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FINANCIAL DEVELOPMENT & FINANCIAL MARKET INTEGRATION IN INDIA: A POST-REFORM SCENARIO

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ABSTRACT

The paper aims to study the performance of financial markets of different developed countries vis-à-vis Indian financial market in the post-liberalization period. This study highlights the extent of integration of the domestic financial market with the global ones. We find that the returns on stocks enlisted in BSE have high, positive correlation with the same on other stock markets. While the risk and (mean) return on stocks of NYSE are on the lower side, those for stocks on BSE are on the higher side. We feel that this fact has implications from the policy perspectives as higher risk would discourage capital flow in the long run.

Keywords: Financial market integration, Stock Price Index, Financial Inter-relation Ratio, New Issues Ratio, Financial Market .

Introduction

During the pre-reform period, i.e. before 1990s, Indian financial system was viewed primarily as tools in the hands of the government. Financial institutions were tapped for funds to finance government and public sector expenditure and this was also used to finance the directed credit (credit facilities given to the priority sector). Till early 1990s, Indian financial system was a closed, restricted, highly regulated and segmented system. But in 1990s, there was paradigm shift in this trend from a state-dominated strategy to a market-determined strategy. The basic objective of this strategy was to increase competitive efficiency in the operation of the financial system, making it healthy and profitable; and imparting to it an operational flexibility and efficiency.

In this paper our primary focus will be on analyzing the financial development in India during the post-reform period based on the 'Flow of Fund-based analyses'. In the second part of this paper, we shall try to show the extent of horizontal integration of the Indian capital market with the global capital during the post-reform period.

Data Source & Methodology

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The financial development in the Indian financial market would be based on the flow of funds estimates of RBI and the secondary data sources, viz. statistical information regarding the financial ratios published in the RBI Bulletins. We have analyzed these ratios for the period from 1970-71 to 2012-13 to indicate the changes during the post-reform period.

On the other hand, for analyzing the capital market integration we have considered the movements of stock prices during 1998-2015 in the Indian capital market vis-à-vis the stock markets of USA, UK, Japan, China, Singapore and Hong Kong. Thus, we have used seven stock price indices: the BSE SENSEX of India pertaining to the domestic market, two stock price indices relating to regional markets such as Singapore [Straits Time Index or STI(Singapore)] and Hong Kong [Hang Seng Index or HSII (Hong Kong)], and four stock price indices relating to the global markets in the United States[New York Stock Exchange (NYSE Composite) Index], the United Kingdom (FTSE 100 Index), China [Shanghai Stock Exchange (SSE Composite) Index]and Japan [Japan Nikkei 225 Stock Index or JNI]. The secondary data on stock indices in these markets have been collected from the website (Yahoo Finance). We have considered six monthly (or semi-annual) data of these stock indices for the period from January, 1998 to June, 2015.

The co-movements of stock indices in these markets have been studied using the correlation matrix and the statistical significance of these correlation coefficients have been measured using the t-statistic. The cyclical fluctuations of each series of stock indices during 1998-2015 have also been worked out by filtering out the trend for each series using Hodrick-Prescott filter. The correlation matrix of these cyclical fluctuations in different stock indices has also been estimated. The Augmented Dickey-Fuller (ADF) unit root test has been used to test whether the time series data regarding the movements of stock indices are stationary or not (Statistical packages such as eviews 7 & SPSS 17 have been used for these estimations).

Literature survey

The flow of funds accounts in India has been maintained by the Reserve Bank of India and there are only a few studies on the financial development in India based on the Financial Ratios such as Finance Ratio, Financial Inter-relation Ratio, New Issues Ratio, Intermediation ratio etc.(RBI, 1998, 2014; Pathak,2014).

In the theoretical literature, financial market integration derives from various postulates such as the law of one price (Cournot, 1927; Marshall,1930), portfolio diversification with risky assets (Markowitz, 1952), capital asset price models (Sharpe,1964; Lintner,1965) and arbitrage price theory (Ross, 1976). Despite distinguishing features, these postulates share a common perspective, viz. if risks command the same price, then the correlation of financial asset prices and the linkage among markets comes from the movement in the price of risks due to investors' risk aversion. Based on these theoretical postulates, financial integration at the empirical level is

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studied using several *de jure* and *de facto* measures, although the latter, reflecting the actual degree of market linkages, have been more popular (Prasad et al, 2006; Yu et al, 2007). Following the seminal works of Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990), numerous studies beginning with Taylor and Tonks (1989), Kasa (1992) and, subsequently, Masih and Masih (2005), Chowdhry (1997), Chowdhry et al (2007) and (Raj & Dhal, 2008), among several others in the applied finance literature, have used the Cointegration hypothesis to assess the international integration of financial markets. Until Taylor and Tonks (1989) and Kasa (1992), studies relied on correlation and regression analyses to gauge the nature of price convergence and international portfolio diversification across markets (Levy & Sarnat, 1970; Agmon, 1972; Solnik, 1974); Panton et al, 1976). However, in most of these studies be it related to the issues of financial development or financial market integration have not emphasized properly on the post-reform scenario of Indian Financial Market using the recent data sources. So, this study is supposed to fill in that gap in previous studies in this dimension.

