The Role of Foreign Direct Investment on Stock Market Development: Evidence from India

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Abstract

The objective of the study is to examine the relationship between foreign direct investment and stock market development in India. The study also includes domestic savings and inflation as other macroeconomic determinants of stock market development. The study covered the period 1991-2018 and employed econometric tools to analyse the time series data. The Augmented Dickey Fuller test was applied to determine the stationarity status of the time series variables, Johansen cointegration test was used to examine the long-run relationship among the variables and Granger causality test was performed to examine the short-run causality. The results of the Johansen cointegration test suggest that the variables are cointegrated, which implies a long-run equilibrium relationship exists among the variables. Further, Granger causality test indicates stock market development and gross domestic savings granger cause foregn direct investment, which suggests that stock market development and gross domestic savings are helpful in predicting foreign direct investment in the short-run.

Keywords: Foreign Direct Investment, gross domestic savings, Granger Causality test, inflation, Stock Market Development

Introduction

Both developed and developing nations have witnessed major reforms in the form of easing restrictions of foreign direct investment (FDI), privatisation of state-owned enterprises and technological developments. India being a developing nation has also witnessed these reforms in its financial markets, one of the changes being stock market capitalisation. Since the liberalisation measures of 1991, Indian stock market capitalisation has seen massive increase. This increase in stock market capitalisation can be attributed to the improvement of enterprises participating in the Indian stock market in terms of capital, productivity, liquidity and profitability (Jeffus, 2004). As noted by Tsagkanos et al. (2018), improvement of enterprises in terms of capital, productivity, liquidity and profitability in developing countries requires new capital inflow, transfer of technical know-how and innovative managerial skills. In developing countries, foreign direct investment bridges the gap of capital, technology and managerial skills (Shahbaz et al., 2013).

The linkage between stock market development and foreign direct investment has been studied extensively by researchers since the 1990s. One theory postulated by Hausmann and Fernandez-Arias (2000) was of the view that inflow of foreign direct investment tends to be larger in nations having higher exchange rate risk, low-domestic savings, high inflation and weak financial institutions. Thus, foreign direct investment is a substitute for stock market development and it takes place to overcome the difficulties through investing in capital markets in those countries (Al Nasser and Gomez, 2009). Under this school of thought, the relationship between foreign direct investment and stock market development is negative. This theory is also known as the theory of short-run FDI.

Another view as observed by Claessens et al. (2001) is that foreign direct investment goes to a nation with good fundamentals and developed financial institutions. Hence, foreign direct investment plays a complementary role to stock market development and both are positively related. This theory is also known as the theory of long-run FDI. The positive relationship between the variables can be explained by a number of theories. First, foreign direct investment inflows expand the economic activities and thereby increase the funds available in the economy. These developments boost financial intermediation in the form of developed banking systems and financial markets. The second argument is based on political economic analysis and suggests that relative power of the elites in the economy gets reduced due to foreign direct investment inflow and hence, leads

them to adopt market-friendly regulations, thereby strengthening the financial system. Lastly, developed stock markets increase the liquidity of the shares of companies listed on the stock markets and may even decrease the cost of capital, thus attracting foreign investments in the country.

India has seen a massive increase in stock market capitalisation post liberalisation of 1991 which amounted to INR 152,540.281 billion in March 2019. Further, India has seen a surge in foreign direct investment since the announcement of 'Make in India' initiative. From 2000-01 to 2018-19, total foreign direct investment inflows in India were INR 23,78,887 crores of which INR 13,34,456 crores were received during the last five financial years (DPIIT, 2019). These figures are a testament of the success of the scheme in attracting foreign direct investment inflows and also show the confidence of investors in the Indian economy. Given the recent developments and theoretical background, the present paper attempts to examine the relationship between foreign direct investment and stock market development in India. In the models that we use to study the linkage between foreign direct investment and stock market development, we include two more macroeconomic variables - inflation and gross domestic savings. To the authors' knowledge, the present study is the first initiative that investigates the relationship between foreign direct investment and stock market development in India.

