CHAPTER – I

INTRODUCTION

1.1 Background of the Study

Stock Market is the mechanism created to facilitate the exchange of the financial assets with a maturity period of more than one year. It is a wide term embracing the buyers & sellers of Securities & constitutes all the agencies that assist the sale & resale of securities. In Stock Market people buy & sell securities which are less tangible than gold but not less valuable (Ritter & Silber, 2008)

Stock Market facilitates the exchange of financial securities which helps to mobilize internal & external financial resources. Stock Market is recognized as an effective way of raising funds for Commercial enterprises, & at the same time providing an investment opportunity for Individuals & institutions having surpluses. The enterprises can collect the funds from the Stock Market by issuing various securities, i.e., equities, corporate bonds, mutual funds, & Stock Derivatives. The activities of buying & selling securities in the Stock Market are extremely important for the efficient allocation of capital within economics (Adhikari, 2011).

An organized Stock Market stimulate opportunities by recognizing & financing productive Project that lead to diversify risk & facilitate exchange of goods & services (Mishkin, 2001).

Stock Market helps expansion of economic activity by providing liquidity to financial assets Traded in them. Investment in real assets require long- term commitment of capital where as Investors are often reluctant to commit their savings for long period. Liquid Stock Market makes Investment less risky because investors allow savers to buy & sell financial assets; they hold cheaply & quickly & change their portfolios at any time according to their risk-return Preferences. At that time, firms enjoy Permanent access to long term capital through equity Issues. By making assts less risky & providing easy access to permanent Source of capital, Liquid Stock market improves allocation of resources, boosts investment & enhances long- term Economic growth (Singh, 1997).

The Stock Market in Nepal has made notable strides during last one & half decade, its impact on the national economy is to being felt. The Market rates of returns on the Stock Exchange have shown high variability during the 15 years from 1994 to 2009. The Market Capitalization of the listed companies increased by 36 times & is around 58 percents of the Gross Domestic Product Of the country in 2009. The figure will be lower if the Market values of only frequently traded Companies are considered (K.C., 2010).

Stock Market contributes to the mobilization of domestic savings by enhancing the set of financial instruments available to savers to diversify their portfolios. In doing so, they prove an important source of investment capital at relatively lower cost. A well functioning & liquid Stock Market allows investors to diversify away unsystematic risk; increases the marginal Productivity of capital. The development of Stock Market is necessary for the development of the Capital market. As far as physical accumulation is also concerned with both Stock Market & Banks that provides sources of external financing for firms. For the purpose of resource Allocation, both creates information to guide the allocation of resources. The difference only is that the information is transmitted. Information in Stock Market is contained in equity prices while loan managers collect that in banks (Carporale et al, 2005).

Alile (1984) argued that the determination of the overall growth of an economy depends on how Efficiency the Stock performs in its allocative functions of capital. When the Stock Market Mobilizes savings, it simultaneously allocates the larger portion of the same to firms with relatively high prospects as indicated by their returns & level of risks. The significance of this Function is that capital resources are channeled by the mechanism of the forces of dem& & Supply to those firms with relatively high & increasing productivity by enhancing economic Expansion & growth.

1.2 Historical Perspective of Nepalese Stock Market

The history of the Nepalese Stock Market in Nepal dated back to 1937 A.D. as Biratnagar Jute Mill & Nepal Bank Limited floated their shares in the Market. The company Act was introduced in 1964. Government Bonds were issued for the

first time in 1964.The Securities Exchange Center (SEC) limited was established in 1973 for the purpose of facilitating & promoting the growth of Capital Market with the Government of Nepal & Nepal Rastra Bank. It was the first Capital Market institution in Nepal.

The SEC has operated under the Securities Exchange Act since it came in to fone in 1984. The interim Government (1990-1991) initiated a financial reform program & two indirect investment vehicles the citizen's investment schemes in the corporate sector. Then worldwide privatization & Economic Liberalization, it was felt that the operation of the SEC needed to change. So that it would be compatible with the changing economic system. Thus, in 1992 the Government initiated changes in the structure of the SEC by dividing it at the policy level into two distinct entities: The securities Board of Nepal (SEBON) & Nepal Stock Exchange (NEPSE) limited. Since that time they have been operating as the main constituents of the Securities Market in Nepal. At that time NEPSE limited was a non- profit organization that operates under the Securities Exchange Act of 1983.

