Institutional Owners and Stock Price Informativeness: Evidence from an Emerging Market

Esmaeil Aliabadi*, Mahdi Heidari†

Abstract

In this paper, we examine the relationship between institutional ownership and trades and the level of firm-specific information incorporated into the stock prices, measured by return non-synchronicity. We use a rich and detailed dataset of Iranian listed firms and show that higher ownership by institutional blockholders weakly associates with impounding more firm-specific information into the stock prices. We also show that the total number of shares bought and sold by institutions convey significant firm-specific information. We also shed light on one crucial channel through which institutional investors' trades affect the informational environment of the firms. We take the literature one step forward and document that higher frequency of institutions in selling position, not their average order size is related to the incorporation of more firm-specific information into stock prices. We show that because the frequency of institutions' in buying position is more explained by the overall market conditions, it has no statistically significant effect on the amount of firm-specific component of stock prices.

Keywords: Price Informativeness, Institutional Ownership, Institutional Trading, Synchronicity

*Esmaeil Aliabadi is Master Student in Economics at Tehran Institute for Advanced Studies (TeIAS) and Khatam University.

†Mahdi Heidari is Assistant Professor of Economics and Finance in Tehran Institute for Advanced Studies (TeIAS) and Khatam University.

1 Introduction

Institutional investors have a remarkable influence on current capital markets. According to the Federal Reserve Board's Flow of Funds report, the percentage of U.S. equity market capitalization held by institutions has risen from approximately 7% in 1950 to 51% by the end of 2004 and 80% in 2017. They are also responsible for the majority of the trading volume in the U.S. market (Bernstein (2009)). In addition to their significant importance in developed countries, their role is also rapidly growing in developing countries (Khorana et al. (2005)). This dominance of institutional investors on capital markets makes them an essential subject of research in financial economics.

A large body of literature in financial economics examines the informational content of institutional ownership and trades and investigates their effects on asset prices. Gompers and Metrick (2001)'s findings suggest that the level of ownership by institutional investors can predict future stocks returns. They provide evidence that this predictive power stems from demand shocks, not institutions' informational advantage. Nofsinger and Sias (1999), document that changes in institutional ownership can explain next year's return, and contrary to Gompers and Metrick (2001)'s address, they attribute this forecasting power to the informational content of institutional investors' trades. In contrast, Cai and Zheng (2004) report that stock returns Granger-cause institutional trading and document a negative effect of lagged institutional trading on stock returns.

The channels through which institutional shareholders and other blockholders affect the informational environment of corporations have been examined by a large number of researches in the literature. Brockman and Yan (2009) argue that because institutional shareholders have a clear advantage of the precision and acquisition cost of gathering firm-specific information, it is not surprising to expect that this informational advantage manifests itself

in the firm-specific component of firm stock return. Boehmer and Kelley (2009)'s empirical results suggest that firms with higher levels of institutional ownership are priced more efficiently. They show that one mechanism that derives this result is through institutional trading activities. They also suggest that institutional investors tend to use private information in their trading activities. Because of their advantage in gathering private information with lower costs, it is more valuable for them to be informed, and thus, their trading activities convey private information that increases the aggregation of firm-specific information into stock prices. Edmans (2009) shows that even when blockholders have no significant control rights, by gathering and trading on private information, they cause prices to convey more information about firm's fundamentals rather than broad industry and market information. Besides, since institutional investors often are the largest shareholders of companies, they are strongly motivated to engage actively in monitoring that helps to deter misreporting (Burns et al. (2010)). Chen et al. (2007) document that long-term institutional investors mostly engage in monitoring rather than trading. This monitoring incentive, encourages informed trading that leads to more informative prices. Also, An and Zhang (2013) document that firm's ownership by dedicated (transient) institutional investors is positively (negatively) related to the level of firm-specific information incorporated into stock prices that is consistent with the monitoring view.[1]

To see whether institutional ownership and trading convey private information, a simple idea is to investigate how they are related to the firm-specific component of stock returns. King (1966) calls attention to the high explanatory power of general market and industry factors in determining

[1]There is also an opposing view about the effect of the institutional blockholding on the informational environment of firms. It claims that issues such as free-riding problem, lack of expertise, and potentially strategic alliance with management may cause an increase in opacity in the informational environment of firms that impede the flow of firm-specific information into stock prices. For example see Pound (1988).

stock returns, but Roll (1988)'s findings suggest that a more significant portion of stock returns variation is related to the incorporation of firm-specific information into stock returns, not broad market and industry returns. After Roll (1988)'s pioneering address, a large body of literature has used a logistic transformation of r-squared (R^2) from an expanded market model (because this R^2 is highly skewed (Durnev et al. (2004))) as a standard measure for stock price synchronicity. Lack of synchronicity is a popular proxy for price informativeness in the literature.[2]

In this paper, we use a rich and detailed dataset of ownership and trades of Iranian listed firms to investigate more deeply the effect of institutional ownership and trades on the informativeness of stock prices; measured by return non-synchronicity. In this dataset, we observe daily holdings of investors that hold more than 1% of shares of stocks. We also observe detailed trade information of stocks for each type of investors separately.