The remainder of the paper proceeds as follows: Section 2 deals with the past literature; Section 3 provides description for the variables, data and methodology employed. Section 4 contains the empirical findings and Section 5 presents the concluding remarks.

Review of Literature

Studies which aim at investigating the relationship between foreign direct investment and stock market development are mainly from developing countries; this section is going to focus on these studies. Some of the studies highlighting their findings are discussed below:

Applying pooled regression on a sample of 15 countries, Garcia and Liu (1999) found a positive impact of real income level, banking sector development, savings rate and stock market liquidity on stock market capitalisation. Claessens et al. (2001) used a sample of 77 nations to investigate whether foreign direct investment is a complement or substitute of stock market development. The study provided evidence of a positive correlation between foreign direct investment with stock market capitalisation and value traded indicating that foreign direct investment is a complement of stock market development, and vice-versa. Naceur et al. (2007) employed panel data analysis to conclude that stock market development in the MENA region (Middle East/North Africa) is positively influenced by stock market liquidity, financial intermediaries and savings. Oseni and Enlolobo (2011) studied the impact of foreign direct investment and stock market development on economic growth of Nigeria during 1980-2009. The study supported the argument that both foreign direct investment and stock market development are significant determinants of economic growth. Raza et al. (2012) used annual time series data to investigate the role of foreign direct investment on stock market development in Pakistan. The study applied the ordinary least square method of regression and includes foreign direct investment, domestic savings, exchange rate and inflation rate as explanatory variables. The findings suggested that foreign direct investment and domestic savings have significant positive impact on stock market development while exchange rate and inflation rate are negatively related. The findings of Shahbaz et al. (2013) supported the complementary role of foreign direct investment to the stock market development in Pakistan. The study further concluded that savings have a significant positive impact on stock market development. Acheampong and Wiafe (2013) investigated the impact of foreign direct investment on stock market development in Ghana and found a positive impact of foreign direct investment on stock market development. They further suggested that in order to attract foreign direct investment on a sustainable basis, enhancement in stock market development is required. Hajilee and Al Nasser (2015) studied the long-run and short-run effects of financial market development on foreign direct investment and employed bounds test approach to cointegration, error correction model and granger causality analysis. The findings showed that development in the financial market has a positive long-run effect on foreign direct investment inflows. The granger causality analysis indicates a bidirectional causality between stock market development and foreign direct investment while a unidirectional causality is found between banking sector development and foreign direct investment. Ho (2017) examined whether macroeconomic factors influence South-African stock market development. The author applied the ARDL Bounds test and concluded that in the long-run, trade-openness and inflation have a negative impact on stock market development while economic growth and banking sector development have a positive impact on South-African stock market development. Using multivariate regression model, Aayale (2017) investigated the relationship between foreign direct investment inflows and development of the Casablanca Stock Exchange. The study covered a time frame of 20 years (1993-2013) and concluded that foreign direct investment has a negative impact on Casablanca Stock Exchange while other explanatory variables, namely, exchange rate and domestic savings have a positive impact on the stock exchange development. Abubakar and Danladi (2018) employed ARDL

bound test approach to cointegration, to study the impact of foreign direct investment on stock market development in Nigeria. The study also included exchange rate, inflation rate and gross domestic savings, and concluded that foreign direct investment has a positive but statistically insignificant impact on stock market development. Tsagkanos et al. (2018) examined the relationship between Greek stock market development and foreign direct investment by applying cointegration analysis and Markov Switching regression model. The findings of the study concluded that a weak positive and symmetric long-run relationship exists between foreign direct investment and Greek stock market development. Tsaurai (2018) applied fixed effects, random effects and pooled ordinary least squares to explore the factors that determine stock market development in emerging financial markets. The findings suggested that economic growth, banking sector development, trade openness, foreign direct investment, domestic savings and stock market liquidity positively impact stock market development.