NEPSE opened its trading floor on January 13, 1994 through its newly appointed licensed members & has adopted an "open out-cry'' system for transactions involving securities with trading hours 12 PM to 2 PM (TWO Hours). NEPSE automated the trading & settlement system by eliminating "open out-cry" from the fiscal year 2007/08. In 15 December 2006, the government started bond trading while automated trading system began in 24 August 2007. Market stabilizing measures like circuit breaker & Market halt was introduced in 15 September 2007. In 13 October 2007, trading through wide area network (WAN) began. In 28 November 2007, NEPSE provided in first time real time information from website (www.nepalstock.com). In 11 December 2000, trading hour extended from 2 hours to 3 hours. In 31 March 2008, NEPSE started trading of promoter's shares. NEPSE has turned itself in a profit seeking organization since 10 May 2008.

In January 2010, NEPSE & CDSL India agreed to set up central Depository System (CDS) in Nepal. In April 2010, trading was started out of Kathm&u. In September 2010, agreement with CMC India limited for CDS software & clearing settlement software was done. In November 2010, 34 new brokers companies permitted for license at SEBON. In November 2010, new company registered for CDS. In April

2011, CDS was opened for the general people. In August 2011, new brokers started trading. In January 2012, CDS by law was implemented. NEPSE currently has 221 listed companies in 10 sectors, there are 50 broker firms. The NEPSE is the only one secondary capital market in Nepal. NEPSE had brought about a number of changes in order to grade up itself & provide efficient & reliable services (http:// www.nepalstock.com).

1.3 Statement of the Problem

Various researches & policy makers alike have focused a lot of attention trying to underst& the various ways in which economic growth can be enhanced. The relevance of policy Implication cannot be overlooked due to the fact that the Financial Market Development & with Particular regard to the Stock Market can be an engine for growth, then the policy makers should Focus their attention & energies towards establishing & sustaining a dynamic Stock Market in Order to foster a sound & continued economic growth. Many literatures have emphasized greatly on the role of the banking sectors as the only Organized Capital Market in most developing Countries & neglecting the potential impact of Stock Market in efficient capital allocation & risk sharing in a Liberalized Financial Market. In an effort therefore to better underst& the relationship between Stock Market & more case studies might better identity the causal linkage Between Stock Market trends & economic growth (Granger, 1969).

Demirguc-kunt et al (1996 a) indicated that economics without well-functioning Stock Markets may suffer from three types of imperfections: First, opportunities for risk diversification are Limited for investors & entrepreneurs, Second, firms are unable to optimally structure their Financing packages & Third, Countries without well-functioning markets lack information about the prospects of firms whose shares are traded, there by restricting the promotion of Investment & it's efficient.

Due to lack of appropriate government policy & political uncertainty the Nepalese Stock Market has gone through fluctuation condition. During this research study period, there is lack of enough institutional investors in the market & more individuals investors are found in the Market; this is major drawback of the Nepalese Stock Market. However, the vital role of the Stock Market in economic growth &

development has not been empirically investigated there by creating a research gap in this area. This study is taken to examine the contribution of the Stock Market in the Nepalese economic growth. The Nepalese Stock Market is not more contributing to the economic growth due to low trading volume, absence of professional brokers, limited movement of share prices & limited information available to investor bottleneck created by the dearth of finance & forbid the process of economic growth. As a result, it is necessary to develop the Nepalese Stock Market (Pradhan, 2006).

This study specifically deals with the following research questions:

i. What is the relationship between economic growth & concern stock market variables in Nepal?
ii. Is there any co-integration between Stock Market indicators & economic growth?
iii. What is the problem of Stock Market in Nepal?

1.4 Objective of the Study

The general objective of the study is to examine the Growth of Nepalese Stock Market. Moreover the specific objectives of the study are as follows:

i) To analyze the relationship of the Nepalese Stock Market determinants & economic growth.
ii) To find if there is any co-integration between the Stock Market indicators & economic growth.
iii) To identify the existing problems faced by the Nepalese Stock Market

1.5 Significance of the Study

Stock Market recognizes the situation of economy. When Stock Market index is going up the economy is better off & when Stock Market index is going down the economy is worse off. Stock Market indicates have always been of great important while analyzing long term growth patterns in the economy, forecast business cycle patterns & other time series measures of economic activities. Economic growth comes with more earning capacity, opportunities to save & also the opportunity to

invest. It must be noted that economic growth is too a great extent, dependent on the industrialization a country (Bhattrai, 2010).

