Stock price synchronicity and information disclosure: Evidence from an emerging market

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Highlights

- Examine the role played by stock price synchronicity in information transmission in India.
- Portfolios of firms with high synchronicity lead the returns of portfolios of firms with low synchronicity.
- Better information environment associated with firms exhibiting high synchronicity is the mean reason behind our results.

Stock price synchronicity and information disclosure: Evidence from an emerging market

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Abstract

We provide empirical evidence on the informational role played by stock price synchronicity. Our findings suggest that the returns of firms with high synchronicity lead the returns of firms with low synchronicity in India during the period between 1999 and 2012. We argue that this lead-lag relationship arises because better information environment associated with firms exhibiting high synchronicity enables quick incorporation of relevant information. Our results are robust under different information conditions. We also show that the returns of firms with high synchronicity also lead the returns of market portfolio.

JEL Classification: G34
Keywords: Stock Price Synchronicity; Information Disclosure; Marginal Investors; Emerging Markets.

1. Introduction

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Information transmission across securities has attracted considerable attention in prior literature (Brennan et al., 1993). Vast majority of this literature holds information environment of a firm as the main reason behind information transmission across securities. Badrinath et al. (1995), for instance, document that the direction of information transmission is from firms held by institutional investors to other firms. They argue that information environment of these firms is better due to differential information set-up costs and legal restrictions arising from the ‘‘prudent man’’ regulations. Both of these factors imply that institutional investors have to expend their resources on a small subset of stocks. As a result, they are better able to gather and interpret value-relevant information. Therefore, firms with high institutional ownership are supposed to have better information environment. Badrinath et al. (1995) posit that if information gathered by institutional investors has common effects across securities, then the returns of stocks held by institutional investors help predict the returns of stocks held by individual investors. The theoretical studies also show that as the number of informed investors increase, the stock price responds to the new information more quickly (Foster and Viswanathan, 1993). Using the number of analysts as a proxy for the number of informed investors, Brennan et al. (1993) and Chuang and Lee (2011) find that the returns of portfolios of firms that are followed by more analysts tend to lead those of firms that are followed by fewer analysts.

An important proxy of information environment that has received lesser attention in prior literature is the stock price synchronicity. Stock price synchronicity measure the extent to which stock prices co-move with the market. Prior literature argues that the

extent of this co-movement is an increasing function of governance and information environment of a firm (Chan and Hameed, 2006; Dasgupta et al., 2010). Firms with better governance environment exhibit higher synchronicity than firms with poor governance environment. Chan and Hameed (2006) document that stock price synchronicity increase as the extent of analyst coverage – an important mechanism via which information improves – goes up. In another related study, Farooq and Ahmed (2014) show that low stock price synchronicity is an indicative of poor governance and information environment. Dasgupta et al. (2010) argue that the positive relationship between synchronicity and governance environment of a firm is due to the fact that high quality governance mechanisms improve the accuracy of forecasts made by investors. They posit that, in efficient markets, stock prices respond only to unexpected events. Therefore, when disclosure and governance mechanisms improve, investors are able to accurately predict future firm-specific events. As a result, there is higher likelihood that prevailing stock prices have already factored in the occurrence of future events. Consequently, when events actually happen, stock prices do not react significantly to them. In other words, more informative stock prices today are associated with less firm-specific variation in stock prices in future. Lower firm-specific variation in stock prices leads to higher correlation between stock returns and market returns, thereby causing high stock price synchronicity. A secondary reasoning that follows Dasgupta et al. (2010) is that their arguments should be more relevant for investors that have required skills and sophistication to form accurate forecasts as information environment of a firm improves. Investors without such skills may not be able to benefit much from the improvements in information environment. We argue that individual investors lack the skills and abilities to make best use of available

information. It is, usually, the institutional investors who have enough skills and sophistication to form accurate forecasts as the information environment of a firm improves. Therefore, it is very likely that firms with high synchronicity have high institutional ownership. Kelly (2007) also comes to the same conclusion and documents that firms with high synchronicity have dominant institutional holdings.

In this paper, we argue that better information environment associated with firms exhibiting high synchronicity has significant implications for how information is revealed in a market. Given better information environment of firms with high synchronicity, this paper hypothesizes that returns of firms with high synchronicity should lead the returns of firms with low synchronicity. Consistent with our hypothesis, we show that information originating from of firms with high synchronicity predicts returns of firms with low synchronicity. We also show that the converse does not hold – returns of firms with low synchronicity do not predict returns of firms with high synchronicity. We also show that returns of firms with high synchronicity Granger-cause returns of firms with low synchronicity. However, the opposite does not hold. We argue that this lead-lag relationship arises because better information environment associated with firms exhibiting high synchronicity enables quick incorporation of relevant information. Our results hold during the periods of negative market returns and during the periods of positive market returns.

The remainder of the paper is structured as follows: Section 2 summarizes the data. Section 3 presents assessment of our hypotheses and Section 4 document additional analysis. The paper ends with Section 5 where we present conclusions.