Research Methodology

Factors like stock market's liquidity, size, concentration and integration with international stock markets are some of the measures of stock market development. Following Tsagkanos et al. (2018), the present study used Indian stock market capitalisation as a proportion of GDP as a proxy of stock market development. In addition, Garcia and Liu (1999) is of the view that stock market capitalisation as a proportion of GDP is less arbitrary than other measures. The nexus between stock market development and foreign direct investment is extensively studied. Claessens et al. (2001), Raza et al. (2012), Acheampong and Wiafe (2013) and Aayale (2017) are among the authors who examined the relationship between foreign direct investment and stock market development. The authors considered net inflows of foreign direct investment as a proxy of foreign direct investment and hypothesised that foreign direct investment can either be a substitute or complement of stock market development. In the former, the authors theorised a negative relationship between the two variables, and in the later, a positive relationship is expected.

According to Garcia and Liu (1999), the quantity of capital flowing in the stock market largely depends on the amounts of savings in the economy. Thus, a positive relationship is expected between domestic savings and stock market development. Garcia and Liu (1999), Shahbaz et al. (2013), Tsaurai (2018) used Gross Domestic Savings as a proxy of savings.

Raza et al.(2012), Shahbaz et al.(2013) and Ho (2017) found a negative impact of inflation on stock market development, which supports the theory that increased inflation reduces the savings rate in the economy and hence, adversely affects the stock market capitalisation. While a positive impact of inflation on stock market development is based on the idea that investment in stocks is perceived by investors as an excellent hedge against inflation.

The analysis of the data starts with computing the descriptive statistics for all the variables. In the next step, the time series property of the variables is investigated by performing Augmented Dickey Fuller test. To investigate the long-run relationship among the time series variables, Johansen cointegration test is performed after choosing the appropriate lag length and the VECM is estimated to observe the error correction term and the short-run dynamics. Lastly, Granger causality test is applied to ascertain the direction of causality in the short-run.

Based on the prior literature, the present study proposes the following model:

$$MCAP = f(FDI, GDS, INF) \qquad (1.0)$$

Where, *MCAP* is Stock Market Development, *FDI* is Foreign Direct Investment, *GDS* is Gross Domestic Savings and *INF* is inflation.

A unit root test examines whether a time series variable is stationary. The present study applies Augmented Dickey Fuller (ADF) test because of its popularity and wide application in the prior studies [for example (Aayale, 2017); (Ho, 2017); (Garcia and Liu, 1999); (Srinivasan, 2014); (Tsaurai, 2018) and (Bhattacharjee and Das, 2020)]. Augmented Dickey Fuller test examines the null hypothesis that the time series variable has a unit root. The ADF statistic is always a negative number and the more negative the ADF test statistic is, higher the chances of rejecting the null hypothesis at some level of confidence.

The following equation is estimated in Augmented Dickey Fuller test:

$$\Delta Y_t = \alpha + \pi t + \delta Y_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{t-1} + \varepsilon_t \qquad (2.0)$$

Johansen cointegration test is performed to examine the presence of long-run equilibrium relationship among the variables. Johansen cointegration test involves the estimation of Trace statistics and Maximum eigenvalue statistics. The presence of a long-run equilibrium relationship suggests that the variables are cointegrated and cannot wander off in opposite directions for a very long duration of time.

Trace statistics and Maximum eigenvalue statistics test the number of cointegrating equations in the system and can be computed by the following equations:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{K} In(1-\lambda_i) \quad (3.0)$$

$$\lambda_{max}(r, r+1) = -T\, In(1-\lambda_i) \quad (4.0)$$

Further, to perform the Johansen cointegration test, it is required that all the variables are integrated in the same order i.e. I(1).

If there exists a long-run relationship among the studied variables, a causal relationship among the variables can be determined by estimating VECM.

The VECM for MCAP is given by

$$DLnMCAP_t = \mu_1 + \gamma_1 Z_{t-1} + \sum_{i=1}^{p} \theta_{1i} DLnMCAP_{t-1} + \sum_{i=1}^{p} \delta_{1i} DLnFDI_{t-1} + \sum_{i=1}^{p} \tau_{1i}\, DLnGDS_{t-1} + \sum_{i=1}^{p} \rho_{1i}\, DLnINF_{t-1} + \varepsilon_t \quad (5.0)$$

Where, *MCAP* is Stock Market Capitalization to GDP (%), *FDI* is Foreign Direct Investment, *GDS* is Gross Domestic Savings and *INF* is Inflation, μ is the constant term, Z_{t-1} is the error correction term, *p* is the lag length, $\gamma, \theta, \delta, \tau,$ and $\rho,$ are the parameters to be estimated and ε_t is the error term.