In the first part of our empirical work, we show that ownership by institutions is weakly associated with the impounding of more firm-specific information into the stock prices. We also examine the effect of total blockholdings instead of only ownership by institutions and document a more positive significant relationship between total blockholders' ownership and the amount of firm-specific component of stock prices.

In the second part, we focus on the institutional investors' trades and document that both their buying and selling activities are positively associated with the level of firm-specific information incorporated into stock prices.

[2] Chen et al. (2006) Use the price synchronicity measure to see whether managers learn from the firm-specific information impounded in the price of their company stock when making decisions on corporate investment. Using this measure of informativeness, Gul et al. (2011) investigate the effect of gender-diversified boards on the level of firm-specific information incorporated into stock returns. Also some other papers examine the relation between price synchronicity and efficient capital allocation (Wurgler (2000)), earnings informativeness (Durnev et al. (2003)), transparency (Jin and Myers (2006)), audit quality (Gul et al. (2010)), and ownership structure (Jung and Kwon (2002), Boubaker et al. (2014), Gul et al. (2010), and Chen et al. (2006)).

It means that institutional investors' trades convey large amounts of firm-specific information. Since our dataset contains detailed trading information of institutions, we can investigate the relationship between institutions' trades and our measure of price informativeness more deeply. For each of the institutions' buying and selling activities during the year, we examine the effect of their trade frequencies and the average number of shares they deal per trade, separately. Our results suggest that institutions' average order sizes do not have a statistically significant effect on the incorporation of firm-specific information into stock prices. We show that the frequency of institutions in selling position is positively associates with price informativeness. Because the frequency of institutions in buying position is highly explained by market conditions, we can not document a significant association between that and price informativeness.

Our empirical work contributes to the literature in two folds. First, to the best of our knowledge, this is the first study that uses detailed daily ownership data of more than 1% blockholders (with id) and trades data of all institutional investors in this context. Our second and main contribution to the literature is that, we introduce an important channel through which institutions affect the informational environment of firms. We show that the frequency of institutions in selling positions is significantly associated with the incorporation of more firm-specific information into stock prices. Our findings also show that average order sizes of institutions are not significantly affect price informativeness. To the best of our knowledge, no previous research refers to this channel.

This paper is organized as follows: in section 2, we explain our sample and variable construction, and in section 3 we provide our empirical design and results. Section 4 concludes.

2 Sample and Variable Construction

2.1 The Sample

We conduct our analysis using daily data from 2011 to 2018 (from 1390 to 1397 in Shamsi time). We obtain price and trade data for each listed firm from the Tehran Stock Exchange (TSE) database[3]. The trade data consists of the daily number of shares sold and bought by individual and institutional investors, separately. Furthermore, data includes the frequency of buying and selling positions for each type of investor. We also have access to another dataset that contains the daily holdings of blockholders that we use to compute our ownership variables. Some part of this dataset is hand-collected.

Since in Iran, we have a price limit rule that bans the movement of most stock prices in a trading day between 5% below or above their previous day close price and these limits are mostly binding, using daily returns might bias our estimates. To overcome this issue, we use weekly stock returns and weekly market and industry returns in our analysis.

To calculate market returns, we use the overall market index at the end of each business day reported by the TSE. TSE classifies listed corporations into 45 different industries. We use this classification to compute industry returns. We define the weekly return for an industry as the weighted average of weekly returns of firms belonging to that industry. Weights are the end-of-the-week market values.

Using these datasets, we form a yearly panel data. If a firm has weekly data for less than 30 weeks within a year, we exclude that firm-year observation from our panel. For each firm-year observation, we sum the daily number of shares sold and bought by each type of investor (individuals or institutions) and the frequency of trades by each type in each position (buying

[3]http://en.tsetmc.com/

or selling).

After dropping industries with only one performing firm, our final sample consists of 2544 firm-year observations. Table 1 shows the number of unique firms in each year of our sample and population.

Table 1: Number of unique firms in each year of our sample and population

year	2011	2012	2013	2014	2015	2016	2017	2018
sample	188	206	289	311	332	355	394	469
population	309	334	403	434	471	505	518	545

2.2 Measuring Stock Price Informativeness

Our measure of price informativeness is return non-synchronicity. To construct this measure, following the literature, for each firm-year observation, we estimate the following expanded market model regression and find it's r-square:

$$R_{j,w} = \alpha + \beta_1 R_{Mkt,w} + \beta_2 R_{Mkt,w-1} + \beta_3 R_{Ind_j \neq j,w} + \beta_4 R_{Ind_j \neq j,w-1} + \varepsilon_{j,w}. \quad (1)$$

In the above regression, $R_{j,w}$ is the weekly adjusted return of firm j on week w[4], $R_{Mkt,w}$ denotes the weekly return of market index, and $R_{Ind_j \neq j,w}$ represents the weekly return of industry I that firm j belongs to. To construct the weekly industry return, we exclude firm j to prevent spurious correlations in industries with few dominating firms. We also add $R_{Mkt,w-1}$ and $R_{Ind_j \neq j,w-1}$ as the first lags of market and industry returns, respectively to allow non-synchronous trading (Hutton et al. (2009)).

