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Relationship between Foreign Portfolio Investments (FPI), Domestic Institutional Investors, and Stock Market Returns in India

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Abstract

The present article attempts to understand the relationship between foreign portfolio investment (FPI), domestic institutional investors (DIIs), and stock market returns in India using high frequency data. The study analyses the trading strategies of FPIs, DIIs and its impact on the stock market return. We found that the trading strategies of FIIs and DIIs differ in Indian stock market. While FIIs follow positive feedback trading strategy, DIIs pursue the strategy of negative feedback trading which was more pronounced during the crisis. Further, there is negative relationship between FPI flows and DII flows. The results indicate the importance of developing strong domestic institutional investors to counteract the destabilising nature FIIs, particularly during turbulent times.

Keywords: Foreign Portfolio Investors, Foreign Institutional Investors, Domestic Institutional Investors and Market Return

JEL Classification: G1

Introduction

One of the important developments in the Indian stock market is the increased presence of institutional investors. The dominance of institutional investors, particularly foreign institutional investors (FIIs) in the stock market has increased the volatility in the stock market during crisis. Foreign portfolio investors (FPIs) which mainly consist of foreign institutional investors (FIIs) and domestic institutional investors (DIIs) which prominently include domestic mutual funds, banks and financial institutions, insurance and pension funds are the two important categories of institutional investors in Indian stock market. Inflow of FPIs is considered as crucial for emerging economies like India. On the one hand, it channelises foreign capital to finance economic growth; on the other hand, inflow of foreign capital through FPIs is also expected to deepen liquidity in the security market by enlarging the investor base thereby improve the functioning of the secondary market. This would lead to lower cost of capital, which in turn would enhance the level of investment. Inflow of FPIs also helps the country to build up foreign exchange reserves to meet the current account deficit. Hence, the flow of FPIs is expected to indirectly contribute to the economic growth (Lee, 2007). However, on the flipside, they are considered as a voracious, erratic type of investor that often profits from destabilising financial markets of host countries. Batra (2003) observes that FPIs are considered to be driven by "animal spirits" rather than rational investment decisions. Hence, they have often been blamed for large reversal of capital from countries in times of crisis leading to herding behaviour among the investors. As a result, FPI investments tend to make financial markets vulnerable and may end up landing the country in a crisis (Rakshit, 2006). In this context, presence of strong domestic institutional investors (DIIs) is important for ensuring stability in the stock market. DIIs, play an important role in mobilising the savings from small investors. Mutual funds, for instance, have a great role to play in India, as the majority of the investors are not comfortable to directly participate in the stock market (NSE, 2014). On the other hand, strong DIIs also act as a cushion against the adverse effect caused by

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sudden withdrawal of FIIs in times of crisis (Bose, 2012). However, this role of DIIs depends on their relative ability as market movers. With this backdrop, this study attempts to understand the dynamic interaction between these two classes of investors and their impact on market return on Indian stock market.

Institutional Investments and Stock Returns-Theoretical Relationship

Broadly, there are three theories which deal with the behaviour and the possible impact of institutional investors on the equity market. One premise propounds that institutional investors do not trade on fundamentals, but on short term and potentially destabilising feedback trading. This may be due to the agency problem in money management. Managers would be interested in short-term performance of the stock. Long term or fundamental strategies like contrarian investment strategies would take long time to perform well and may actually do very badly in short run. This puts managers at significant risk as their performance is continuously monitored. Hence, they may be pursuing trend chasing or positive feedback strategy with the belief that trends are likely to continue. This strategy is destabilising, if institutions buy overpriced stocks and sell underpriced stocks which results in the divergence of prices away from fundamentals. However, the positive feedback strategy can also stabilise the market by bringing prices closer to fundamentals if stocks under react to the news (Lakonishok, Shleifer, & Vishny, 1992).

As opposed to the first theory, the second theory states that institutional investors are rational investors who offset changes in the sentiment of individual investors. Unlike individual investors, they have access to various information sources like news reports and analyses and the guidance of professional money managers and hence they are in a better position to understand the fundamentals of the stocks, which they trade. Hence, institutional investors prefer not to engage in irrational herding. They will herd only when all the investors receive the same information and interpret similarly. Since they trade based on the fundamental, they are likely engaging in negative feedback or contrarian trading strategies which means buying stocks that have fallen too far (past losers and selling stocks that have risen too far (past winners) (Lakonishok et al., 1992).