Granger causality test is useful in determining whether one time series is helpful in predicting another. According to the test, if X granger causes Y, then past values of X should contain information that helps predict Y above and beyond the information contained in past values of Y alone. The Granger causality test involves the estimation of the following equations:

$$(Y)_t = \alpha + \sum_{i=1}^{m} \beta_i (Y)_{t-i} + \sum_{j=1}^{n} \tau_j (X)_{t-j} + \varepsilon_t \quad (6.0)$$

$$(X)_t = \omega_0 + \sum_{i=1}^{m} \gamma_i (Y)_{t-i} + \sum_{j=1}^{n} \theta_j (X)_{t-j} + \varepsilon_t \quad (7.0)$$

Sources of Data

The study covers a time span of 28 years (1991 to 2018) and is based on annual time series data relating to Indian stock market development and foreign direct investment. The study selected such a time frame in order to capture the entire post liberalisation period. The study also includes domestic savings and inflation as other macroeconomic determinants of stock market development.

The data for this study was obtained from The World Bank database and Reserve Bank of India database. The study used EViews for the purpose of performing the required tests and for generating the figures. The description of all the variables is summarised in Table 1.

Table 1 Description of Variables

Variables	Proxy Used	Acronyms	Source
Stock Market Development	Stock Market Capitalization to GDP (%)	MCAP	World Bank
Foreign Direct Investment	FDI net inflows (US$)	FDI	World Bank
Savings	Gross Domestic Savings (US$)	GDS	World Bank
Inflation	Wholesale Price Index (Base year = 2010)	INF	Reserve Bank of India

Results and Discussion

Table 2 Descriptive Statistics

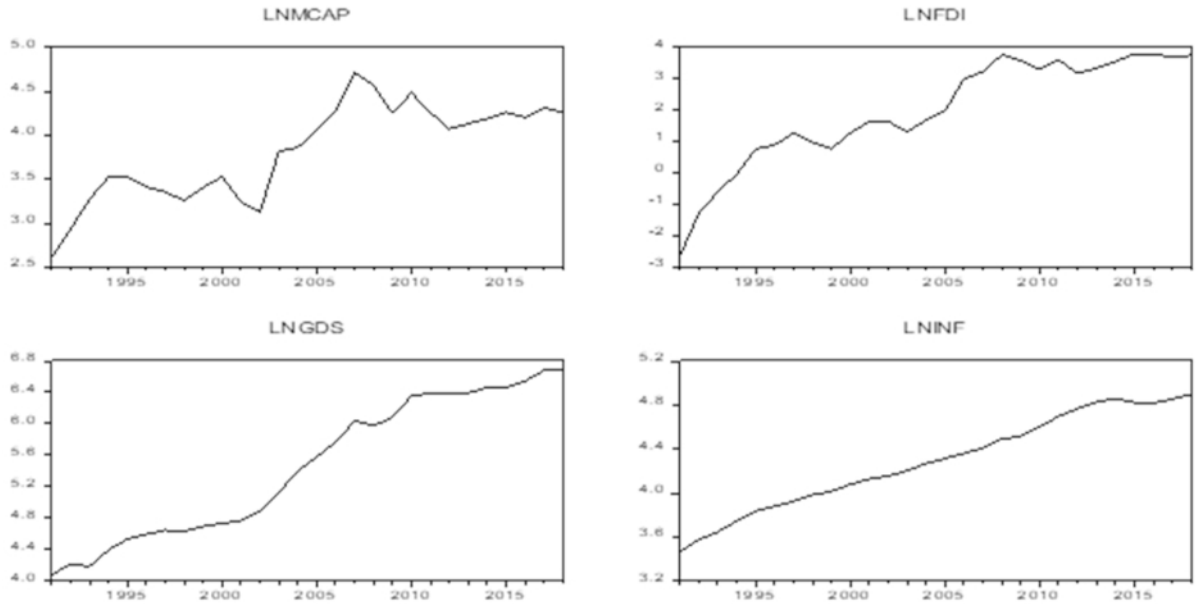
	MCAP	FDI	GDS	INF
Mean	51.98086	17.51932	332.3529	79.69061
Standard Deviation	25.62924	16.91308	256.0919	32.99226
Maximum	111.877	44.45900	798.8110	133.5990
Minimum	13.658	0.073000	59.16200	31.89400
Skewness	0.4110	0.419133	0.471073	0.298221
Kurtosis	2.3142	1.492213	1.680367	1.705930
Coefficient of Variation	0.49305	0.965395	0.77054	0.41400