Financial Development in India

The financial development in India, in our study, is primarily based on the Flow of Funds accounts of the Reserve bank of India. The Flow of Funds (FOF) accounts represent a systematic record of financial transactions through a variety of instruments among the various sectors of the economy during a given period of time. The FOF accounts serve as an important policy-supportive analytical tool in at least five major ways: (a) The FOF accounts help to assess the nature and pace of financial development of the economy;(b) these accounts unravel the relationship of the financial sector with the real economy (i.e. the non-financial sectors) and hence, provide insights into their saving, capital formation, wealth and indebtedness; (c) the FOF accounts can also be used to check consistency with corresponding parameters derived independently from the national accounts and the balance of payments. In fact, the FOF projections undertaken in some countries serve to supplement and cross-check the macroeconomic projections based exclusively on the non-financial sectors; (d) the FOF accounts can help in estimating the impact of monetary policy on the volume of financial resources mobilized by different sectors of the economy as also on the portfolio choice between money and other financial assets; and (e) the FOF accounts can be used to assess financial inter-connectedness as well as financial stability or vulnerability of the economy (RBI, 2014).

Recognizing these inherent advantages of FOF accounts, many developed and emerging market countries have been compiling the FOF accounts over the years. In fact, the central banks in many of these countries, e.g. the Federal Reserve Board, the European Central Bank, the Bank of Japan, the People's Bank of China, the South African Reserve Bank and the Reserve Bank of India (RBI) have been compiling the FOF accounts.

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Flow of funds estimates by the RBI include the variables such as national income, total issues of securities or total claims, total financial assets and physical assets, total primary issues and secondary issues. The primary issues here signify the financial claims issued by the non-financial institutions (viz., the primary securities issued by the ultimate borrowers). On the other hand, the secondary issues or secondary securities signify the financial claims issued by the financial institutions who can convert the primary issues to secondary issues (say, the units issued by the mutual funds). Based on these variables, the following financial ratios are used to gauge the financial development in any financial market.

Finance Ratio (FR): It indicates the process of financial deepening in an economy. It is an indicator of the rate of financial development in relation to economic growth

So, $FR = \frac{Total\ Issues}{National\ Income} = \frac{Total\ Financial\ \ Claims}{Net\ \ National\ \Pr oduct\ at\ \ Factor\ Cost}$

Financial Inter-relation Ratio (FIR): It reflects the proportion of financial assets with respect to the net domestic capital formation or the physical assets in the economy. It shows the relation between the financial structure and the real asset structure in an economy.

So, $FIR = \frac{Financial\ Assets}{Physical\ Assets} = \frac{Total\ Issues}{Net\ Domestic\ \ Capital\ Formation}$

New Issues Ratio (NIR): It is the ratio of primary issues to net domestic capital formation. It measures the proportion of primary claims issued by non-financial institutions to net domestic capital formation. In other words, the FIR shows how far direct issues to the savers have financed the investment made by the investing sector.

So, $NIR = \frac{\Pr imary\ Issues}{Net\ Domestic\ \ Capital\ Formation} = \frac{\Pr imary\ Issues}{Net\ Physical\ \ Investments}$

Intermediation ratio (IR): It is the ratio of secondary issues to primary issues and shows the importance of financial intermediaries in channelizing financial resources. It shows the institutionalization of financing in the economy. It is ratio between the financial claims issued by the financial institutions to the financial claims issued by the non-financial institutions.

So, $IR = \frac{Total\ Secondary\ \ Issues}{Total\ \Pr imary\ \ Issues}$

The movements of these financial ratios in Indian financial market during the pre-reform and post-reform periods have been shown in Table-1 and Figure-1.