Because R^2 of regression 1 is bounded between 0 and 1 and is highly skewed (Durnev et al. (2004)), we apply a logistic transformation on that as in equation 2. Following the literature we call the result *return synchronicity*

[4]We also estimate Eq. (1) for daily firm return and daily market and industry returns over each year. This different estimation do not change our findings.

and use lack of return synchronicity as a proxy for price informativeness.

$$SYNCH = log\left(\frac{R^2}{1-R^2}\right) \tag{2}$$

Note that, higher levels of R^2 translates into market-level and industry-level returns can explain higher variation of firm's return that spells out more return synchronicity.

We also use residuals from regression 1 to construct two of our control variables. Because these residuals are highly skewed, following Hutton et al. (2009), we define *Firm-Specific Return* as the $ln(1+\epsilon_{j,w})$ to transform their distribution to a roughly symmetric one. We define *Skew* and *Kurt* as the skewness and kurtosis of the distribution of these firm-specific returns during each quarter.

2.3 Control Variables

Following the previous literature (Jin and Myers (2006), An and Zhang (2013), and Hutton et al. (2009)), in regressions with the $SYNCH$ in the left hand side, we control for *ln(Size)*, defined as the natural logarithm of the market value of equities at the beginning of the year; *Volume*, defined as the total number of shares traded during year divided by the total number of shares outstanding; *Skew* and *Kurt* as the skewness and the kurtosis of the distribution of *Firm-Specific Return* during the year; and the *Industry_Vol*, defined as the standard deviation of the industry weekly returns during the year.

In our regressions, we also control for *Ret_Mkt*, defined as the yearly market return. As we will explain in detail later, the average return synchronicity has a strong positive association with the market return. Thus, if we do not control on market returns, because our other explanatory variables are probably correlated with market conditions, our estimates will be biased. To

the best of our knowledge, no previous research in this context, controls for market conditions.

2.4 Descriptive Statistics

Table 3 represents summary statistics of variables. Also, the correlation matrix is presented in Table 4. The mean and median of R^2 reported in Table 3 are approximately 0.29 and 0.26, respectively. These numbers are very different from those documented by An and Zhang (2013) (An and Zhang (2013) report that the mean and median of R^2 are 0.16 and 0.1 respectively. This huge difference between the distribution of R^2 between two countries supports the Morck et al. (2000)' finding that in countries with weak property rights, like Iran, firm returns are more synchronous with market and industry factors). As noted before, the R^2 is considered highly skewed in the literature. The skewness of R^2 in our panel is nearly 0.65. After applying the logistic transformation of Eq.(2), the skewness of $SYNCH$ becomes -0.29.

Table 3 also indicates the paramount role of institutional investors in Iran's stock market. The mean and median of institutional ownership are nearly 70 and 79 percent, respectively. Table 3 also specifies the critical role of institutional investors in trading. This table shows that the frequency of institutional investors trades is significantly less than individuals participation. Despite that, a closer look reveals that each institutional investor that participates in trading, buy per trade on average more than 10 times of average volume bought per trade by each trading individual. Also, When they sell, this average order size per trade is even higher and reaches nearly 15 times.

The distribution of the *ln(Size)* and *Volume* of sample firms during the years show that there is considerable heterogeneity between them. The minimum and maximum of the total number of shares traded during a year divided by the total number of shares outstanding, *Volume*, are 0.09 and

3691 percent, respectively. The mean and median of *Volume* reported in the table portrays a distribution with a long right tail for that.

Table 2: This table reports summary statistics for variables in our panel data. Our panel sample consists of firm-year 2710 observations. See Appendix A for variable definitions.

	min	25%	mean	median	75%	max	sd	count
SYNCH	-6.49	-1.82	-1.13	-1.07	-0.35	2.31	1.11	2453
InsO(%)	0.00	57.84	69.78	78.72	88.85	99.70	25.22	2453
BH(%)	1.65	66.45	75.31	80.88	89.72	99.70	19.05	2453
R^2	0.00	0.13	0.29	0.26	0.41	0.91	0.19	2453
InsBVol(%)	0.00	6.78	26.95	19.51	42.10	98.83	24.26	2453
InsSVol(%)	0.00	9.92	26.81	21.22	39.02	98.40	21.21	2453
InsBCount(%)	0.00	0.90	3.86	2.10	4.48	84.34	5.89	2453
InsSCount(%)	0.00	0.89	2.74	1.72	3.29	79.64	3.86	2453
AvgInsBuyVol(%)	0.00	0.05	0.21	0.10	0.22	7.94	0.42	2448
AvgInsSellVol(%)	0.00	0.08	0.31	0.16	0.33	26.79	0.72	2451
AvgIndBuyVol(%)	0.00	0.00	0.02	0.01	0.02	0.47	0.04	2453
AvgIndSellVol(%)	0.00	0.01	0.02	0.01	0.03	0.75	0.04	2453
ln(Size)	23.94	27.12	28.28	28.06	29.19	34.36	1.63	2100
Volume(%)	0.09	7.87	54.65	22.68	58.36	3691.38	128.21	2107

Table 3: This table documents correlation matrix. For variable definitions, see Appendix A.