Source: Authors' computation

The descriptive statistics for all the variables is presented in Table 2. From the table, it can be observed that the mean value of market capitalisation is 51.98% of GDP which is a satisfactory percentage for an emerging economy. However, the value of standard deviation indicates high volatility. The maximum and minimum values also show sharp contrast. The mean value of foreign direct investment is US$ 17.519 billion. The coefficient of variation indicates that it is more volatile than other variables in the study. In addition, the difference between the maximum (44.459) and minimum (0.0730) value is extremely high. The mean value of gross domestic savings is US$ 332.35 billion with a standard deviation of US$ 256.09 billion. The maximum (798.811) and minimum (59.162) is also very high. The coefficient of variation suggests that gross domestic savings is less volatile than foreign direct investment while the volatility is higher proportionally to market capitalisation and inflation. Inflation has a mean value of 79.690 and standard deviation of 32.992. Like other variables, the difference between the maximum and the minimum value of inflation is also high.

Further, all the data series are positively skewed or skewed right. A positive value for skewness indicates that the right tail is long relative to the left tail, while a negative value indicates that the left tail is long relative to the right tail. The value of Kurtosis has pointed out that all the data series have a Platykurtic distribution (i.e. <3).

Figure 1 Line Chart (Level Data)



Before applying the Augmented Dickey Fuller test, graphical presentation of the data is the first step in the analysis of time series variables. The visual observation provides a hint of the stationarity status of the time series variables. The line graphs in Figure 1 show that the variables may contain unit roots since their respective means and variances are not constant and require further investigation by employing unit root test.

Table 3 Unit Root Test Result (Level Data)

Null Hypothesis: Variables have Unit Root					
Test Critical Values					
ADF Test Statistic	**t-statistic**	**10%**	**5%**	**1%**	**p-value**
MCAP	-2.235211	-3.229230	-3.587527	-4.339330	0.4526
FDI	-3.576272	-3.229230	-3.587527	-4.339330	0.0511
GDS	-2.622842	-3.243079	-3.612199	-4.394309	0.2742
INF	-2.750743	-3.243079	-3.612199	-4.394309	0.2271

Source: Authors' computation

The present study applied Augmented Dickey Fuller test to determine the order of integration of the variables and the results are summarised in Table 3 and Table 4. The calculations are made using akaike information criterion (AIC) with the maximum lag length of 6 lags. The results of the ADF test indicate that all the variables are non-stationary at their level forms but become stationary at their first difference. Thus, we can infer that the time series variables are integrated of order one or I(1) and are suitable for the Johansen cointegration test.