The third and more neutral view of institutional investors, says that institutions are neither are rational negative feedback investors nor pursue destabilising strategies of herding and positive feedback strategies in their trading. This premise says that institutional investors are heterogeneous in nature and hence the trading strategy or behaviour is heterogeneous. Accordingly, some class of institutional investors may be pursuing positive feedback and/ or herding strategy, while others may pursue a negative feedback strategy. Therefore, their trading strategy does not destabilise asset prices, as the heterogeneity of trading strategies is fair enough that the aggregate excess demand is approximately zero, which indicates that there are enough negative feedback traders to offset the positive feedback traders. For instance, the positive feedback trading strategy of FIIs would be offset by negative feedback trading strategy being followed by DIIs. Hence, trading strategies being followed by various classes of institutional investors would have a neutral impact on the equity market despite generating a substantial trading volume in the market (Lakonishok et al., 1992).

Based on these premises one can infer that, institutional investors may be pursuing positive feedback and herding trade strategies or negative feedback trading strategy or both positive feedback and negative feedback strategies and herding. Accordingly, the impact on the stock market is also divergent. The first premise says that institutional investors destabilise the market, while the second premise argues that they counteract the sentiments of individual investors and bring about stability in the equity market. On the other hand, the third premise argues that the presence of institutional investors would have a neutral impact on the equity market. Hence, a positive relationship between lagged returns and institutional investment supports the positive feedback trading strategy being followed by institutional investors, and a negative relation between lagged returns and institutional investment would show that institutional investors follow a negative feedback trading strategy in the market.

Review of Literature

The dominance of institutional investors, particularly, FIIs, is increasing in the Indian equity market. According to Mohan (2005), FIIs have displaced domestic mutual funds in importance in the Indian equity market. Their shareholding in the Sensex companies is large enough for them to be able to move the market. Thiripalraju and Acharya (2009) empirically showed that FIIs have increased their capacity to influence the market, whereas mutual funds are losing their ability as market movers. In

this regard, Bikhchandani and Sharma (2001) argued that more empirical research is required in emerging markets where, according to them, there is a greater tendency to herd by institutional investors. Further, they observed that informational cascades and reputational herding are more likely to occur in emerging markets due to the uncertain environment characterised by weak reporting requirements, lack rigorous accounting practices, poor implementation of regulations, and information acquisition asymmetry. They also argued that in emerging markets due to the prevalence of imperfect information, momentum investment strategies may be more profitable for the investors.

In India, few studies attempted to understand the behaviour of FIIs. For instance, using data on FII equity purchases and sales on daily and monthly basis over the period from January 2000 to December 2002, Batra (2003) attempted to study the behaviour of FIIs in India. He found that the FIIs have been positive feedback investors. He also found that foreign investors have a tendency to herd in the Indian equity market. Bose (2012) examined the dynamic interaction between FII investment and mutual fund investment covering the recent post-crisis period from April 1, 2008 to March 31, 2012. Using daily data on net investment flows of FIIs and mutual funds to Indian stock markets, he showed that that past FII flows have significant explanatory power for mutual fund net inflows. He also studied the relationship between Bombay Stock Exchange (BSE) returns and the flow of FIIs and mutual funds. He found that contemporaneous BSE returns are significant in determining mutual fund flows, while BSE returns with a lag are significant in explaining FII flows to the Indian stock market. He also found some evidence that during global uncertainties domestic mutual fund flows positively influenced FII inflows.