	SYNCH	InsO	BH	R^2	InsBVol	InsSVol	InsBCount	InsSCount	AvgInsBuyVol	AvgInsSellVol	ln(Size)	Volume
SYNCH	1											
InsO	0.0401	1										
BH	-0.0452	0.851	1									
R^2	0.960	0.0492	-0.0345	1								
InsBVol	0.00455	0.259	0.176	0.0203	1							
InsSVol	0.0824	0.322	0.225	0.0978	0.865	1						
InsBCount	-0.0788	0.172	0.137	-0.0679	0.650	0.482	1					
InsSCount	-0.0157	0.210	0.174	0.00428	0.549	0.603	0.681	1				
AvgInsBuyVol	-0.157	0.0729	0.118	-0.151	0.276	0.225	0.166	0.152	1			
AvgInsSellVol	-0.119	0.0759	0.113	-0.121	0.208	0.226	0.209	0.0640	0.470	1		
ln(Size)	0.243	0.307	0.227	0.275	0.569	0.568	0.218	0.262	-0.0936	-0.0950	1	
Volume	-0.0500	-0.168	-0.154	-0.0474	-0.123	-0.0837	-0.0908	-0.00475	-0.117	-0.0907	-0.238	1

Figure 1 shows the association between yearly market return and the equally-weighted (EW) and value-weighted (VW) r-squares of regression 1 for weekly returns. As the figure shows, the value-weighted mean r-squared is higher than the equally-weighted mean r-squared. It means that larger firms' returns are more synchronous with market and industry returns. Figure 1 also shows that generally, there is more synchronicity when the market return is higher.

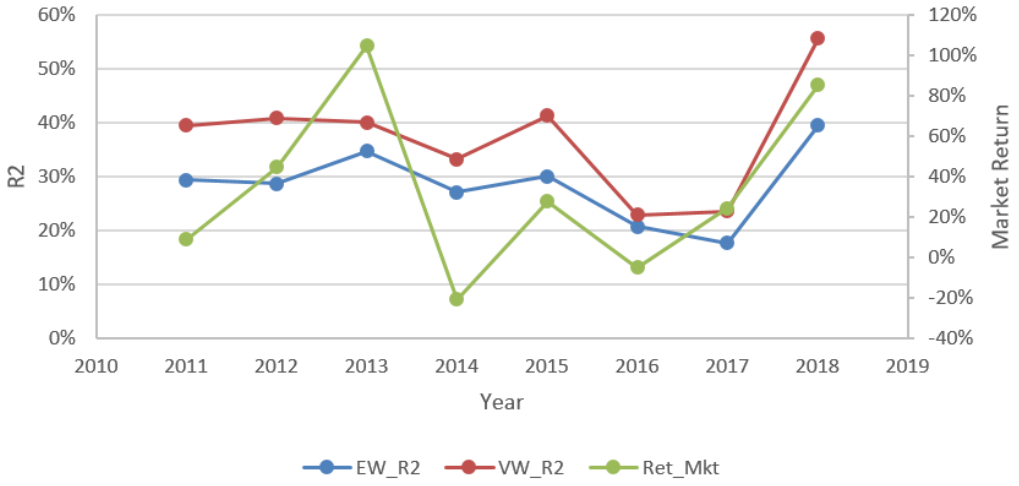

Figure 1: The association between yearly market return and value-weighted mean and equally-weighted mean r-squares of regression 1 with weekly returns.

This high correlation between *SYNCH* and market returns (correlation is nearly 50%) suggests that when we include *SYNCH* as the dependent variable in our multivariate regressions, we should control for the market returns. If we do not do that, because our other explanatory variables are probably correlated with market returns, our estimates will be biased.

Figures 2,3, and 4 plot the co-movement of yearly market return and yearly mean of our explanatory variables.

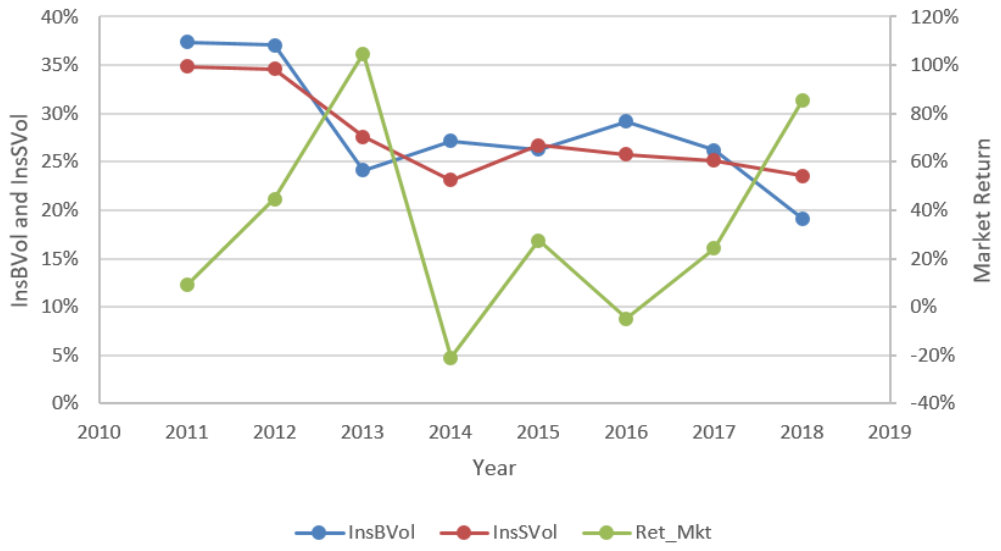

Figure 2: The association between yearly market return and the fraction of yearly traded shares that bought and sold by institutions.