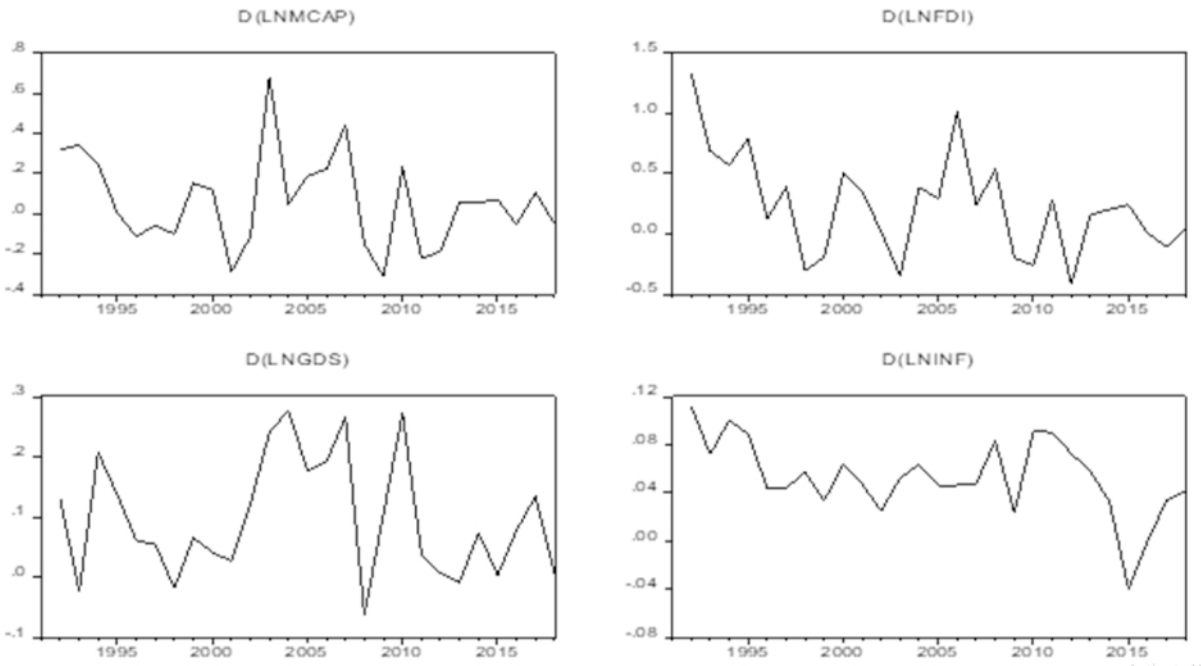
The stationarity status of the variables can also be verified by examining the graphical representation of the time series variables at their first difference (See Figure 2).

Table 4 Unit Root Test Result (On First Difference)

Alternate Hypothesis: Variables are stationary					
Test Critical Values					
ADF Test Statistic	**t-statistic**	**10%**	**5%**	**1%**	**p-value**
MCAP	-4.634765	-3.233456	-3.595026	-4.356068	0.0054
FDI	-4.677072	-3.233456	-3.595026	-4.356068	0.0049
GDS	-3.891337	-3.233456	-3.595026	-4.356068	0.0273
INF	-3.533958	-3.233456	-3.595026	-4.356068	0.0564

Source: Authors' computation

Figure 2 Line Graphs (At First-Differenced)



The long-run linkage among the variables is explored by employing Johansen cointegration test. To perform the Johansen cointegration test, it is required that the variables should be stationary at their first difference. In addition, the present study used variables at their level form. At first, the study estimated the unrestricted VAR model and the appropriate lag length is selected on the basis of the sequential modified likelihood test ratio (LR), the final prediction error criteria (FPE), the akaike information criteria (AIC), Swartz-Bayes information criteria (SC) and Hannan and Quinn criteria (HQC). From Table 5, we can conclude that all the criteria indicate a lag length of 1.

Table 5 Lag selection criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-7.016745	NA	2.66e-05	0.816055	1.008031	0.873140
1	113.7732	196.8428*	1.15e-08*	-6.946160*	-5.986280*	-6.660737*

Source: Authors' computation

Table 6 Unrestricted Cointegration Rank Test (Trace)

No. of CE(s)	Eigenvalue	Statistic	Critical Value	p-value
None *	0.685884	65.39482	47.85613	0.0005
At most 1 *	0.540059	35.28703	29.79707	0.0105
At most 2	0.395237	15.09392	15.49471	0.0574
At most 3	0.074680	2.018018	3.841466	0.1554

Source: Authors' computation

Table 7 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

No. of CE(s)	Eigenvalue	Statistic	Critical Value	p-value
None *	0.685884	30.10779	27.58434	0.0232
At most 1	0.540059	20.19311	21.13162	0.0672
At most 2	0.395237	13.07590	14.26460	0.0764
At most 3	0.074680	2.018018	3.841466	0.1554