Similarly, Mukherje, Bose, and Coondoo (2002) analysed factors determining the flow of FIIs in India. Using daily flows of FIIs during January 1999-May 2002, they found that a return to the Indian equity market is an important factor that influences FII flows into the country. This finding, according to them, is suggestive of the return-chasing behaviour of FIIs in Indian equity market. However, their evidence does not support that market return is influenced by the flow of FIIs. Contrary to Mukherje et al. (2002), Patnaik and Shaha (2008) found that both foreign and domestic institutional do not chase returns. They examined the preferences of foreign and domestic institutional investors in Indian stock markets. Their evidence showed that both foreign and domestic institutional investors prefer larger, more widely held firms. However, foreign investors prefer to buy stocks of more liquid, younger, private sector firms with global visibility while domestic investors prefer older firms, with a large share of fixed assets and high advantage. They also found that unlike foreign investors, domestic investors do not have a bias against public sector enterprises. Gordon and Gupta (2003) also studied the determinants of FII flows into India using the data on monthly FII flows. They found that a combination of global, regional and domestic factors influence the flow of FIIs. Their result shows that the performance of the emerging market equities positively influences FII flows into India. This shows that there could be risk of outflows if the stock market returns declines across the emerging markets. This finding also reflects the extent of integration of equity markets. They also found that lagged domestic equity market returns, exchange rate depreciation and rating downgrades negatively affect FII flows. The negative influence of domestic equity returns is less surprising and contrary to the findings of Mukherje et al. (2002) which may be indicative of contrarian trading by FIIs. Chakrabarti (2001) also examined the nature and determinants of FIIs during the period May 1993 to December 1999. He found a strong correlation between contemporaneous market return and FII flows into India. Specifically, his evidence shows that BSE Index explain a third of the total variation in FII flows during the study period. However, he found that FII flows do not influence the market shows that FII flows do not lead herding and subsequent destabilising impact on the equity market. His results also showed that other domestic and international factors like US and world returns, country risk ratings do not significantly influence the FII flows. He also found some evidence of positive feedback trading by FIIs, which he feared would exacerbate the occurrence of equity market bubbles if not cause it. Dua and Garg (2013) also found that domestic stock market performance is an important determinant of FII flow along with other factors like exchange rate and domestic output growth. Contrary to Chakrabarti (2001), Thiripalraju and Acharya (2009) found some evidence of herding and momentum strategies by FIIs. Their analysis also showed that there is a significant relationship between index return and lagged FIIs investment showing that FII trading activity influence the market return. Most recently, Prosad, Kapoor, and Sengupta (2012) examined the presence of herd behaviour in the Indian equity market using the daily return of Nifty50 stocks. Using Cross Sectional Standard Deviation (CSSD) method of herding developed by Christie and Huang (1995), they found no evidence of herding on average.

However, they found the presence of herding when the market was advancing and no herding when the market was declining. However, the study did not tell anything about the direction of herding, i.e., buy side herding or sell side herding.

It is evident from the above discussion that most of the studies did not examine the dynamic interaction between FIIs and DIIs. Studies, which attempted to understand the relationship between FIIs, DIIs used mutual fund as representative of DIIs. However, Badrinath and Wahal (2002) argued that focusing on particular subsets of institutional investors provides an incomplete view of the trading landscape of institutional investors. Therefore, this study overcomes this limitation by including the trading activities of all DIIs while analysing the dynamic relationship between DIIs and FIIs and market return.

Source of Data and Methodology

The study relies on secondary data to examine the dynamic relationship between FPIs and DIIs and market return. The data on the daily net investment of FPI has been obtained from the Securities and Exchange Board of India (SEBI). The data on the daily net investment of DIIs has been sourced from moneycontrol.com, which compiles the data from National Stock Exchange (NSE) Ltd. The study used S&P Sensex to compute the market return. The daily data on S&P Sensex has been procured from Bombay Stock Exchange. The study period span from 1 January to 30 December 2014. The study employs statistical/ econometric techniques like correlation, Granger causality, and multivariate VAR framework to understand the dynamic interaction between DIIs, FIIs, and market return on the Indian equity market.

Institutional Trading Activity in Indian Stock Market

DIIs and FIIs are the two important categories of institutional investors in Indian stock market. DIIs in India prominently consist of domestic mutual funds, insurance companies, pension funds, banks and financial institutions. Powerful DIIs potentially counteract the destabilising nature of FII trading, thereby providing a cushion against the adverse effect of FIIs, especially in times of major shocks or crisis in the economy. However, this function of DIIs depends on their trading strategies in the market.