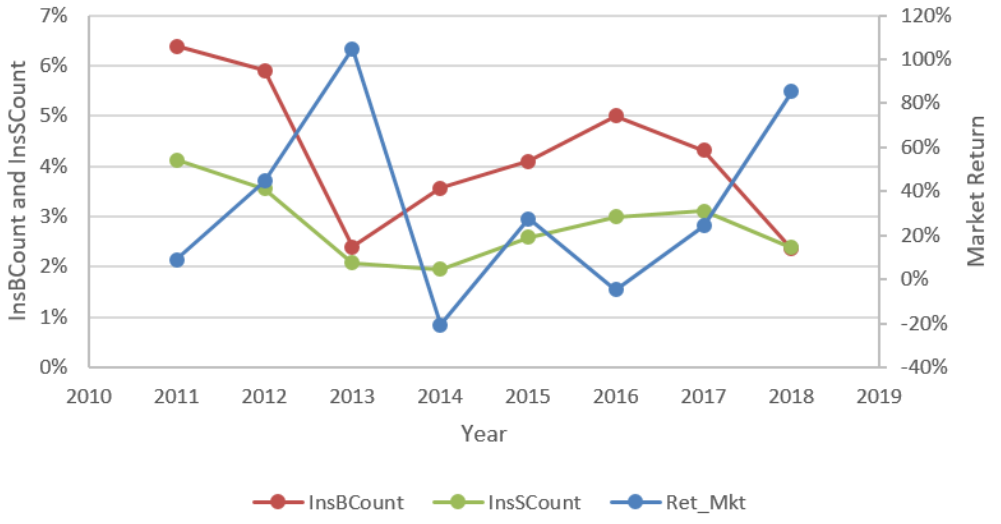

Figure 3: The association between yearly market return and the fraction of selling and buying positions occupied by institutions.

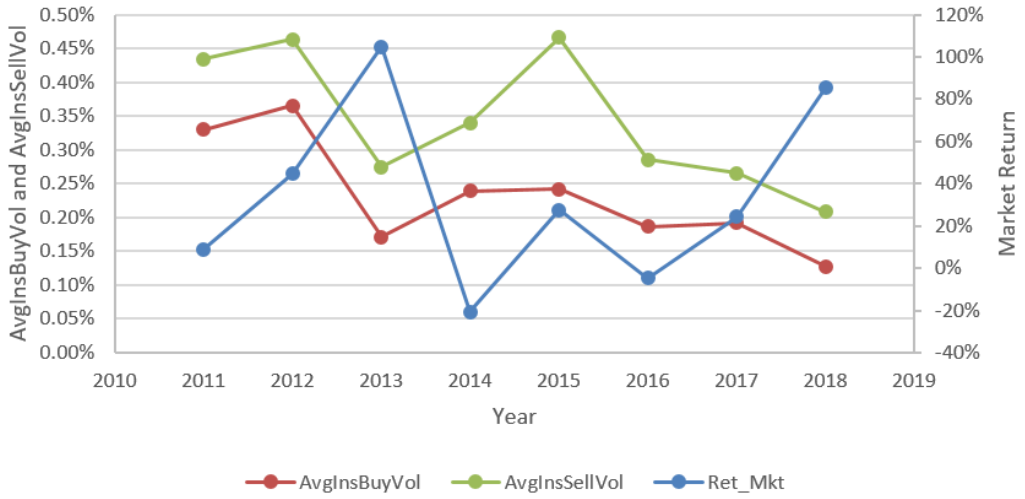

Figure 4: The association between yearly market return and the average number of shares that institutional investors buy and sell per trade as a fraction of total number of shares traded during the year.

3 Empirical Design and Results

3.1 Institutional Ownership

We examine the relationship between institutional blockholders ownership ($InsO$) and our measure of price informativeness (lack of $SYNCH$) by the following fixed-effects regression model:

$$\begin{aligned} SYNCH_{j,y} =& \alpha + \beta_1 InsO_{j,y}(BH_{j,y}) + \beta_2 Ret\_Mkt_y + \beta_3 Skew_{j,y} \\ &+ \beta_4 Kurt_{j,y} + \beta_5 Industry\_Vol_{j,y} + \beta_6 Volume_{j,y} \\ &+ \beta_7 ln(Size)_{j,y} + (Year - Dummies) \\ &+ u_j + \epsilon_{j,y}, \end{aligned} \tag{3}$$

Where, $SYNCH_{j,y}$ is the synchronicity measure represented in Eq. (2) for firm j in year y. The lack of synchronicity is related to the level of firm-specific information impounded into stock prices. $InsO_{j,y}$ denotes the percentage of shares of firm j held by institutional blockholders at the beginning of year

y. We also estimate this regression model for the holdings of all blockholders (individuals and institutions) of firm j at the beginning of year y, $BH_{j,y}$, to see the effect of blockholding on the informational environment of firms. We add Ret_Mkt as the market return on year y to control on the overall market conditions. Following Hutton et al. (2009), we add the natural logarithm of firm j's market value of equities at the beginning of year y and variables related to the distribution of *Firm-Specific Return*, including *Skew*, and *Kurt* to our regression model as controls. We also add the volatility of weekly industry return as an additional control. Following Gul et al. (2010), we also control on the percentage of total shares outstanding of firm j traded during year y. In the above regression, u_j denotes firm j's time invariant fixed effect and $\epsilon_{j,y}$ represents regression residuals.

