CHAPTER-1

Introduction

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Introduction

1.1 Stock Exchanges – A Component of the Broader Markets

Among the great variety of institutions that pursue the objective of providing service to the modern society, stock exchanges can be easily regarded to play the most critical role as the “agents and facilitators of entrepreneurial progress”. The onset of the Industrial Revolution resulted in substantial growth in the size of business enterprises. Such enterprises needed large amounts of investment, which could no longer be provided through proprietorships or partnerships, the traditional modes of doing business till then. Besides, these proprietorship or partnership form of business had always suffered from certain weaknesses. For example, small-time proprietors, or partners in a proprietary or partnership firm cannot easily leave the firm whenever they would like to. The reason behind this is that it may not always be possible to find buyers for the entire business, or even a part of the business, whenever the proprietors would like to sell it. Again, it is difficult for a person with limited savings to take advantage of proper business opportunity by utilising their limited means. Such problems can be even more complicated for large proprietorships and partnerships. Generally people will avoid investing in such firms, as it is very difficult to convert the invested savings into cash. Besides, there may be more convincing alternatives for converting these savings into cash (e.g., better investment opportunities, marriage, education, death, health, etc.). Hence it follows that the only proper alternative for large enterprises is to have a system where people own parts or shares of a business, and can buy or sell that share (or those shares) at their own convenience and according to their existing requirements. Therefore it follows that such a system involves division of the ownership of the business into numerous units so that each and every unit can be bought and sold independently and easily without affecting the operations of the business. It acts as a medium for directing small savings of the economy towards the entrepreneurial ventures.

Stock exchanges, regardless of their complexity and the myriad people and processes involved, constitute a mere subset of the capital markets. The latter in turn can be
treated as a component of the financial markets, the other being the money market. The basic composition of the markets can be demonstrated schematically as in Exhibit I:

**Exhibit I**

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Markets
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<tbody>
<tr>
<td></td>
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<tr>
<td>Commodity Markets</td>
<td>Financial Markets</td>
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<td></td>
<td></td>
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<tr>
<td>Money Market</td>
<td>Capital Market</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Market</td>
<td>Secondary Market</td>
</tr>
</tbody>
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From the structural point of view, the government policies influencing the stock markets can be categorised into the legislative, monetary, credit and fiscal elements. Once again, considering the overall focus of this effort is only on the stock market indices per se, it would be better to limit the consideration of these elements in Exhibit II:

**Exhibit II**

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Government Policies
<table>
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<tbody>
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<td></td>
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<tr>
<td>Legislative Policies</td>
<td>Monetary Policies</td>
<td>Credit Policies</td>
<td>Fiscal Policies</td>
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<td></td>
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<tr>
<td>SEBI Act</td>
<td>Indian Companies’ Act</td>
<td>Securities Contract and Regulation Act</td>
<td>Finance Act</td>
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<td></td>
<td></td>
<td></td>
<td>Income Tax Act</td>
</tr>
</tbody>
</table>
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From the procedural point of view, the effect of government policies can be illustrated as in Exhibit III:

**Exhibit III**

In modern companies the objectives mentioned at the outset are attained through the system of shares. It can be easily understood that a share stands for the smallest unit of ownership in a publicly owned company. A share certificate validates the ownership of each such fraction. As the total ownership of the company comprises of many such fragments, each of which is signified by the holding of a share certificate, it gives rise to a system that supports easy buying and selling of such ownership.

The stock market scenario in India is essentially dominated by the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). The former is India’s oldest stock exchange while the latter occupies primacy of position in terms of
volume of trading, particularly in the derivatives market. Each of these stock exchanges utilises a set of indices as a barometer for different dimensions of the market. Each such basket of indices consists of a primary index and a collection of sectoral indices. The first part of the analysis in the present work focuses on broad-based indices of the BSE and the NSE, viz., the Sensex and the S&P CNX Nifty (or simply the Nifty, as per popular use), respectively, and the sectoral indices covering areas like banking, information technology (IT), realty, infrastructure, etc. We have referred to the former as the primary index of the respective exchange. The attempt here is to examine the degree of inter-relationship among the primary index and its sectoral counterparts. This is sought to be achieved through the application of statistical tools like unit root testing and cointegration analysis.

While stock markets themselves can vary from country to country in terms of depth of the market, the securities and trading instruments, and indeed the nature of economic performance, the corresponding indices can also differ from one another with regard to the method of computation, the mode of selection of scrips for the calculation of the index, as well as the number of such scrips utilised for this calculation. In an era when globalisation and liberalisation have become commonplace in the business lexicon in the hitherto insulated developing nations, it has become customary to address the issue of integration of markets around the world. This issue holds particular relevance in a country like India where at one time the protectionist policies of the government ensured that the economy remained protected from occurrences on foreign shores. However, with the onset of liberalisation, Indian firms have been exposed to the full force of competitive forces from across the borders. In addition, Indian markets have also been flooded with products and service offerings from other countries. At the micro level domestic companies have had to brace themselves for the competition from the multinationals. A concurrent development has been the signing of Free Trade Agreements (FTAs) between and a number of other nations. The net effect of all these developments has been the creation of a globalised integrated system across the world. A relevant question that is often raised in this connection is the degree of such integration across countries.

In the present work we have tried to find the answer for the above question from the viewpoint of stock markets in India. One of the obvious results of global integration is
the undoubted influence exercised by developments in the stock markets of a
particular country (specially if it is one of the relatively larger or more powerful
economies of the world) on those from other nations. At a conceptual level this is to
be expected since share market participants in the latter will naturally look towards
the former for deducing the current state of the international market.