The Stock Market helps to channel public savings to industrial & business enterprises. Mobilization of such resources for investment is certainly a necessary condition for economy to take off but the quality of their allocation to various investment projects is as important as a factor for growth. Stock Market helps agents to manage liquidity & productivity risk by eliminating premature capital liquidation which increases corporate sector productivity. Stock Market also accelerates growth indirectly by reducing liquidity risk, which encourage enterprise investment (Levine, 1991).

Stock Market can promote industrial activities & employment opportunities through production & service sectors expansion by supplying financial resources at low & competitive cost. Stock Market contributes to the mobilization of domestic saving by enhancing the set of financial investment instruments to savers in order to diversify their portfolios & they provide an important source of investment capital at relatively low cost (Dailami & Aktin, 1990).

1.6 Limitations Study

This study has the following limitations:

i) This study covers the time series data from 1994-2013
ii) This study is based on annual data as there is no availability of quarterly data figures on all variables.
iii) This study is limited only to the determinants, trends, & situation of Stock Market in Nepal.
iv) This study assumes that economic growth is affected by various factors such as Market Capitalization ratio, NEPSE index, Total value of traded Ratio, share of companies, Turnover Ratio, liquidity, Concentration Ratio etc. However, due to the data availability, time & budget constraints, only Market Capitalization Ratio, Total value Traded Ratio, Turnover Ratio & Concentration Ratio are considered by this study in order to identify the determinants of economic of economic growth in the context of Nepal.

v) The findings of the study may not be applicable for other countries due to socio-economic constraints, legal provision, geo-graphic condition, stage of development etc.

1.7 Organization of the Study

To present this study in a systematic way, this study has been organized into five chapters. Each chapter tries to deal on some aspects of Stock Market & Stock Market growth. Chapter I is the introduction part. It includes the background of the study, Historical Perspective of Nepalese Stock Market, statement of the problem, objectives of the study, significance of the study, limitations of the study. Chapter II deals literature reviews with the theoretical & empirical reviews. Finally, it concludes the summary of the reviewed literature. Chapter III forms the research methodology including introduction, the general model, definition of variables, estimation methodology, unit roots, Augmented Dickey Fuller (ADF) test, OLS regression analysis, Johansen Co-integration Test, Granger Causality Test, nature & source of data & summary of the variables. Chapter IV deals with the presentation of data & empirical analysis of the study with various indicators of the Stock Market & economic growth. Eventually, Chapter V includes the summary, conclusions & recommendations of the study.

CHAPTER – II

LITERATURE REVIEW

2.1 Introduction

This chapter an attempt is made to review both the theoretical & empirical literature on the relationship between Stock Market & economic growth. The theoretical literature review is organized into three Sections one is look at the relationship between Stock Market development & economic growth. Second section deal with the role of Stock Market development in economic growth & the determinants of the Stock Market development while the empirical literature review, on the other h&, is structured into two sections.

2.2 Theoretical Literature Review

2.2.1 The Relationship between Stock Market Development & Economic Growth

The relationship between Stock Market Development & Economic Growth involves a lot of theories. This review mainly looks at the nature of the relationship between Stock Market Development & Economic Growth. There are two main opposing theories underpinning the relationship between Stock Market Development & Economic Growth. These are the "supply-leading" & "dem&-following" hypotheses as highlighted by (Patrick, 1966).

The proponents of the "dem&-following" hypothesis Robinson (1952) contend that financial system including Stock Market Development plays a trivial role in Economic Development; Stock Market Development simply responds to economic growth.

According to dem& following hypothesis, the growth in Stock Market Development is driven by the growth in real economic activities. He argues that the expansion of an economy will create new dem& for certain financial services. Such increase in dem& resulting from high economic growth will exert pressure to establish larger & more sophisticated financial institutions to create certain financial instruments &

arrangements to satisfy the new dem& for their services. As economies grow or develop, more funds will be needed to meet the rapid expansion. He suggests that economic growth seems to have created a new dem& for financial assets, including Stocks Traded in Organized Stock Exchange.