We estimate regression 3 by correcting standard errors for firm-level clustering. Table 4 reports the regression results.

Columns 1 and 2 of Table 4 report the results of regression 3 for total blockholdings with and without year dummies. As we see, these columns suggest a significant positive effect of ownership by blockholders, *BH*, on the level of firm-specific information that comes to stock prices. we replicate columns 1 and 2 for the ownership by institutional blockholders in columns 3 and 4 of table 4. Documented results show that higher ownership by institutional blockholders associates with impounding more firm specific information into stock prices.

The negative and significant coefficients for both *BH* and *InsO* suggest that the monitoring mechanism by blockholders is dominant. Based on this mechanism, because blockholders have more shares, they have strong incentives to monitor. This monitoring activity leads to a more transparent informational environment that encourages informed trading. The result is that more firm-specific information flows into stock prices.

Hutton et al. (2009) argues that because the link between firm return

Table 4: This table reports the results of running regression 3. *SYNCH* is the return non-synchronicity measure that is estimated using weekly returns over each fiscal year for each firm. *InsO* and *BH* are the fraction of stock shares held by institutional blockholders and all blockholders, respectively. *Ret_Mkt* denotes the yearly market return. *Skew* and *Kurt* are the skewness and the kurtosis of the distribution of the *Firm-Specific Return*. *Industry_Vol* represents the standard deviation of Industry weekly returns over year. *ln(Size)* shows the logarithm of the market value of equities at the beginning of the fiscal year and *Volume* is the total number of shares traded during the fiscal year as a fraction of total number of shares outstanding.

	(1) SYNCH	(2) SYNCH	(3) SYNCH	(4) SYNCH
BH	-0.728***	-0.571**		
	(-3.53)	(-2.55)		
InsO			-0.579***	-0.398*
			(-2.98)	(-1.94)
Control Variables:				
Ret_Mkt	0.148***	0.769***	0.142**	0.736***
	(2.63)	(5.47)	(2.54)	(5.29)
Kurt	-0.0594***	-0.0636***	-0.0593***	-0.0637***
	(-5.36)	(-5.60)	(-5.34)	(-5.60)
Skew	-0.119***	-0.114***	-0.118***	-0.113***
	(-3.72)	(-3.60)	(-3.68)	(-3.56)
Industry_Vol	0.631***	0.372***	0.634***	0.373***
	(13.79)	(6.82)	(13.86)	(6.81)
ln(Size)	0.0382	-0.0640	0.0317	-0.0646
	(1.00)	(-1.29)	(0.82)	(-1.30)
Volume	-0.0133	-0.0228	-0.0116	-0.0202
	(-0.43)	(-0.76)	(-0.38)	(-0.67)
Year_Dummies	No	Yes	No	Yes
Constant	-2.651**	0.432	-2.614**	0.320
	(-2.41)	(0.31)	(-2.36)	(0.23)
Observations	2100	2100	2100	2100
R^2	0.272	0.316	0.270	0.314
F	90.11	59.68	88.84	59.13

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

and the market return is weak in jump events, it is reasonable to anticipate a negative effect of *Skew* and *Kurt* on synchronicity. Confirmed by this argument, Table 4 reports negative and highly significant coefficients for both variables in all specifications. We also expect that high-volatile industries must be associated with higher values of *SYNCH*. The reason may be that higher industry volatility increases the systematic risk that leads to higher R^2. As reported in table 4, the coefficient of *Industry_Vol* is positive and statistically significant in all specifications. As we showed in Figure 1, the mean *SYNCH* is highly correlated with the overall market conditions. In good conditions of market, firm returns on average are more synchronous with market and industry factors. As table 4 reports, the regression coefficients of *Ret_Mkt* are positive and highly significant that supports our hypothesis about the relationship between *SYNCH* and *Ret_Mkt*.

3.2 Institutional Trades

In this part, we aim to investigate the relationship between institutional investors' trades and the level of firm-specif information impounded into stock prices, measured by the lack of *SYNCH*. We run the below fixed-effects regression to grasp such a relation:

$$\begin{aligned} SYNCH_{j,y} =& \alpha + \beta_1 InsSVol_{j,y}(InsBVol_{j,y}) + \sum Controls \\ &+ \sum Year - Dummies + u_j + \epsilon_{j,y}, \end{aligned} \tag{4}$$

Where $InsSVol_{j,y}$ ($InsBVol_{j,y}$) shows the total number of shares of firm j sold (bought) by institutions during year y divided by the total number of shares of firm j traded within that year, u_j indicates firm j's time invariant fixed effect, and Control variables are as before.