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Table-1 Movements of Financial Ratios in India

Year	FR	FIR	NIR	IR
1970-71	0.17	1.38	0.79	0.77
1980-81	0.34	2.42	1.43	0.69
1990-91	0.4	1.74	1	0.74
1991-92	0.49	2.92	1.62	0.81
1992-93	0.38	2.18	1.19	0.84
1993-94	0.47	2.82	1.49	0.89
1994-95	0.5	2.53	1.38	0.84
1996-97	0.37	2.05	1.12	0.83
1997-98	0.49	2.53	1.52	0.67
2000-01	0.46	2.57	1.6	0.61
2001-02	0.52	3.27	2.23	0.46
2002-03	0.51	2.75	1.63	0.69
2006-07	0.63	1.93	1.19	0.63
2007-08	0.77	2.18	1.22	0.79
2008-09	0.53	1.83	1.01	0.81
2009-10	0.61	1.95	1.14	0.71
2010-11	0.64	1.98	1.18	0.68
2011-12	0.59	1.89	1.07	0.78
2012-13	0.57	1.87	1.04	0.79

Source: RBI Bulletin (2014-15)

Compared to the pre-reform period (i.e. before 1990-91), the FR has gradually increased during the post-reform period. For instance, the FR was only 0.34 in 1980-81 but this has increased upto 0.77 in 2007-08. This actually implies a financial deepening in Indian economy or an increase in financial assets in the economy.

If FIR>1 it implies that the growth in financial assets is more than that of the physical assets. This trend has also improved during the post-reform period. For instance, in 1970-71, this ratio was only to the extent of 1.38 and this has increased to 3.27 in 2001-02. However, since then, there has been a downward trend in this ratio and it slipped down to 1.87 in 2012-13. This implies that the investors now prefer relative more of physical assets compared to financial assets in their asset portfolio. The downward trend in this ratio during 1996-97 might be the impact of crisis in the 'Asian Financial Market' and the same during 2006-09 might be the result of financial crisis in USA and some other European markets.

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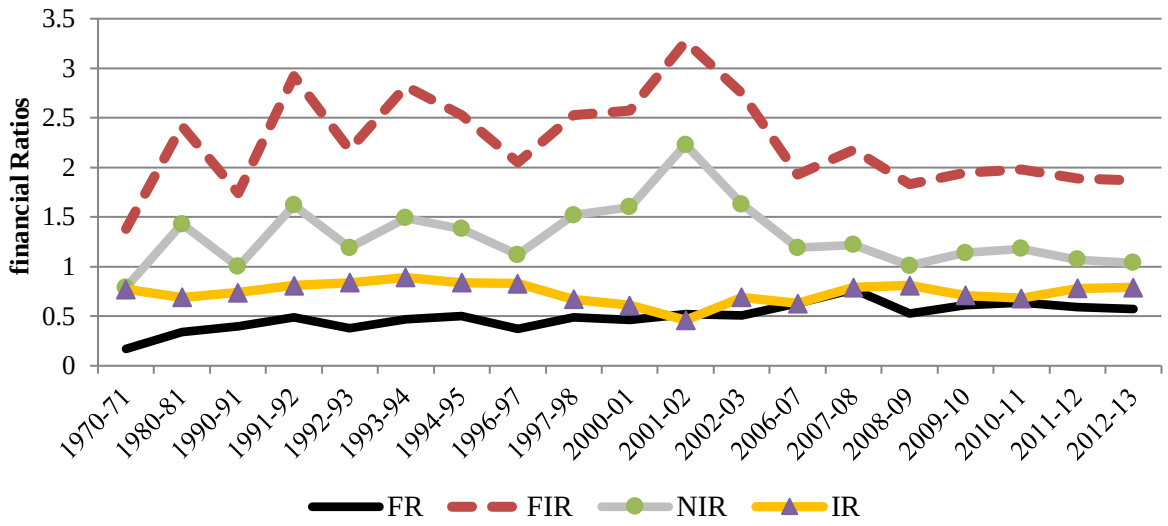
Fig.-1 Line Charts Showing the Movements of Financial Ratios in India



The NIR trend shows that compared to the pre-reform period, it has increased during the post-reform period (particularly upto 2001-02 when this ratio reached at 2.23. If we look at the pre-reform period, we find that in 1970-71, this ratio was only 0.79. An increase in this ratio implies that the capital market has expanded during the post-reform period and greater part of direct issues of securities by the non-financial institutions to the savers has financed the formation of real capital in Indian economy. But a decline in this trend during 1996-97 and 2001-07 may signify either a sluggish investment trend in the real sector or sluggish activities in the capital market so far as the issues of direct / primary securities are concerned. The impact of the movements of the global financial market during these periods as noted earlier can also provide plausible explanation to such trends. Though there was a slight improvement in this trend during 2006-08, it was followed by a fall during 2008-09 (might be the dampening effect of world financial crisis on Indian capital market) and remained almost stagnant during 2009-13.