Furthermore, it has been argued that economic growth enlarges the stock ownership base in the economy through the rise in per capita income. When per capita income of a country increases, it creates the opportunity for the citizens to participate in the Stock Market by acquiring ownership of companies. Dem& for financial services which results in the development of financial institutions & market.

Moreover, other economists make a stronger case against the development of Stock Market as part of the Capital Market. They argue that Stock Market is likely to hurt economic growth due to their susceptibility to market failure, which often manifest in the volatile nature of Stock Market in many developing countries (Singh & Weiss, 1998). In fact, some consider stock markets as "casinos" which have potentially negative effect on economic growth (Singh, 1997). They are of the view that Stock Market Development rather has a negative relationship with economic growth. Again, the traditional growth theorists believe that Stock Market development & economic growth are not correlated because of the level effect of the former (Shahbaz et al., 2008).

On the contrary, the proponents of the "supply-leading" hypothesis which include McKinnon (1973) maintain that financial development precedes economic growth. This hypothesis claims that the establishment of financial institutions & Market would increase the provision of financial services & thus lead to economic growth.

Levine & Zervos (1998) support the view that Stock Market promotes economic growth. They observe that the development of Stock Market is positively related with the level of economic development & accumulation of capital. Hence, Stock Market is not "casino". This means that the development of Stock Market matter a lot since they channel both domestic & foreign capital into productive investible projects as well as the provision of liquidity. The fact is that well-functioning Stock Market, along with well-designed institutions & regulatory systems bring about economic growth.

Patrick (1966) point out the emphasize that financial development & economic growth are positively interdependent which can be described as "feedback" hypothesis. According to this hypothesis, a country with well-developed financial system & for that matter well-developed Stock Markets could promote economic growth through technological & product innovation. Schumpeter (1912) this, in turn will create high dem& for the financial arrangements & services to which financial institutions respond to stimulate higher economic performance. Patrick (1966) asserts that the "supply-leading finance" (i.e. financial development) may not be a necessary condition or precondition for ensuring self-sustained economic development. Rather, it offers an opportunity to induce real growth by financial means.

Montiel (1995) argues that growth & financial development/intermediation are mutually dependent on the grounds that the level of per capita income partially determines the level of financial development, while the level of financial development/intermediation can contribute to economic growth in the long-run.

Although the debate on the nature of relationship between Stock Market Development & Economic Growth remains inconclusive (Levine & Zervos 1996) observe that a prominent line of research stresses the importance of stock market development in economic growth. It is equally important to emphasize that Stock Market Development & Economic Growth are positively interdependent since the level of development of one affects the other.

2.2.2 The Role of the Stock Market Development in Economic Growth

The Stock Market is an important financial function which ensures efficiency in capital allocation to induce economic growth. Levine & Zervos (1996) observe that Stock Market influence economic growth provision of Liquidity, Mobilizing Capital Resources, Facilitating Risk Diversification, Acquisition of information about firms & corporate control. However, the critics cast doubts on the contributions of the Stock Market to long-run economic growth.

The Stock Market is expected to promote economic growth through encouraging both domestic savings & foreign capital inflow by providing opportunities for investors with financial instruments that may better meet their risk preferences & liquidity

needs. It also provides an avenue for firms to raise capital through equity issues at lower cost for financing their businesses (Rousseau & Wachtel, 2000).

Greenwood & Smith (1996) in particular, show that Stock Market lower the costs of mobilizing savings thereby facilitating investment into the most productive technologies. Mayer (1988) disputes the importance of the Stock Market in raising capital. He argues that new equity issues account for a very small fraction of funds required for corporate investment. Moreover, the Stock Market may influence economic growth through their liquidity which ensures that investment in firms is not disrupted. Since high-return projects require a commitment of long-term capital, liquid equity Market help investors who cannot cope with liquidity risk & are therefore reluctant to commit their savings for long periods to easily & quickly sell their shares to those who are not suffering from liquidity shock. In this case, capital is not prematurely removed from firms to satisfy short-run liquidity needs (Levine & Zervos, 1996). It is important to point out; however, that theory is unclear about the exact effects of greater stock market liquidity on economic growth. Some models show that increased Stock Market liquidity can hurt economic growth (Levine, 1997). Bencivenga & Smith (1991) demonstrate that by reducing uncertainty, greater liquidity may reduce savings rates which will have adverse effect on the rate of economic growth.