Table 1 presents the trading activities of DIIs in the equity market. As evident from the table, DIIs have shown strong trading activities during the global financial crisis of 2008 with the net investment of Rs. 60040.47 crore in 2008-09, which was up by 26 percent of the net investment in 2007-08. On the other hand, during the same period, FII investment saw a huge outflow from the market whose net investment stood at Rs. 45811 crore. However, in the post-crisis period, DIIs outflow from the market was more than inflow which continued until 2014-15 as depicted in Table 1. On the other hand, FIIs increased

Table 1: DII Investment in Indian Stock Market (Rs. Crore)

Year	Purchases	Sales	Net Investment
2007-08	311482.50	263,757.59	47697.11
2008-09	247396	187355.53	60040.47
2009-10	342874.7	318814.64	24060.06
2010-11	319686.52	336081.93	-16395.41
2011-12	271015.58	274801.85	-3786.27
2012-13	234020.42	300956.85	-66936.43
2013-14	271989.4	326061.37	-54071.97
2014-15	398916.09	418179.68	-19263.59

Source: Compiled from moneycontrol.com (2015)

their investment in equity in the post crisis period, as shown in Table 2, which indicates that the trading strategies of FIIs and DIIs highly differ in the market. Table 2 shows the net investment by FIIs and mutual funds in equity and debt. It is evident from the table that equity route is the preferred mode of investment by FIIs. For instance, in 2012-13, 83% of the total net investment by FIIs came from this route. Net FII investment in equity was Rs. 8546 crore in 1996-97 which rose to its peak in 2012-13 with net investment to tune of Rs. 140,033 crore. On the other hand, net FII investment in debt was Rs. 29 crore in 1996-97 which went up to Rs. 49,988 crore in 2011-12 which experienced a steep decline after 2012-13. The highly skewed preference of FII investment towards equity shows the risk taking behaviour of FIIs in investment which is contrary to the investment behaviour of domestic mutual funds which preferred debt to equity investment in the post crisis period. These recent trends in institutional trading activity motivated to reexamine the relationship between FPIs, DIIs, and stock market returns in India using high frequency data.

Table 2: FII & Mutual Fund Investment in Equity and Debt (Rs. Crore)

	FII		Mutual Funds	
Year	Net Investment in Equity	Net Investment in Debt	Net Investment in Equity	Net Investment in Debt
2000-01	10207.00	-273.00	-2767.00	5023.00
2005-06	48801.00	-7334.00	14302.00	36801.00
2006-07	25236.00	5605.00	9062.00	52543.00
2007-08	53404.00	12775.00	16306.00	73790.00
2008-09	-47706.00	1895.00	6983.00	81803.00
2009-10	110221.00	32438.00	-10512.00	180588.00
2010-11	110121.00	36317.00	-19975.00	248854.00
2011-12	43738.00	49988.00	-1358.00	334820.00
2012-13	140033.00	28334.00	-22749.00	473460.00
2013-14	79709.00	-28060.00	-21224.00	543247.00

Source: Compiled from SEBI

Empirical Analysis of Relationship between FPIs, DIIs, and Stock Market Returns in India

The study employed correlation, Granger causality tests and multi-variate VAR model to understand the relationship between FIIs, DIIs, and market return.

Correlation Analysis and Causality Tests

The correlation matrix in Table 3 shows important patterns in the relationship between FIIs, DIIs, and return. The table depicts moderate but significant negative contemporaneous correlation between FIIs and DIIs which indicates that positive net inflows by FIIs in a given day would tend to be accompanied by net outflows by DIIs and vice versa, which is contrary to the findings of Sehgal and Tripathi (2009) who concluded that FIIs propelled the investment by DIIs (mutual funds). This negative relationship is more pronounced when the weekly (moving average) data are considered. This may infer that the investment strategies of these investors differ in the market. The negative correlation between lagged FIIs and DIIs flows also remains moderate and significant. Further, a moderate auto correlation is found in the case FIIs when lagged net flow is considered. DIIs showed strong auto correlation showing that their net inflow on a given period is influenced by their inflow in the previous day. As far as the relationship between stock returns and daily institutional flows is concerned, a moderate and significant positive correlation is found between lagged returns and FII flows, indicating that FII may pursue positive feedback trading in the market. On the other hand, weak and significant negative correlation is found between DII flows and lagged returns indicating the contrarian trading strategy being followed by DIIs which is consistent with Thiripalraju and Acharya (2011) who found a significant negative relationship between lagged market return and mutual fund investment. The relationship has remained almost same during the crisis period. However, the correlation became stronger during a crisis as evident from Table 4. Positive feedback trading by FIIs became more pronounced during crisis indicating

