase in the changes of institutional ownership by 1% would increase the marginal changes of valuation by approximately 0.7% during growing period between 1980–2005. For the stable period between 2006 and 2016, the positive relationship between the changes of institutional ownership and firm valuation is relatively weaker. When the changes of institutional ownership increase by 1%, the changing speed of firm valuation would increase by about 0.25%. The marginal impact of institutional changes is stronger during growing period than stable period.

TABLE VII: DESCRIPTIVE STATISTICS OF ALL THE VARIABLES (2006–2016)

Dependent Variable: Changes of Log (Q)			
	1980–2016 (1)	1980–2005 (2)	2006–2016 (3)
Changes of INST	0.544*** (0.0731)	0.685*** (0.0847)	0.249*** (0.0509)
Firm Size	0.0108*** (0.0032)	0.0100** (0.0041)	0.0107** (0.0034)
Leverage Ratio	0.0530 (0.0315)	0.0559 (0.0369)	0.0429 (0.0491)
Stock Volatility	0.0394 (0.0314)	0.0514 (0.0346)	0.0200 (0.0490)
ROA	-0.190*** (0.0573)	-0.182** (0.0678)	-0.218** (0.0760)
Share Turnover	-0.0131*** (0.0047)	-0.0155* (0.0077)	-0.0106*** (0.0027)
Growth	-0.0507*** (0.0146)	-0.0532*** (0.0179)	-0.0440*** (0.0103)
Industry Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	No
Year Fixed Effects	Yes	Yes	Yes
Observations	85,099	63,135	21,963
R2	0.114	0.103	0.1705
Adjusted R2	0.1103	0.0991	0.1602

The value in parentheses indicate robust standard errors. Industry based on 3-digit SIC codes. ***, **, and * represent $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively.

TABLE VIII: THE RELATIONSHIP BETWEEN THE CHANGES OF INSTITUTIONAL OWNERSHIP AND STOCK VALUATION (USING CHANGES OF LOG(Q) FIRM FE)

Dependent Variable: Changes of Log(Q)			
	1980–2016 (1)	1980–2005 (2)	2006–2016 (3)
Changes of INST	0.569*** (0.0565)	0.712*** (0.0511)	0.297*** (0.0669)
Firm Size	-0.0261*** (0.0068)	-0.0348*** (0.0104)	(0.0281) (0.0156)
Leverage Ratio	0.0875** (0.0342)	0.0838** (0.0374)	0.1010 (0.0705)
Stock Volatility	0.112*** (0.0256)	0.141*** (0.0250)	0.0731 (0.0536)
ROA	-0.504*** (0.0455)	-0.528*** (0.0546)	-0.624*** (0.1080)
Share Turnover	-0.0105* (0.0052)	(0.0092) (0.0090)	-0.0122*** (0.0031)
Growth	-0.0486*** (0.0128)	-0.0511*** (0.0159)	-0.0548*** (0.0109)
Industry Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	83,778	61,855	21,561
R2	0.2034	0.2055	0.2664
Adjusted R2	0.1138	0.0960	0.1542

The value in parentheses indicate robust standard errors. Industry based on 3-digit SIC codes. ***, **, and * represent $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively.

C. Robustness Test

Then, negative inverse q is applying to verify the empirical results of the relationship between institutional ownership and stock valuation. The positive relationship between institutional ownership and stock valuation is solid. The results prove the negative relationship between firm size, stock volatility and valuation. The positive effect of institutional ownership to stock valuation during stable period is relatively weaker than that of growing period. Besides, the coefficient of growth rate during 2006–2016 is lower than the growth rate during 1980–2005. Therefore, the robustness test result is aligned with the empirical regression model above.

To conduct the robustness test, negative inverse q is applies to verify the empirical results of the impact of the changes of institutional ownership to the changes of stock valuation as well. The positive relationship between the changes of institutional ownership and stock valuation is confirmed. The result proves the negative relationship between firm size and valuation. The positive relationship between the marginal change of institutional ownership and the marginal change of stock valuation during stable period is relatively weaker than that of growing period. The coefficient of growth rate during 2006–2016 is higher than the growth rate during 1980–2005. The robustness test result under negative inverse q is align with the empirical regression model under the log of q .

Regardless of the time period of institutional ownership, the institutional ownership is positively correlated with the stock valuation. Institutional ownership changes synchronously with the stock price. The marginal change of the institutional ownership is positively correlated with the marginal change of stock valuation, which is more obvious for small companies than large companies. During the growing period, the positive impact is stronger than stable period.

IV. CONCLUSION

The three assumptions in this paper have been proved by using the stock data during 1980–2016. This paper selects the data of all listed companies in the United States from 1980 to 2016, and studies the impact of institutional ownership on stock valuation as well as the changes of institutional ownership on the changes of stock valuation. It is found that the institutional ownership keeps increasing during 1980–2005 from 16% to 42% and stays stable around 45% between 2006–2016. The data sample is categorized to different developing phases to further research the internal impacts. The time period is divided to growth period and stable period and the regression analysis are conducted respectively. The result shows that the institutional ownership have a positive correlation with the stock valuation and the changes of institutional ownership has a positive effect on the changes of valuation as well, that is, the larger the institutional ownership and the greater the institutional ownership changes, the stock valuation is relatively higher. The stock valuation is more sensitive to institutional ownership and its changes during growth period. The coefficient prove stronger positive relationship during 1980–2005 for institutional ownership and changes of institutional ownership.

Endogeneity problems may exist when there are omitted variables and the company's valuation is indirectly affected by

the institutional shareholding (Yan and Zhang, 2009). For example, the omitted variable is the analyst opinion, if the institutional ownership affects the judgement of analysts, and the judgement could affect the stock valuation, which is absorbed in the error term. Two stage regression can be applied and instrumental variable can be found to deal with endogeneity issue.

One possible explanation for the positive relation is the herding behavior of investors. Institution tends to grab more information, the behavior of institutional investor could affect both other institutional and individual investors (Gutierrez and Kelley, 2009). This paper mainly focus on the empirical research and the economic explanation can be covered in further researches. The investment behavior of institutional investor provides effective information for individual investors to make investment decisions. Individual investors may invest according to the buy and sell behavior of institutional investors, which mainly because institutional investors tend to have more information. A lot of developing countries have been dominated by retail investors. They should encourage more institutional participant to their stock market to improve stock valuation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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