We also add *InsO* in regression 4 to simultaneously investigate the effect of institutional ownership and trades on the level of firm-specific component

of the stock prices:

$$\begin{aligned} SYNCH_{j,y} =& \alpha + \beta_1 InsSVol_{j,y}(InsBVol_{j,y}) + \beta_2 InsO_{j,y} \\ &+ \sum Controls + \sum Year - Dummies \\ &+ u_j + \epsilon_{j,y} \end{aligned} \tag{5}$$

We document regression coefficients and related statistics for regressions 4 and 5 in Table 5.[5] This table reports that the participation of institutional investors in both buying and selling activities are significant predictors of firm-specific information arriving to the securities market. It means that overall institutional selling and buying activities convey a large amount of firm-specific information. This relationship between institutional trading and the level of the firm-specific component of stock prices do not depend on the inclusion of year dummies.

Table 5 also reports approximately similar coefficients to what reported in Table 4 for the *InsO*. It shows that when we add year dummies, the effect of ownership by institutional blockholders on the informational environment of firms is only marginally significant. The coefficients of our control variables are all as what reported in Table 4.

Our reach dataset enables us to investigate the relationship between the frequency of buying and selling positions by institutional investors and the informational environment of firms. All previous researches in this context only link between total institutional trade volume and the measures of price informativeness. So, in the following, we aim to fill this gap in the literature.

To investigate the relationship between institutions' trades and the level of firm-specific information that incorporated into stock prices more deeply, we break *InsSVol* and *InsBVol* to their's components: the frequency of trade

[5] As shown in table 3, the correlation between *InsSVol* and *InsBVol* is approximately 0.87. To avoid harmful consequences of multi-collinearity, we include each of them in a separate regression model as shown in Table 8.

Table 5: This table reports the results of running regressions 4 and 5. *InsSVol* (*InsBVol*) is the fraction of total number of shares traded during a year that sold (bought) by institutions. *SYNCH* is the return non-synchronicity measure that is estimated using weekly returns over each fiscal year for each firm. *InsO* is the fraction of stock shares held by institutional blockholders. *Ret_Mkt* denotes the yearly market return. *Skew* and *Kurt* are the skewness and the kurtosis of the distribution of the *firm specific return*. *Industry_Vol* represents the standard deviation of Industry weekly returns over year. *ln(Size)* shows the logarithm of market value of equities at the beginning of the fiscal year and *Volume* is the total number of shares traded during the fiscal year as a fraction of total number of shares outstanding.

	(1) SYNCH	(2) SYNCH	(3) SYNCH	(4) SYNCH	(5) SYNCH	(6) SYNCH	(7) SYNCH	(8) SYNCH
InsSVol	-0.492***	-0.416**	-0.465***	-0.383**				
	(-2.97)	(-2.42)	(-2.81)	(-2.22)				
InsBVol					-0.551***	-0.424***	-0.542***	-0.405***
					(-3.73)	(-2.76)	(-3.69)	(-2.64)
InsO			-0.539***	-0.335			-0.559***	-0.351*
			(-2.77)	(-1.63)			(-2.84)	(-1.70)
Control Variables:								
Ret_Mkt	0.144***	0.600***	0.156***	0.653***	0.117**	0.536***	0.131**	0.590***
	(2.65)	(4.31)	(2.82)	(4.48)	(2.13)	(3.72)	(2.34)	(3.93)
Skew	-0.112***	-0.108***	-0.114***	-0.110***	-0.112***	-0.109***	-0.114***	-0.110***
	(-3.48)	(-3.40)	(-3.55)	(-3.45)	(-3.53)	(-3.44)	(-3.60)	(-3.49)
Kurt	-0.0580***	-0.0635***	-0.0579***	-0.0631***	-0.0562***	-0.0621***	-0.0560***	-0.0617***
	(-5.26)	(-5.62)	(-5.22)	(-5.56)	(-5.05)	(-5.46)	(-5.02)	(-5.40)
Industry_Vol	0.624***	0.364***	0.624***	0.366***	0.617***	0.360***	0.617***	0.363***
	(13.63)	(6.70)	(13.74)	(6.77)	(13.46)	(6.60)	(13.55)	(6.67)
Volume	-0.00616	-0.0151	-0.0151	-0.0208	-0.00750	-0.0149	-0.0169	-0.0210
	(-0.19)	(-0.48)	(-0.50)	(-0.68)	(-0.24)	(-0.48)	(-0.56)	(-0.69)
Size	0.0170	-0.0387	0.0296	-0.0403	0.0204	-0.0233	0.0333	-0.0247
	(0.45)	(-0.77)	(0.78)	(-0.80)	(0.53)	(-0.45)	(0.87)	(-0.48)
Year_Dummies	No	Yes	No	Yes	No	Yes	No	Yes
Constant	-2.467**	-0.469	-2.451**	-0.243	-2.525**	-0.865	-2.501**	-0.632
	(-2.26)	(-0.34)	(-2.25)	(-0.17)	(-2.30)	(-0.60)	(-2.29)	(-0.44)
Observations	2100	2100	2100	2100	2100	2100	2100	2100
R^2	0.271	0.316	0.274	0.317	0.274	0.317	0.277	0.318
F	90.25	60.12	80.41	56.01	89.95	59.82	80.54	55.88

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

positions (buying or selling) and the average order size of each institutional investor per trade. We run the following fixed-effects regression to see the effect of these two components, separately:

$$\begin{aligned} SYNCH_{j,y} =& \alpha + \beta_1 AvgInsSellVol_{j,y}(AvgInsBuyVol_{j,y}) \\ &+ \beta_2 InsSCount_{j,y}(InsBCount_{j,y}) \\ &+ \sum Controls + \sum Year - Dummies \\ &+ u_j + \epsilon_{j,y} \end{aligned} \tag{6}$$

where *AvgInsSell(Buy)Vol* refers to the average number of shares institutional investors of firm j sell (buy) in each of their selling (buying) activities during year y divided by the total number of shares of firm j traded during that year. Also, *InsSell(Buy)Count* denotes the frequency of selling (buying) positions of institutional investors of firm j divided by the total frequency of selling (buying) positions of investors of firm j during the year. As before, we control for total number of shares traded as a portion of total number of shares outstanding and the market value of equities at the beginning of the year. We also control for *InsS(B)Count* as the total number of selling (buying) positions of firm j during the year y.