Source: Authors' computation

The empirical results of the cointegration test are summarised in Table 6 and Table 7. Both the Trace test statistics and Max test statistics indicate the existence of cointegration among the variables. The Trace test statistics identified two cointegrating equations while Max test statistics identified a single cointegrating equation. The results confirm that the variables move together in the long-run suggesting the presence of a long-run relationship among the variables. The normalised cointegrating coefficients are summarised in Table 8. The coefficient indicates that foreign direct investment, gross domestic savings and inflation are significantly related to stock market development. The coefficient of foreign direct investment and gross domestic savings is positive while the coefficient of inflation is found to be negative. The positive coefficient of foreign direct investment suggests that in the long-run, foreign direct investment is complementary to stock market development in India and confirms that the structural reforms in the Indian stock market have attracted foreign direct investment in the long-run. In other words, the theory of long-run FDI properly explains the relationship between foreign direct investment and Indian stock market development. The positive coefficient of gross domestic savings suggests that with the increase of domestic savings, the amount of capital flows through Indian stock market increases. Further, an increase in domestic savings can accelerate the rate of economic growth in India through boosting the Indian stock market. The negative coefficient of inflation indicates that in the long-run, inflation negatively affects Indian stock market development. High inflation adversely affects the rate of domestic savings which, in turn, reduces the stock market capitalisation.

Table 9 exhibits the error correction term and the short-run coefficients. The sign of the error correction term is negative (-0.8611) and statistically significant, which indicates that the model (see equation 4) returns to equilibrium after an exogenous shock. The size of error correction term suggests that 86.11% of the disequilibrium in the long-run relationship is corrected every year as the stock market development variable settles back into its equilibrium. The short-term coefficients suggest that none of the macroeconomic variables significantly affect in the short-run.

Table 8 Normalised cointegrating coefficients

LnMCAP	LnFDI	LnGDS	LnINF	C
1.000	**-0.2954***	**-1.0603***	**2.2222***	-6.9995
	(0.0461)	(0.1395)	(0.2840)	
	[-6.4050]	[-7.5984]	[7.8227]	

Source: Authors' computation

Note: SEs are in ( ) while t-values are in [ ].
*Denotes significance at the 5 % level.

Thus, the normalised cointegrating equation is as follows:
*LnMCAP = 6.9995 + 0.2954*LnFDI + 1.0603*LnGDS - 2.2222*LnINF*

Table 9 Error Correction and Short-run Coefficients

Error Correction:	D(LNMCAP)	D(LNFDI)	D(LNGDS)	D(LNINF)
CointEq1	-0.861120*	0.832286	0.101008	-0.07919
	-0.37577	-0.46218	-0.18376	-0.04504
	[-2.29159]	[1.80080]	[0.54968]	[-1.75835]
D(LNMCAP(-1))	0.418998	0.532764	-0.061805	0.055492
	-0.29656	-0.36475	-0.14502	-0.03554
	[1.41287]	[1.46065]	[-0.42619]	[1.56130]
D(LNFDI(-1))	0.047882	0.168601	0.028082	-0.018984
	-0.11384	-0.14002	-0.05567	-0.01364
	[0.42059]	[1.20411]	[0.50442]	[-1.39137]
D(LNGDS(-1))	0.234883	0.461123	0.279519	0.045758
	-0.5415	-0.66601	-0.2648	-0.0649
	[0.43376]	[0.69237]	[1.05560]	[0.70507]
D(LNINF(-1))	-1.394822	0.80697	-0.907484	0.50607
	-1.47689	-1.81647	-0.72221	-0.177
	[-0.94443]	[0.44425]	[-1.25654]	[2.85908]
C	0.063275	0.028444	0.112999*	0.020119
	-0.09185	-0.11297	-0.04491	-0.01101
	[0.68890]	[0.25179]	[2.51585]	[1.82770]

Source: Authors' computation

Notes: SEs are in ( ) while t-values are in [ ].
*Denotes significance at the 5 % level.