Furthermore, the Stock Market Development can serve as an important vehicle for risk diversification through internationally integrated Stock Market. Smith (1994) shows that Stock Market Development could influence economic growth through risk diversification in the internationally integrated Stock Market. He also showed that greater risk diversification can influence growth by shifting investment into higher-return projects, thereby improving resource allocation & accelerating economic growth. This theory also suggests that greater risk sharing can slow economic growth. Integrated Stock Market can lower savings rates, slow growth, & reduce economic welfare.

The Stock Market can also promote economic growth by aggregating information about firms' prospects, thereby directing capital to investment with higher returns (Holmstrom & Tirole, 1993). The efficient Stock Market, by reducing the costs of acquiring information & providing better information about firms, will enable

investors to acquire information about investment opportunities & monitor firms. This will improve resource allocation & result in a higher rate of economic growth (Levine & Zervos, 1996). On the other h&, casts doubts on the role of stock markets in stimulating information acquisition & hence improving informational asymmetries. He argues that well-developed stock markets quickly reveal information through price changes, creating a free-rider problem that reduces investor incentives to conduct costly search for information. Again, in spite of the fact that the efficient stock markets may reflect all available information, that information has little effect on resource allocation (Stiglitz, 1989).

Bhide (1993) argue that well-functioning stock markets will not improve corporate governance; instead, more liquid stock markets may adversely influence corporate control & ultimately impede effective resource allocation & productivity growth. He argues that greater Stock Market liquidity encourages investor myopia & this adversely affects corporate governance. Thus, with more liquid Stock Market, dissatisfied investors can quickly & easily sell their shares in a company. Thus the Stock Market provides several financial services that promote long-run economic growth.

2.2.3 Determinants of Stock Market Development

The theoretical literature emphasizes that a well-functioning Stock Market plays important role in resource mobilization & allocation of funds into high-return investible projects through various mechanisms as well as deepening the financial system which in the long run promote economic growth (Levine & Zervos, 1996;). A well-developed Stock Market, however, is underpinned by a combination of factors which include sound macroeconomic/ fiscal policies, institutional development, appropriate legal & regulatory framework & availability of professional financial intermediary institutions such as brokerage firms & investment banks or underwriters (Paddy, 1992).

Writing on the development of Financial Market Paudel (2007) identifies four broad factors that are critical to the development of successful Capital Market including the Stock Market. These are:

The existence of a sufficient number of Market Intermediaries such as Stock brokers, Issue Manager, Security dealer & Market Maker. Reasonably well developed accounting, auditing & disclosure st&ards, so that all needed financial information may be available, transparent, & accurate; establishment & vigorous enforcement of rational & comprehensive legal & regulatory frameworks, so that abuses are prevented & investors protected.

Paddy (1992) who shares a similar view identifies two basic building blocks necessary for a thriving Stock Market. The first block concerns a macroeconomic & fiscal environment conducive to the supply of good quality securities & sufficient dem& for them. The second one relates to a Market infrastructure capable of supporting efficient operation of Stock Market infrastructure, comprises institutional, regulatory & legal infrastructures. Popiel (1991) considers the legal & regulatory frameworks to be critical for maintaining the integrity of the Capital Market & sustaining investor confidence. Aryeetey (2003) supports the view that investor protection should be paramount in Capital Market regulation. He concludes that small investors should be properly protected through strict enforcement of securities laws & regulations.

Pagano (1993) argues that the existence of transparency & regulations increases investor confidence & has a greater impact on the development of financial market. It is believed that tightening the regulatory environment by increasing disclosure requirements for new stock listings, reduction in taxes & fees on transactions will encourage the development of Securities Market (Feldman & Kumar, 1995). These points to the fact that the development of a successful Stock Market will depend to a larger extent on the enforcement of securities laws & regulations which seek to safeguard the interest of the investors so as to attract both domestic & foreign capital.

Moreover, macroeconomic factors such as income, interest rate, investment, stock market liquidity & inflation play important role in the development of capital markets (Garcia & Liu, 1999). A stable & favorable macroeconomic & political environment provide conducive & harmonious atmosphere necessary to attract savings & investments for a sustained economic growth. Demirguc-Kunt (2006) observes that well functioning financial systems do not only require a stable political system, but also fiscal discipline & stable macroeconomic policies on the part of the government.