As reported in table 6, both average buying and selling order sizes of institutions do not have statistically significant effect on the amount of firm-specific information component of stock prices. Table 6 also shows that frequency of selling positions of institutions convey firm-specific information, but their buying positions do not.

As we plotted in Figure 3, the frequency of institutions in buying position is more explained by the market return than the frequency of institutions in selling position. The correlation between *Ret_Mkt* and mean *InsBCount* and mean *InsSCount* is -57% and -25%, respectively. It means that the frequency of institutions in buying position is more correlated with overall market con-

Table 6: This table reports the results of running regression 6. *AvgInsSellVol* (*AvgInsBuyVol*) is the average number of shares institutional investors sell (buy) in each of their selling (buying) activities during year divided by the total number of shares traded during that year. *InsSell(Buy)Count* denotes the frequency of selling (buying) positions of institutional investors divided by the total frequency of selling (buying) positions of investors during the year. *SYNCH* is the return non-synchronicity measure that is estimated using weekly returns over each fiscal year for each firm. *InsO* is the fraction of stock shares held by institutional blockholders. *Ret_Mkt* denotes the yearly market return. *Skew* and *Kurt* are the skewness and the kurtosis of the distribution of the *firm specific return*. *Industry_Vol* represents the standard deviation of Industry weekly returns over year. *ln(Size)* shows the logarithm of market value of equities at the beginning of the fiscal year and *Volume* is the total number of shares traded during the fiscal year as a fraction of total number of shares outstanding. *InsS(B)Count* denotes the total number of selling (buying) positions during the year.

	(1) synchronicity	(2) synchronicity	(3) synchronicity	(4) synchronicity
AvgInsSellVol	-0.346	-0.989		
	(-0.16)	(-0.47)		
InsSCount	-3.744***	-2.957**		
	(-3.14)	(-2.46)		
AvgInsBuyVol			-3.663	-4.336
			(-0.70)	(-0.87)
InsBCount			-1.364**	-0.875
			(-2.11)	(-1.40)
Controls:				
Ret_Mkt	0.140**	0.567***	0.115**	0.578***
	(2.54)	(4.00)	(2.07)	(4.13)
SCount	0.00680***	0.00676***		
	(3.51)	(3.58)		
BCount			0.00449***	0.00444***
			(2.90)	(2.97)
kurtosis	-0.0544***	-0.0604***	-0.0552***	-0.0611***
	(-4.88)	(-5.33)	(-4.94)	(-5.39)
skewness	-0.113***	-0.109***	-0.110***	-0.106***
	(-3.56)	(-3.47)	(-3.48)	(-3.38)
volatility	0.590***	0.344***	0.597***	0.345***
	(12.60)	(6.25)	(12.86)	(6.28)
Volume	-0.0443	-0.0493	-0.0238	-0.0313
	(-1.36)	(-1.58)	(-0.81)	(-1.09)
ln(Size)	-0.0457	-0.0952*	-0.0341	-0.0888*
	(-1.12)	(-1.82)	(-0.83)	(-1.70)
Year Dummies	No	Yes	No	Yes
Constant	-0.725	1.092	-1.089	0.863
	(-0.62)	(0.76)	(-0.93)	(0.60)
Observations	2098	2098	2095	2095
R^2	0.282	0.325	0.275	0.319
F	77.38	56.11	70.15	52.29

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

ditions, and thus, conveys less firm-specific information. The other factor that can derive our findings of Table 6 is the extensive supporting rule of institutions in Iran's stock market. Because the governmental institutions hold shares in most listed firms in Iran's stock market, most of the time, their buying positions only reflects their supporting rule and do not add any firm-specific information into stock prices.

4 Conclusion

In this paper, we examined the effect of institutional ownership and trades on the level of the firm-specific component of stock prices, measured by return non-synchronicity. We showed that ownership by institutional blockholders is a weak significant predictor of the amount of firm-specific information incorporated into stock prices. We also examined the effect of total blockholdings instead of only ownership by institutions and documented a more positive significant relationship between total blockholders' ownership and the amount of firm-specific component of stock prices.

We also documented that both institutional buying and selling activities convey significant firm-specific information. We also introduced one important channel through which institutional trades affect the impounding of more firm-specific information into stock prices. Our results suggest that although institutions' average order sizes do not have a statistically significant effect on the price informativeness, the higher frequency of their participation in selling positions associates with incorporation of more firm-specific information into stock prices. Because the frequency of institutions in buying position is highly explained by market conditions, we can not document a significant association between that and price informativeness.

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