Table 10 Granger Causality Analysis

Null Hypothesis	F-Statistic	p-value
$\Delta \log(FDI) \neq> \Delta \log(MCAP)$	0.17761	0.6773
$\Delta \log(MCAP) \neq> \Delta \log(FDI)$	19.1963	0.0002
$\Delta \log(GDS) \neq> \Delta \log(MCAP)$	0.41557	0.5255
$\Delta \log(MCAP) \neq> \Delta \log(GDS)$	0.01713	0.897
$\Delta log(INF) \neq> \Delta \log(MCAP)$	0.99039	0.33
$\Delta \log(MCAP) \neq> \Delta(\mathrm{INF})$	1.36557	0.2545
$\Delta \log(GDS) \neq> \Delta \log(FDI)$	5.1668	0.0327
$\Delta \log(FDI) \neq> \Delta \log(GDS)$	0.00588	0.9395
$\Delta log(INF) \neq> \Delta \log(FDI)$	0.97527	0.3336
$\Delta \log(FDI) \neq> \Delta log(INF)$	0.83899	0.3692
$\Delta log(INF) \neq> \Delta \log(GDS)$	1.39831	0.2491
$\Delta \log(GDS) \neq> \Delta log(INF)$	2.74153	0.1114

Source: Authors' computation

Note: X ≠>Y means X does not Granger Cause Y.

The Granger Causality test with 1 lag is performed to identify the direction of causality. The results of the test are summarised in Table 10. The results suggest that a unidirectional causality exists between stock market development and foreign direct investment, which flows from stock market development to foreign direct investment. However, no causality was observed between stock market development and gross domestic savings, and stock market development and inflation. The result further indicates that gross domestic savings granger cause foreign direct investment. Thus, from the causality analysis, it can be concluded that stock market development and gross domestic savings are helpful in predicting foreign direct investment in India.

Conclusion

The present study attempts to investigate the relationship between foreign direct investment and stock market development in India. The study has also included gross domestic savings and inflation as determinants of stock market development. The period of the study is 28 years starting from 1991. The selected time span captures key measures undertaken by the Government of India. Dematerialisation of shares, introduction of screen based trading, establishment of Securities and Exchange Board of India (SEBI), establishment of National Stock Exchange (NSE), setting up of National Securities Clearing Corporation Ltd. (NSCL) and introduction of rolling settlement are some of the important measures undertaken by the government since 1991.

The study employed Augmented Dickey Fuller test, Johansen cointegration test and granger causality test to establish the relationship among the variables. The descriptive statistics showed that the mean value of market capitalisation as a proportion of GDP is more than 50 per cent which is a satisfactory percentage for an emerging economy like India. The result of the Augmented Dickey Fuller test at level data set suggests that all the variables are non-stationary. However, the time series variables become stationary when Augmented Dickey Fuller test is performed on data at their first difference form. The Johansen cointegration test was applied to examine the long-run relationship among the variables. The cointegration test revealed that the variables are cointegrated in the long-run. The long-run coefficient suggests that foreign direct investment and gross domestic savings have a positive relationship with stock market development in India while the relationship between inflation and stock market development is found to be negative. The coefficients are significant at 5 per cent level. The short-run causality is examined by employing granger causality test. The granger causality test revealed that stock market development and gross domestic savings granger cause foreign direct investment. In other words, the causality analysis indicates that stock market development and gross domestic savings are helpful in predicting the flow of foreign direct investment in the short-run.

Applicability and Generalizability

The findings of the study show that foreign direct investment plays a complementary role in stock market development in India. The significant positive relationship between gross domestic savings and stock market development indicates that the quantity of capital flowing in the stock market depends on the rate of savings in the country. The Government should frame policies in a manner that facilitates and encourages savings in the economy. The government, in collaboration with private players, should create more employment opportunities and improve income generation. The negative linkage between inflation and stock market development suggests that if the government wants to encourage stock market development in India, it should ensure low inflationary trend by implementing appropriate monetary policy measures.

Limitations

The study is not without its limitations. The study only considered three macroeconomic variables, namely, foreign direct investment, gross domestic savings and inflation. Some other relevant macroeconomic variables can be used in future research endeavours. Further, the study is based on annual observations; analyses based on quarterly data may yield different results.

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