So far as the IR ratio is concerned, it is observed that this ratio has also improved during the post-reform period. For instance, in 1980-81, this ratio was 0.69 and rose to an average of about 0.81 during 1990s. It implies growing importance of financial intermediation in Indian capital market. Though there was a falling trend in this regard during 1993-2002, this was followed by a turn around and remained at an average level of about 0.80 during 2008-13.

All these movements of financial ratios are not only an indication of the pattern of financial development in India during the post-reform period; they also signify the volatility of financial transactions to some random shocks generated in the global financial market.

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Vertical Integration of the Indian Capital market

Financial market integration occurs either horizontally (inter-linkage of various domestic market segments) or **v**ertically (inter-linkage of domestic and regional/international markets).

The development of financial markets occurs in its true sense only if they are well-integrated, for it is only then that the monetary policy impulses are effectively transmitted to the entire economy. In an integrated financial market system, the central bank's short-term policy rate changes would be transmitted to the market rates (short-term as well as long-term), money market, bond market, and credit market. Technically, financial market integration means the unification of the markets for the convergence of risk-adjusted returns on assets with similar maturity across all the markets. Factors such as deregulation (freeing pricing of financial assets), globalization (transnational movement of capital, especially the savings of one nation to supplement the domestic savings of another nation), IT advances (electronic payment and communication systems that decrease arbitrage opportunities across financial centres), and changes in the operating framework of a monetary policy (shift to price-based instruments such as short-term policy interest rate, impacting the interest rate term structure) have significantly influenced the integration of the various market segments in India. Financial market integration is witnessing a new wave of confidence in recent years; besides individual nations, some economic regions (such as the Arab countries) are also actively discussing the possibility of having integrated financial markets.

There is no doubt that national stock markets both in India and abroad have emerged as the major channel for financial integration of emerging market economies in the era of globalisation, deregulation and advances in information technology. The factors which are supposed to contribute most towards growing financial integration are: (i) a rapid increase in the cross-border mobility of private capital inflows due to the motivations of the investors who want portfolio diversification and better yields, (ii) a growing reliance of any nation on the savings of other nations, and (iii) a shift in the leverage preference of companies from debt towards equity finance.

Integration not only allows the government machinery to transmit key price signals, but also promotes domestic savings and investments. In turn, these create opportunities for the financial sector of a nation to emerge as a financial center at the regional or the international level. Integrated financial markets enhance equal access to financial services (for the public as well as for companies, and institutions) by innovative and cost-effective intermediation, informational efficiency, and market discipline.

Global financial integration is beneficial for international risk-sharing, consumption smoothing, and enhancement of the depth and breadth of domestic financial markets. This competitive environment discourages the exorbitant profits that are associated with monopolistic/cartelised markets by decreasing costs and increasing market efficiencies. International studies confirm that

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a higher degree of financial market integration leads to higher efficiency of financial markets and thereby leads to higher availability of better risk-return combinations to investors. A number of prior studies were conducted to evaluate and understand the level of integration of international financial markets in various economies of the world.

However, on the flip side, integrated financial markets pose grave risks, which could lead to catastrophic developments if they are not analyzed prudently. Highly integrated domestic and international financial markets run the risk of contagion due to informational asymmetry from one market to the other markets, with the possibility of systemic instability. For instance, the currency crisis in the Asian markets during 1997-98, the terrorist attack on September 11, 2001 in USA and massive sales of stocks by FIIs in September 2001 leading to the stock market crash in USA followed by a bearish movement in stock prices during 2001-03 in different stock markets, the sub-prime crisis in the financial market of USA during 2007-08 and its impact on global capital market etc. indicate the darker sides of such an integrated capital market.

Such volatility risks and surprising reversals in capital flows in the context of highly open capital accounts are likely to occur at significant costs. Macroeconomic stability could also be jeopardised due to the pro-cyclical nature of short-term capital flows, with high chances of abrupt reversals. Capital flow volatility leads to exchange rate instability (similar to the recent episode of INR depreciation in July 2013), fluctuations in official reserves, or in extreme situations, currency crises (such as the East Asian crisis). High capital inflows can result in inflationary pressures, rapid monetary expansion, widening of the current account deficit, and real exchange rate appreciation. Hence, a phased progressive integration of financial markets is required for the economic stability of a country.

There is a view that in analysing the long-run integration of markets, it is appropriate to use a long sample period consisting of several years, rather than large sample observations with high frequency daily or weekly data for a few years (Hakkio and Rush, 1991). However, over a very long horizon such as a decade, an empirical study has to contend with long-run integration being affected by structural shifts emanating from changes in the policy regime and the general economic environment. With the above issues as the backdrop, we have used seven stock price indices, viz., BSE, SSE, NYSE, STI, JNI, HSII and FTSE (as already noted in methodology part).