Popiel (1991), on the other h&, notes that because investors are very sensitive to political or economic uncertainty, a combination of macroeconomic & sector policies aimed at the maintenance of political stability, steady economic growth & low inflation should be pursued to provide conducive environment for thriving Capital Markets. This suggests that political or macroeconomic uncertainty can scare away both the actual & potential investors which may have adverse effects on resource mobilization in particular & economic growth in general.

The development of good quality institutions can also affect the attractiveness of equity investment & hence the development of stock market (Feldman & Kumar, 1995). Billmeier & Massa (2007), institutions can be interpreted as the set of rules & norms that shape the social, political & economic interactions among the members of a society. Paddy (1992) indicates that institutional infrastructure relates to intermediaries that provide important financial services which include trading, investment management & advisory services; market & market-related service providers for Stock Exchanges, over-the-counter markets & providers of ancillary services such as accounting & auditing, & legal advice.

Billmeier & Massa (2007) identify two ways by which institutions may affect stock market development. Firstly, better institutions which are marked by more transparency, less corruption, & better protection of property rights foster investor confidence, thus leading to a high dem& for securities & larger Stock Market. Secondly, better institutions promote economic growth in general &enhance market fundamentals that lead to highly developed Stock Market.

2.3 Empirical Review

The link between Stock Market & Economic Growth has been empirically, investigated by researchers in both Nepal & others countries some empirical studies on the link between Stock Market & Economic Growth between National as well as international level as explained below:

2.3.1 Review of International Empirical Studies

Levine & Zervos (1996) have presented an article entitled "Stock Market Development & Long Run Growth" with the objective to examine the relationship between Stock market Development & economic Growth. This study indicates that there is a strong empirical association between Stock Market Development & long run economic growth using secondary data, cross-country regression analyses & partial correlation coefficient & have concluded that the Stock Market Development is positively associated with Economic Growth.

Levine & Zervos (1998) have presented an article entitled "Stock Markets, Banks & Economic Growth" in the American economic Review. In this article, they seek to analyze do well functioning Stock Markets & banks promote long-run economic growth? This paper studied the empirical relationship between various measures of Stock Market development, banking development & long run economic growth concluded & that even after controlling for many factors associated with growth. Stock Market liquidity & robustly correlated with contemporaneous & future rates of economic growth, capital accumulation, & productivity growth. This result is consistent with the view that a greater ability to trade ownership of an economy's productive technologies facilitates efficient resource allocation, physical capital formation & faster economic growth. Furthermore, since measure of Stock Market liquidity & banking development both enter the growth regression significantly the findings suggest that banks provides different financial services from those provided by Stock Markets. Thus, to underst& the relationship between the financial system & long run growth more comprehensively, we need theories in which both Stock Markets & banks arise & develop simultaneously while providing different bundles of financial services to the economy. We find to support for the contentions that Stock Market liquidity, international Capital Market or stock return volatility reduces private saving rates or hinder long- run growth. This paper finds a strong positive link between financial development & economic growth, & the results suggest that financial factors are an integral part of the growth process.

Hanousek & Canmpos (1999) have presented a working entitled "Do Stock Markets Promote Economic Growth?" with the objective to seek the role of stock market in economic growth in any country. They explained the three Stock Market

Development indicators MC, TV & NOLC to seek the role of Stock Market in the economic growth of any country. & concluded that there is positive relationship between market capitalization & future economic growth because the efficient market anticipated future growth anticipated future growth into current period process. Higher the turnover of the Stock Market, higher will be economic growth. The active Stock Market is crucial in reallocating capital in productive, profitable economic sectors. If the number of the listed companies is in increasing order, then the economic growth rate will be higher & vice-versa. On the basis of these indicators, the study attempted to describe the Stock Market as an important engine of economic growth in developing countries like Nepal.