The second part of the analysis in this work considers seven major stock indices from
across the globe viz. – the Dow Jones Industrial Average (DJIA) and the NASDAQ
Composite in the USA, the FTSE 100 in the UK, DAX in Germany, Nikkei 225 in
Japan, Hang Seng in Hong Kong and the S&P/TSX Composite in Canada. On the
domestic side we have chosen the Sensex since for all intents and purposes it is the
most widely followed stock index in India. Using data collected over a ten year
period, we have attempted to determine whether a long-term relationship exists
between the Indian markets and leading markets across the globe. This is sought to be
achieved once again through the application of techniques like unit root testing and
cointegration analysis.

In the third part of our analysis we have considered a totally different dimension. Here
we have looked into the existence of inter-relationship, if any, between stock index
values on the one hand and commodity prices on the other. Outside the realm of the
stock exchanges the commodity markets have been attracting increasing popular
interest from the investing community in particular and the general public at large.
Since the commodities represent an alternative avenue for investment which would
otherwise find its way into more conventional savings instruments or securities, we
felt that it would be worth examining whether the stock and commodities markets
influence one another. For the purpose of our analysis we have chosen two
commodities that are important with respect to the general Indian consumer, viz.,
gold and oil.1 Once again the stock markets are represented by the Sensex. The prices
of the former and the daily values of the latter constitute the data element of this
analysis. As before, the ADF Test and the Johansen Cointegration Test are the
essential tools of this analysis.

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1 For the justifications behind choosing these two particular commodities, kindly refer to Chapter 7
1.2 Existing Problems in the Stock Markets

While stock markets undoubtedly provide some benefits in terms of availability of easier avenues for financing to the companies, greater opportunity for the general population to participate in such initiatives and better utilisation of the savings of the general public, there are also some inherent problems in this mechanism which are yet to be fully addressed. Some of the more fundamental problems in this regard are as follows:

(1) Despite the widespread popularity of the stock market mechanism, ultimately it represents only a microcosm of the real economy. This implies that the stock market can never be regarded to be truly representative of the real economy.

(2) Since the stock market is supposed to provide a reflection of the future, it is highly sensitive to events like the policies of governments or central banks, unemployment data or consumer spending. For this reason major occurrences like the recent sub-prime crisis in the USA, political unstability, war, natural disasters, etc can act as a trigger for spectacular market crashes. Similarly happenings with significant positive fallouts like the election of a popular government, investor-friendly measures taken by the state, etc can bring about major upheavals in the market.

(3) Stock prices can be highly fluctuating in nature. Such fluctuations may be much larger than the actual change in worth of the companies underlying the security. Further such rise or fall in prices may be accentuated through statements from political leaders, major business personalities and respected market specialists. This can lead to creation of market bubbles, ultimately ending in a market crash.

(4) False or misleading information may result in unnatural price changes that have no link with reality. A significant amount of trading activity takes place on the basis of ‘insider information’, where the ordinary investor ends up as the ultimate loser.

(5) Human psychology plays a very important role in the operation of stock markets. Investors often resort to the ‘herd mentality’. Instead of making their own decisions, people simply opt for the path chosen by others. This is a common mistake in investing which can have an important bearing on the markets.
(6) Owing to the unpredictability and risk inherent in the stock market, many people avoid investing in these markets. This is particularly true for countries like India. As a result the market cannot become more broad based. Consequently a limited number of individuals or institutions trading in substantial amounts can have a distortive impact on the market. This is not desirable.

1.3 Concepts of Index numbers

Basically the stock market is the place where the stocks of a listed company are traded. However, in a situation where millions of shares of numerous companies are traded in the stock market, it becomes necessary to have a single figure that sums up the overall performance of the market on a daily basis. The stock index takes care of this requirement. A good stock index captures the movement of well-diversified and highly liquid stocks. It captures the pulse of the economy for the ordinary person.

Indices have been commonly utilised as sources of information. In other words, a perusal of index values during a particular period of time can give a fair idea about the market performance at that point of time. In addition to this fundamental requirement, indices today satisfy new uses as index funds and index derivatives. With the help of index derivatives, not only can investors easily decide on the appropriate amount of risk exposure to an index (a practice which is known as hedging), but they can also implement forecasts about index movements (a practice which is known as speculation). In the modern economy the idea of risk management has been developed around the use of index derivatives in hedging activities.

Statistically an index is a number that measures the change in a set of values over a period of time. Proceeding from this fundamental definition, it can be said that a stock index represents the change in the value of a set of stocks that constitute the index. This statement can be further clarified by saying that a stock index number is the current relative value of the weighted average of the prices of a pre-defined group of entities. It has already been explained that indices are always expressed relative to the weighted average of prices at some arbitrarily chosen date or base period. The starting value (i.e. the ‘base’) of the index is generally set to a number like 100 or 1000.
It is obvious that a good stock market index is one that provides snapshot of the behaviour of the overall equity market. In addition to representing the market, such an index should be well diversified, yet highly liquid. Movements of the index should represent the returns earned by ‘typical’ portfolios in the country.

1.4 Brief Objectives of the Study

Following the aforementioned goal of identifying the inter-relationship, if any, among different indices, or between index values and commodity prices, we formulate the following objectives for the present effort:

1) Examining the data collected for the study in order to evaluate the presence or absence of stationarity

2) Evaluating the possibility of existence of long-term relationship using the Johansen Cointegration Test

3) Evaluating the causal relationships among variables utilising Granger Causality Test

These objectives are then utilised for studying the inter-relationships at three levels, viz., -

(i) Primary vs Sectoral Indices
(ii) National vs International Indices
(iii) Stock market indices vs commodity prices