As regards frequency of data, we have used Bi-annual stock prices (January & June in every Year). The sample period covers from January 1998 to June 2015. Our choice of stock markets is guided by the consideration that India has significant trade and financial relations with the countries like USA, UK, Japan, China, Singapore and Hong Kong. In fact, global markets such as the USA continue to be India's single largest trade and investment partner. India has had long-standing trade and financial relations with the UK since the era of British colonial rule. As regards regional markets, India has experienced growing trade relation with China and a

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comprehensive economic cooperation agreement with Singapore. Hong Kong has also shown a significant trade and investment relations with India.

Now the questions that arise in this context are: Is the Indian stock market integrated with global and regional markets? What is the extent of such market integration? Which regional and global markets have dominant influence on India's stock market? etc. In this paper, an attempt has been made to provide possible answers to these issues.

The correlation matrix (Table-2) of the log values of stock indices in these markets indicate statistically significant co-movement of stock prices between BSE index and other global and regional indices (except for Japan) during the post-reform period.

Table-2 Correlation Matrix of the Log Values of Stock Indices during 1998-2015

	LSSE	LNYSE	LSTI	LJNI	LHSII	LFTSE	LBSE
LSSE	1	0.572**	0.706**	0.080	0.785**	0.344*	0.719**
LNYSE	0.572**	1	0.851**	0.484**	0.829**	0.767**	0.788**
LSTI	0.706**	0.851**	1	0.196	0.970**	0.578**	0.918**
LJNI	0.080	0.484**	0.196	1	0.190	0.730**	0.034
LHSII	0.785**	0.829**	0.970**	0.190	1	0.574**	0.935**
LFTSE	0.344*	0.767**	0.578**	0.730**	0.574**	1	0.415*
LBSE	0.719**	0.788**	0.918**	0.034	0.935**	0.415*	1

** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).

Fig.-2(a) Movements of Stock Indices in different markets

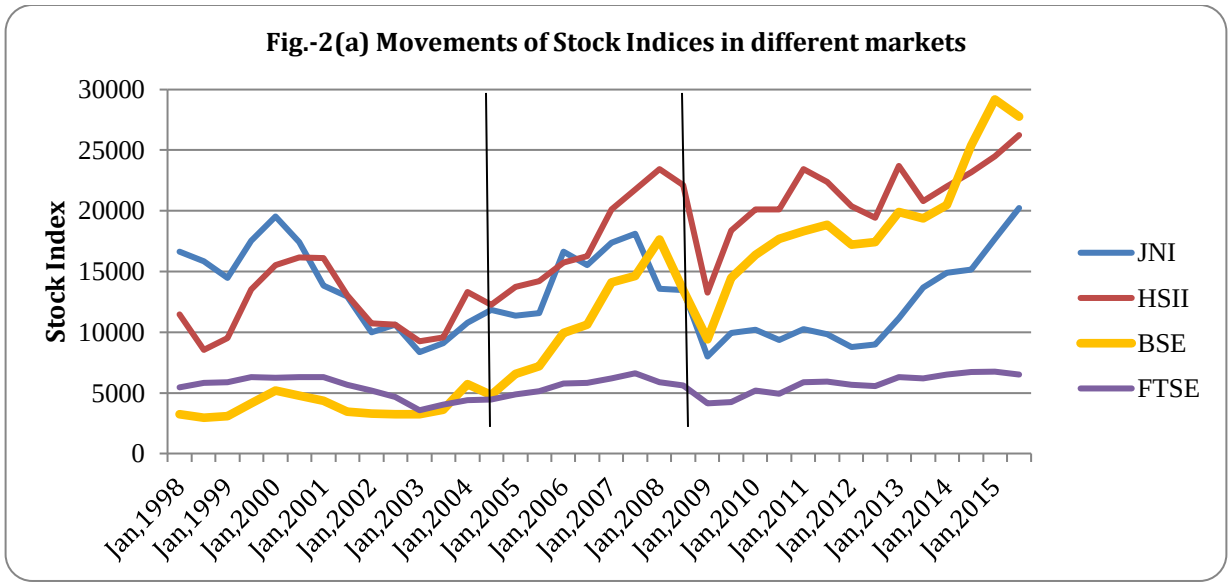

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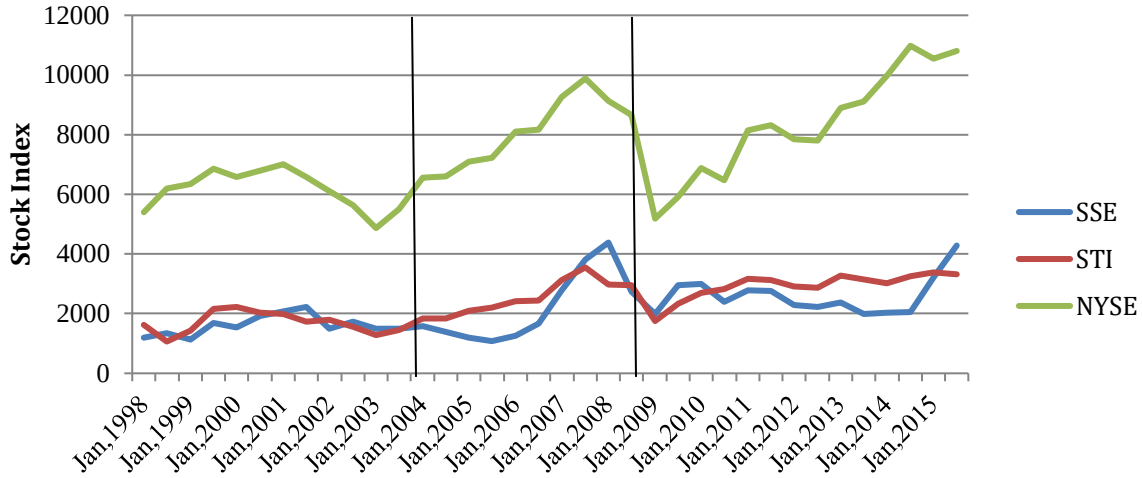
Fig.-2 (b) Movements of Stock Indices in different markets



However, if we divide this entire period into some sub-periods like 1998-2003, 2004-09 and 2010-15 based on the trend of movements in these stock indices as shown in Fig.-2 [along with a sub-period 1993-2003 on the basis of another study (Raj & Dhal, 2008)], we find that the correlation coefficients of the movements of stock indices in BSE and other indices like NYSE, FTSE, JNI, STI, SSE and HSII have improved more during 2003-09 and/or 2010-15 compared to the initial reforms period in India i.e. during 1993-2003 (Table-3).

Table-3: Periodic Changes in Correlation Coefficients of Stock Indices

	CHINA	USA	SINGAPORE	JAPAN	Hong Kong	UK	India	Period
	LSSE	LNYSE	LSTI	LJNI	LHSII	LFTSE	LBSE	
LBSE *a*		– 0.42	0.63	0.73	0.33	– 0.26	1	1993-2003
LBSE	0.492	0.578*	.837**	0.501	0.882**	0.471	1	1998-2003
LBSE	0.841**	0.522	.809**	0.408	0.922**	0.579*	1	2003-09
LBSE	0.423	0.874**	.814**	0.911**	0.816**	0.806**	1	2010-15

** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed). [LBSE a: Based on the study of Raj & Dhal, 2008]

Unit Root Test for the Time Series data

The movements of stock price indices over time show a stochastic process. Such a stochastic process is said to be stationary if its mean and variance remain constant over time and the value of the covariance between two time periods depends only on the distance or lag between these two time period and not the actual time at which the covariance is computed (Gujrati, 2008). If a

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time series is non-stationary, with a time-varying mean or a time-varying variance or both, it is not possible to generalize it to other time periods. So, for the purpose of forecasting, such non-stationary time series may be of little practical value. The test of stationarity has been done here with the unit root test. The Null hypothesis in the Augmented Dickey-Fuller Test is that each series of stock index during 1998-2015 has a unit root. The null hypothesis is rejected when either the estimated $t > t\alpha$ or the estimated $t < -t\alpha$.

The results of the Augmented Dickey-Fuller (ADF) unit root test (Table-4) suggest that all the representative stock price indices in their level form are non-stationary, with the deterministic trend including both the intercept and the time trend. In first difference form, however, these stock price indices are stationary. Thus, the chosen stock price indicators are first-order integrated series. Since this study is not aimed at showing any causality between these stock indices, so this result of ADF test would not affect the results regarding the correlation or co-movements of these indices.