2. Data

This paper documents the informational role of stock price synchronicity in India during the period between 1999 and 2012. In order to compute stock price synchronicity, we estimate the following regression with return of stock 'i' during week 't' ($R_{i,t}$) as a dependent variable and return of market index 'M' for the same week ($R_{M,t}$) as an independent variable (Morck et al., 2000).

$$R_{i,t} = \alpha + \beta(R_{M,t}) + \varepsilon_{i,t} \quad (1)$$

The coefficient of determination (or R^2) obtained from the estimation of Equation (1) is the measure of stock price synchronicity. We use the synchronicity to categorize firms in two groups. The first group (HS) consists of firms that have synchronicity in the top two deciles and the second group (LS) consists of firms that have synchronicity in the bottom two deciles. We compute daily equally-weighted and value-weighted returns for both portfolios. Table 1 documents the descriptive statistics for both portfolios. The results show that mean returns for low synchronicity portfolio are higher than mean returns of high synchronicity portfolio. The results also show that returns for low synchronicity portfolio are more positively skewed than returns of high synchronicity portfolio.

Table 1: Descriptive statistics for portfolios with high synchronicity and portfolios with low synchronicity

	Equally-Weighted Portfolio		Value-Weighted Portfolio	
	High Synchronicity	Low Synchronicity	High Synchronicity	Low Synchronicity
Mean	0.00001	0.00049	-0.00101	-0.00082
Median	0.00000	0.00000	0.00000	0.00000
Standard Deviation	0.01984	0.01323	0.01714	0.02281
Skewness	-0.19371	0.30603	-1.45201	-0.32003
Kurtosis	2.84519	3.76435	17.74040	3.12060

No. of Observations	3643	3643	3643	3643

3. Methodology and results

Section 1 argues that returns of portfolios consisting of firms with high synchronicity ($RET_{HS,t}$) should lead the returns of portfolios with low synchronicity ($RET_{LS,t}$). Consisting with prior literature, we use the following bivariate VAR regressions to estimate our conjecture (Brennan et al. 1993; Chuang and Lee, 2011). The returns of portfolios that are first to reflect information will predict the returns of portfolios that reflect information later.

$$RET_{LS,t} = \alpha + \beta_{LS}\left(RET_{LS,t-1}\right) + \beta_{HS}\left(RET_{HS,t-1}\right) + \varepsilon_{LS,t} \quad (2)$$

And

$$RET_{HS,t} = \alpha + \beta_{LS}\left(RET_{LS,t-1}\right) + \beta_{HS}\left(RET_{HS,t-1}\right) + \varepsilon_{HS,t} \quad (3)$$

The results of our analysis are reported in Table 2. Our results show that returns of portfolio with high synchronicity ($RET_{HS,t}$) are able to predict returns of portfolio with low synchronicity ($RET_{LS,t}$). We report significantly positive coefficient of $RET_{HS,t-1}$ in Equation (2). We also show that the converse does not hold – returns of low synchronicity portfolio do not predict returns of high synchronicity portfolio. We report insignificant coefficient of $RET_{LS,t-1}$ in Equation (3). Our results in Table 2 also indicate that returns of portfolio with high synchronicity Granger-cause returns of portfolio with low synchronicity. However, the opposite does not hold. We report significant chi-square values for tests showing that returns of high synchronicity portfolio Granger-cause returns of low synchronicity

portfolio and insignificant chi-square values for tests showing that returns of low synchronicity portfolio Granger-cause returns of high synchronicity portfolio.

Table 2: Informational role of stock price synchronicity

Parameters	Equally-Weighted Portfolio		Value-Weighted Portfolio	
	Equation (2)	Equation (3)	Equation (2)	Equation (3)
$RET_{LS,t-1}$	0.25258***	0.00387	0.19554***	-0.03416*
$RET_{HS,t-1}$	0.09714***	0.312443***	0.05903***	0.24263***
No. of Observations	3642	3642	3642	3642
Adjusted R-Square	0.13207	0.09824	0.05714	0.05365
$RET_{HS,t-1}$ Granger Cause $RET_{LS,t}$	52.06000***	-	19.38500***	
$RET_{LS,t-1}$ Granger Cause $RET_{HS,t}$	-	0.01000		2.06000

NOTE: Coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

4. Additional tests

4.1 Market-wide information and informational role of stock price synchronicity

Lo and Mackinlay (1990) argue that it is possible that certain firms show slower response to positive market-specific news and faster response to negative market-specific news. In order to test this conjecture, we estimate the following bivariate VAR regressions. In the following equations, $DUM_{M,t}$ takes the value of 1 if market return is positive and 0 otherwise.

$$RET_{LS,t} = \alpha + \beta_{LS}\left(RET_{LS,t-1} * DUM_{M,t-1}\right) + \varphi_{LS}\left(RET_{LS,t-1} * \left[1 - DUM_{M,t-1}\right]\right) + \beta_{HS}\left(RET_{HS,t-1} * DUM_{M,t-1}\right) + \varphi_{HS}\left(RET_{HS,t-1} * \left[1 - DUM_{M,t-1}\right]\right) + \varepsilon_{LS,t} \quad (4)$$