Table 3: Correlation of DII Investments with FII Investments and Stock Returns (2007-2014)

Panel A: Daily (net) flows						
	FPI	**FPI(-1)**	**DII**	**DII(-1)**	**RETURN**	**RETURN(-1)**
FPI	1.00					
FPI(-1)	0.37	1.00				
DII	-0.34	-0.34	1.00			
DII(-1)	-0.37	-0.34	0.57	1.00		
RETURN	0.04	0.02	-0.13	-0.01	1.00	
RETURN(-1)	0.30	0.04	-0.18	-0.13	0.08	1.00
Panel B: 5-day moving average of daily (net) flows						
	FPI	**FPI(-1)**	**DII**	**DII(-1)**	**RETURN**	**RETURN(-1)**
FPI	1.00					
FPI(-1)	0.93	1.00				
DII	-0.60	-0.59	1.00			
DII(-1)	-0.59	-0.60	0.96	1.00		
RETURN	0.35	0.24	-0.25	-0.17	1.00	
RETURN(-1)	0.45	0.35	-0.32	-0.25	0.80	1.00

Source: Authors' Computation

Table 4: Correlation of DII Investments with FII Investments and Stock Returns (Sep 2008 to Mar 2009)

Panel A: Daily (net) flows						
	FPI	**FPI(-1)**	**DII**	**DII(-1)**	**RETURN**	**RETURN(-1)**
FPI	1.00					
FPI(-1)	0.38	1.00				
DII	-0.44	-0.35	1.00			
DII(-1)	-0.54	-0.44	0.42	1.00		
RETURN	0.03	-0.08	-0.22	0.00	1.00	
RETURN(-1)	0.54	0.03	-0.33	-0.23	0.13	1.00
Panel B: 5-day moving average of daily (net) flows						
	FPI	**FPI(-1)**	**DII**	**DII(-1)**	**RETURN**	**RETURN(-1)**
FPI	1.00					
FPI(-1)	0.92	1.00				
DII	-0.83	-0.81	1.00			
DII(-1)	-0.06	-0.04	-0.01	1.00		
RETURN	0.58	0.42	-0.48	-0.13	1.00	
RETURN(-1)	0.75	0.58	-0.59	-0.13	0.79	1.00

Source: Authors' computation

the destabilising nature of FII flows. However, DIIs continued pursuing negative feedback trading even during crisis. This shows that DIIs act as a cushion against the adverse impact of the sudden withdrawal of FIIs. The table also shows that both FIIs and DIIs do not significantly influence market return.

Multivariate VAR and Granger Causality Tests

In order to understand the dynamic interaction between FIIs, DIIs and market return we ran the multivariate VAR analysis. Table 5 shows that all the variables are stationary

at levels. The result of the VAR analysis is presented in Table 6. Our findings show that lagged FIIs flows have significant explanatory power for DII flows. Specifically, we found a negative relationship between lagged FPI and DII flows. Similarly, DIIs are also influenced by their past flow and past market returns. On the other hand, FPI flows are positively influenced by their past flows, market return, and negatively influenced by DII flows. However, market return is not influenced by the institutional

Table 5 : Phillips-Perrron Test Statistic for Stationarity of Variables

Null Hypothesis: DII has a unit root			Null Hypothesis: DII has a unit root			Null Hypothesis: DII has a unit root		
	T Stat	Prob*		T Stat	Prob*		T Stat	Prob*
Phillips-Perron test statistic	-30.33	0.0000	Phillips-Perron test statistic	-38.59	0.0000	Phillips-Perron test statistic	-39.13	0.0000
Test critical values 1%	-3.43		Test critical values 1%	-3.43		Test critical values 1%	-3.43	
5%	-2.86		5%	-2.86		5%	-2.86	
10%	-2.57		10%	-2.57		10%	-2.57	

Source: Authors' computation

Table 6: Relationship between FIIs, DIIs and Market Return in Indian Equity Market