Table-4 Unit Root Test Results

	In Level form (with intercept & Trend)	**At 1st Difference (with intercept & Trend)**
Stock Index	ADF t-statistic (Semi-annual)	ADF t-statistic (Semi-annual)
LSSE	–2.783778	-4.930422*
LNYSE	–2.416518	-5.581445*
LSTI	–3.123597	-6.368554*
LJNI	–1.659709	-5.900918*
LHSII	–2.923188	-6.075114*
LFTSE	–1.814520	-5.116907*
LBSE	–2.273653	-5.633145*

* Significant at 1% level

The cyclical fluctuations of each series of stock indices during 1998-2015 have also been worked out by filtering out the trend for each series using Hodrick-Prescott filter. The correlation matrix of these cyclical fluctuations (Table-5) also shows statistically significant positive correlation coefficients between the cyclical fluctuations of BSE (denoted by CBSE) and those for other stock indices in the global capital market. This implies that during the last two decades all these stock markets have become concordantly sensitive to any random shock.

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Table-5 Correlation Matrix of Cyclical fluctuations of Stock indices during 1998-2015

	CSSE	CNYSE	CSTI	CJNI	CHSII	CFTSE	CBSE
CSSE	1	.410	.522*	.252	.705**	.373	.758**
CNYSE	.410	1	.819**	.796**	.735**	.879**	.733**
CSTI	.522*	.819**	1	.704**	.922**	.864**	.776**
CJNI	.252	.796**	.704**	1	.600**	.758**	.705**
CHSII	.705**	.735**	.922**	.600**	1	.797**	.793**
CFTSE	.373	.879**	.864**	.758**	.797**	1	.667**
CBSE	.758**	.733**	.776**	.705**	.793**	.667**	1

** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).

The co-movements in stock indices can also signify a positive correlation between the returns from investment in different stock markets. There might be differences in these returns in different markets providing greater scope for arbitraging for the investors but the returns are expected to be positively correlated in a closely linked local and global capital markets.

The stock market return has been calculated as follows:

Stock Market Return $= \left[\left(\frac{P_{jt}}{P_{jt-1}}\right)-1\right]\times 100$ where P_{jt} = stock index at j^{th} market for the time period.

A statistically significant positive correlation between the returns in BSE, SSE, STI, NYSE, JNI, HSII and FTSE has become evident from the correlation matrix of these returns in different stock markets (Table-6).

Table-6 Correlation Matrix of Returns in Different Stock markets (1998-2015)

	SSE	STI	NYSE	JNI	HSII	FTSE	BSE
SSE	1	0.381*	0.404*	0.443**	0.563**	0.312	0.442**
STI	0.381*	1	0.601**	0.562**	0.862**	0.598**	0.695**
NYSE	0.404*	0.601**	1	0.648**	0.653**	0.910**	0.551**
JNI	0.443**	0.562**	0.648**	1	0.625**	0.633**	0.560**
HSII	0.563**	0.862**	0.653**	0.625**	1	0.589**	0.831**
FTSE	0.312	0.598**	0.910**	0.633**	0.589**	1	0.477**
BSE	0.442**	0.695**	0.551**	0.560**	0.831**	0.477**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

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Now if we look at the statistical moments of returns in these stock markets we find a positive correlation between risk (represented by the standard deviation of returns) and return (estimated by the mean return) in different stock markets. This conclusion gets a support when we plot the mean return against the standard deviations of these returns in different stock markets (Table- 7 & Fig.-3).

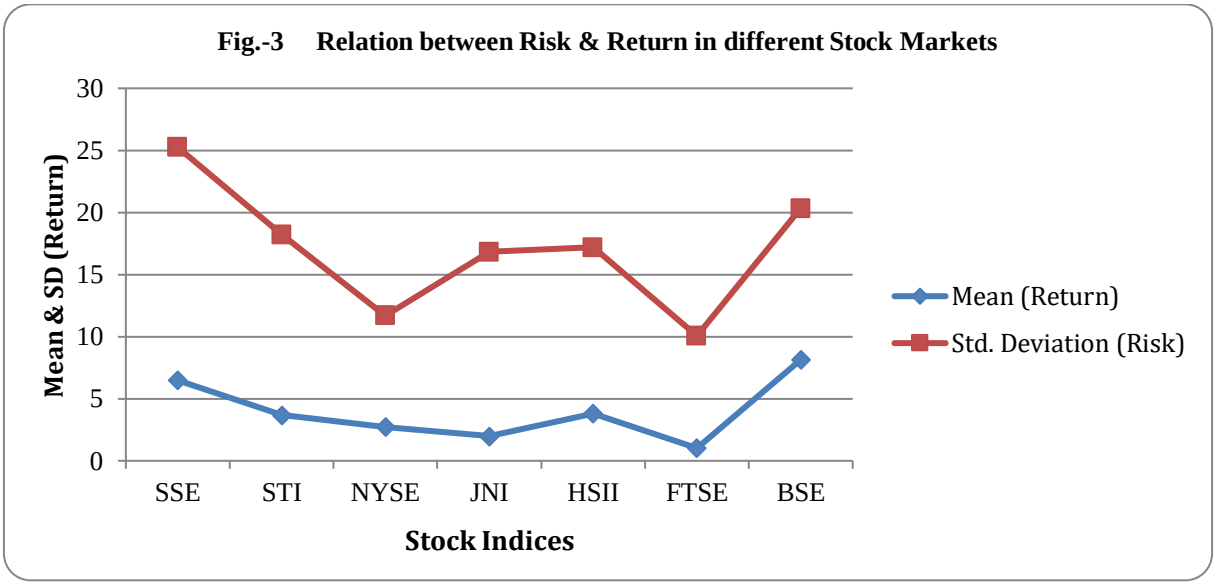
Table-7 Statistical Moments of Stock Returns during 1998-2015