And

$$RET_{HS,t} = \alpha + \beta_{LS}\left(RET_{LS,t-1} * DUM_{M,t-1}\right) + \varphi_{LS}\left(RET_{LS,t-1} * \left[1 - DUM_{M,t-1}\right]\right) + \beta_{HS}\left(RET_{HS,t-1} * DUM_{M,t-1}\right) + \varphi_{HS}\left(RET_{HS,t-1} * \left[1 - DUM_{M,t-1}\right]\right) + \varepsilon_{HS,t} \quad (5)$$

The results of our analysis are reported in Table 3. Our results show that the positive impact of $RET_{HS,t-1}$ on $RET_{LS,t}$ holds in regimes characterized by both positive and negative market information. We report significantly positive coefficient of $RET_{HS,t-1}*DUM_{M,t-1}$ and $RET_{HS,t-1}*[1 - DUM_{M,t-1}]$ in Equation (4) for both portfolios. The converse, however, does not hold. We report insignificant coefficient of $RET_{LS,t-1}*DUM_{M,t-1}$ and $RET_{LS,t-1}*[1 - DUM_{M,t-1}]$ in Equation (5).

Table 3: Effect of positive and negative information in market portfolio on the informational role of stock price synchronicity

Parameters	**Equally-Weighted Portfolio**		**Value-Weighted Portfolio**	
	Equation (4)	**Equation (5)**	**Equation (4)**	**Equation (5)**
$RET_{LS,t-1}*DUM_{M,t-1}$	0.30803***	-0.01496	0.18432***	-0.07532
$RET_{LS,t-1}*(1 - DUM_{M,t-1})$	0.22455***	-0.03195	0.21012***	0.01717
$RET_{HS,t-1}*DUM_{M,t-1}$	0.08043***	0.32555***	0.06181***	0.28960***
$RET_{HS,t-1}*(1 - DUM_{M,t-1})$	0.13446***	0.37975***	0.08257***	0.24663***
No. of Observations	3642	3642	3642	3642
Adjusted R-Square	0.12194	0.09574	0.05432	0.05364

NOTE: Coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

4.2 Lead-lag relationship between market portfolio and synchronicity-based portfolios

Our results show that information generated in portfolios with high synchronicity is superior to information generated in low synchronicity portfolio. We argued that this superior information generation is a result of better governance environment prevailing in portfolios with high synchronicity. We, further, posit that it may be possible that information generated in portfolios with high synchronicity may be able to lead returns of the market. In order to test this argument, we estimate the following bivariate VAR regressions.

$$RET_{M,t} = \alpha + \beta_{LS}(RET_{M,t-1}) + \beta_{HS}(RET_{HS,t-1}) + \varepsilon_{M,t} \quad (6)$$

And

$$RET_{HS,t} = \alpha + \beta_{LS}(RET_{M,t-1}) + \beta_{HS}(RET_{HS,t-1}) + \varepsilon_{HS,t} \quad (7)$$

The results of our analysis are reported in Table 4. Our results show that information flow takes place from portfolio with high synchronicity to market portfolio in the equally-weighted case. We report significantly positive coefficient of $RET_{HS,t-1}$ in Equation (6) for equally-weighted portfolio. We also show that no information flow takes place from market portfolio to portfolio with high synchronicity. We report insignificant coefficient of $RET_{M,t-1}$ in Equation (7) for both portfolios.

Table 4: Market portfolio and informational role of stock price synchronicity

Parameters	Equally-Weighted Portfolio		Value-Weighted Portfolio	
	Equation (6)	Equation (7)	Equation (6)	Equation (7)
$RET_{M,t-1}$	0.01657	-0.00001	0.03393*	-0.00001
$RET_{HS,t-1}$	0.04098***	0.36210***	0.01457	0.27298***
No. of Observations	3642	3642	3642	3642
Adjusted R-Square	0.00298	0.13100	0.00174	0.07425

NOTE: Coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

5. Conclusion

This paper adds to the debate on informational role of stock price synchronicity. Using the data from India, we show that returns of portfolios comprising of firms with high synchronicity lead returns of portfolios comprising of firms with low synchronicity during the period between 1999 and 2012. We show that this relationship is robust under various information conditions. We argue that better information environment and institutional

ownership associated with firms exhibiting high synchronicity is the driving force behind our results. Better information environment and institutional ownership makes stock prices more efficient and leads to the incorporation of timely information. It, therefore, also results in making returns of portfolios comprising of firms with high synchronicity to lead returns of portfolios comprising of firms with low synchronicity. This paper contributes to the growing literature on stock price synchronicity (Chan and Hameed, 2006; Farooq and Ahmed, 2014). However, unlike prior literature that primarily focuses on the determinants of synchronicity, we document the implication of synchronicity for investors. We believe that our results have important implications for investors, especially foreign investors in emerging markets. Our results indicate that foreign investors – who usually have informational disadvantage – can obtain value relevant information from stock price synchronicity. We argue that stock price synchronicity – a publicly available market-driven indicator – can help these investors to mitigate some of the information asymmetries in emerging markets.

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