VAR Results based on daily net flows and return						
	Full Sample			Crisis Period		
Endogenous Variables	**FII**	**DII**	**Return**	**FII**	**DII**	**Return**
FII(-1)	+ve Sig	-ve Sig	Non-Sign	Non -Sig	Non-Sig	Non-Sig
FII(-2)	+ve Sig	-ve Sig	Non-Sign	Non -Sig	Non-Sig	Non-Sig
DII(-1)	-ve Sig	+ve Sig	Non-Sign	+ve Sig	+ve Sig	Non-Sig
DII(-2)	-ve Sig	+ve Sig	Non-Sign	Non -Sig	Non-Sig	Non-Sig
Return(-1)	+ve Sig	-ve Sig	+ve Sig	+ve Sig	-ve Sig	Non-Sig
Return(-2)	+ve Sig	Non-Sig	-ve Sig	+ve Sig	Non-Sig	Non-Sig

Source: Authors' Estimation

investment flows. This may be due to the negative relationship between FPIs and DIIs which may neutralise the impact of market return. It is possible that the nature of the relationship between FIIs and DIIs flows will change during the economic crisis. In order to explore this we looked at a sub period from September 2008 to March 2009. As evident from Table 6, during the crisis FII flows are positively influenced by past DII flows and past market return. On the other hand, DII flows are positively influenced by past DII flows and negatively influenced by past market return. Hence, FIIs continue to follow positive feedback strategy and DIIs pursued a negative feedback strategy during the crisis period. However, market return remained unaffected by the institutional trading activities. This may be due to the different trading strategies being pursued by FIIs and DIIs.

Granger Causality test largely confirmed the results of VAR analysis. As shown in Table 7, there is bidirectional causality between FII flows and DII flows. However, unidirectional causality is found between Return and FII and DII flows and the causality runs from a return to FII and DII flows which are consistent with the extant literature which reported that the domestic market return is the most important factor determining institutional investment in India (Chakrabarti, 2001; Mukherjee et al., 2002; Thiripalraju & Acharya, 2011; Dua & Garg, 2013). The direction of causality remained same even during crisis.

Table 7: Direction Causality between FIIs, DIIs and Return (2007-2014)

Direction of Causality	F-Statistic	Prob.	Inference
DII does not Granger Cause FPI	54.22	0.00	FPI causes DII
FPI does not Granger Cause DII	24.48	0.00	DII causes FPI
RETURN does not Granger Cause FPI	140.24	0.00	Return causes DII
FPI does not Granger Cause RETURN	0.84	0.43	
RETURN does not Granger Cause DII	24.55	0.00	Return causes FPI
DII does not Granger Cause RETURN	0.32	0.72	

Source: Author's computation

Table 8: Direction of causality between FII, DII and Return (Sep 2008 to Mar 2009)

Direction of Causality	F-Statistic	Prob.	Inference
FPI does not Granger Cause DII	3.40	0.037	FPI causes DII
DII does not Granger Cause FPI	20.17	0.000	DII causes FPI
RETURN does not Granger Cause DII	6.13	0.003	Return causes DII
DII does not Granger Cause RETURN	0.14	0.874	
RETURN does not Granger Cause FPI	40.60	0.000	Return causes FPI
FPI does not Granger Cause RETURN	0.15	0.858	

Source: Author's computation

It is clear from the above analysis that the trading strategies of FIIs and DIIs differ. While FIIs follow positive feedback trading strategy, DIIs pursue the strategy of negative feedback trading which was more pronounced during the crisis. Further, there is negative relationship between FII flows and DII flows. These findings are very important from the perspective of developing strong DIIs to counteract the activities of FIIs. Since they follow different trading strategies in the market, their net trading activity would bring stability in the equity market.

Conclusion

Increased presence of institutional investors will contribute to the increase in the depth in the stock market. However, on the flipside, stock market movement would excessively depend on the behaviour of this class of investors. The negative correlation between the flow of FIIs and DII shows that there exists contrarian opinion among the FIIs and DIIs which is very critical for maintaining stability in the stock market. However, the share of FIIs in total stock market turnover has been on the rise compared to DIIs. The flow of FII is also considered as the most mobile form capital, which is highly sensitive to any kind of shocks emanating from any part of the world. Therefore, we need to develop and strengthen DIIs who can act as a cushion against the sudden withdrawal caused by FIIs especially during economic crisis. On the other hand, developing DIIs, like mutual funds, will also help in increasing the indirect participation of small retail investors in Indian stock market.

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