	SSE	STI	NYSE	JNI	HSII	FTSE	BSE
Mean (Return)	6.50	3.69	2.74	1.98	3.82	1.02	8.14
Std. Deviation (Risk)	25.25	18.21	11.71	16.82	17.18	10.06	20.32
Kurtosis	– 0.067	1.240	4.076	.615	.958	1.334	0.298
Skewness	.579	.148	–1.184	–0.145	.088	– 0.575	0.596

Source: Author's own calculation

While the skewness of returns is negative for NYSE, FTSE and JNI, it has been positive in case of BSE, SSE, STI and HSII. Positive skewness indicates a distribution with an asymmetric tail extending toward more positive values, and negative skewness indicates a distribution with an asymmetric tail extending toward more negative values. The kurtosis of returns is found to be positive for all these indices except SSE. Positive kurtosis indicates a relatively peaked distribution while negative kurtosis indicates a relatively flat distribution.

Fig.-3 Relation between Risk & Return in different Stock Markets



Thus, it becomes clear that though risks and returns are different in different stock markets, their relation as a whole shows a positive co-movement in a global framework. If risk is denoted by X

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(as an independent variable) and the return by Y (as a dependent variable) then an exponential function $Y = aX^b$ shows statistically more significant relation between X and Y, viz. $Y = 0.463\ X^{0.115}$(Table-8 & Fig.-4).

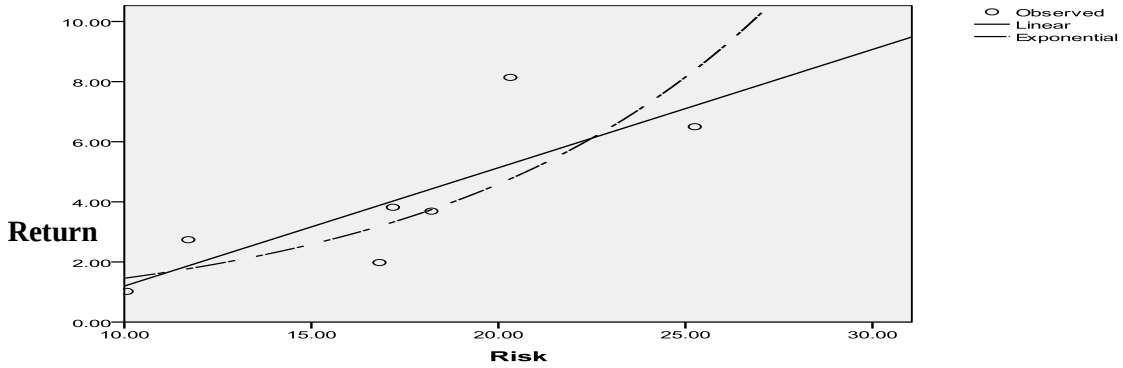
Table- 8 Model Summary and Parameter Estimates

Dependent Variable: Return

Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.638	8.803	1	5	0.031	-2.737	0.394
Exponential	0.691	11.207	1	5	0.020	0.463	0.115

The independent variable is Risk.

Fig.-4



Conclusion

In the pre-liberalization period, the Indian financial system was primarily a tool in the hands of the government. The market segmentation and excessive government control reduced its efficiency. Hence in 1991, along with other sectors of the economy, the financial market was liberalized with the aim of enhancing efficiency and integrating with the global financial market. Our paper attempts to evaluate the performance regarding integration.

We find that the returns on stocks enlisted in BSE have high, positive correlation with the same on other stock markets. While the risk and (mean) return on stocks of NYSE are on the lower side, those for stocks on BSE are on the higher side. We feel that this fact has implications from the policy perspectives as higher risk would discourage capital flow in the long run.

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