Mohtad & Agarwal (2004) have presented an article entitled "Financial Market & the Financing Choice of Firms" with the objective to examined the Capital Market & economic growth in developing countries using a panel data approach that covers 21 emerging markets 21 years (1977-1997). They found that turnover ratios is an important & statistically insignificant determinant of investment by turn are significant determinant of aggregate growth. Foreign direct investment is also found to have a strong positive influence an aggregate growth. The result of their study indicates that both turnover ratio & foreign direct investment are important variables as determinants of economic growth.

Singh & Athpathu (2008) have presented an article entitled "Stock Market Performance & Economic Growth" with the objective to study the Stock Market performance & economic growth in case of Sri-Lanka, over the period of study 1997 to 2008. The study found that the Stock Market Development is an influential factor for economic growth in Sri-Lanka. The statistical evidence is based on co-integration analysis adopting Johansen's methodology. The Vector Error Correction Model (VECM) approach showed the long run dynamics of the variables taken together adjusting over the duration to each variation to maintain an equilibrium level. The economic growth adjustments to Stock Market deviating evidence of error correlations to maintain a stable relationship over the period of the study. The Granger test also provides evidence of causality from Stock Market performance to economic growth. The study establishes that the direction of this causal relationship is primarily from Stock Market performance to economic growth. There had also been limited

evidence of bi-directional causality indicating economic growth impacting the market performance. This means that sustainable economic growth would lead to Stock Market development. Therefore the study suggests that the performance the Stock Market influence real sector development generating real economy activity.

Deb & Mukherjee (2008) have presented an article entitled “Does Stock Market Development cause Economic Growth?” With the objective of the relationship between stock market development & economic growth on their part investigate the causal relationship between stock market development & economic growth for the Indian economy using quarterly data for the period 1996 to 2007. They use real GDP growth rate as a proxy for economic growth & real market capitalization ratio, real total value traded ratio & stock market volatility as stock market indicators. Applying Granger non-causality test proposed by Toda & Yamamoto (1995) to determine the direction of causality, the results suggest a bi-directional causation between real stock market capitalization ratio & economic growth at 1% significance level. The implication of both studies is that economic growth & stock market development are mutually dependent. Moreover, both studies find that economic growth leads to stock market development measured by stock index & value traded ratio at 5% level of significance in Pakistan & India, respectively.

Mohammed (2010) has presented an article entitled "Does Stock Market Development Play a Major Role? The Determinants of Economic Growth in Pakistan”, with the objective to analyze the relationship between stock market development & economic growth in Pakistan. This paper employs FMOLS & ARN bounds testing approach to examine the relationship between various factors & economic growth with special attention to the relationship Stock Market Development & Economic Growth both in the short run & long run time series data for Pakistan for the period from 1971 to 2006. This finding suggests that there exist significant positive relationship between Stock Market Development & Economic Growth. The empirical result Stock Market liquidity has positive effect on economic growth. This results also shows that human capital & physical capital influence economic growth positively.

Nazir et al (2010) have presented an article entitled “Stock Market Development & Economic Growth” with the objective to investigate the relationship between Stock Market Development & Economic Growth in Pakistan from 1986 to 2008

using time series analysis. They used to measure the Stock Market Development variables namely, Market Capitalization & value traded ratio as proxies for market size & liquidity. The result showed that both measures of Stock Market Development impacted positively on economic growth in Pakistan for the period of study. The findings indicate the Stock Market play a vital role for resource mobilization, employment generation & economic growth.

Mishra et al (2010) have presented an article entitled "Capital Market Efficiency & Economic Growth," the case of India with the objective to examined the impact of Capital Market Efficiency on economic growth of India using the time series data on market capitalization, total market turnover & stock price index over the period spanning from the first quarter of 1991 to the first quarter of 2010. Their study reveals that there is linkage is established through high rate of market capitalization & total market turnover. The large size of capital market as measured by greater market capitalization is positively correlated with ability to mobilize capital & diversify risk on an economy wide basis. The increasing trend of market capitalization in India would certainly bring capital market efficiency & thereby contribute to the economic growth of the country.

Odhiambo (2010) investigated the direction of causality between the Stock Market Development & economic growth in South Africa using annual time series data from 1971 to 2007, with the objective to examine the causal relationship between Stock Market Development & Economic Growth. The study used three proxies of stock market, variables namely, stock market capitalization, stock market traded value & stock market turnover & real GDP per capita a proxy for economic growth. It used the Autoregressive Distributed Lag Model (ARDL) Bounds testing approach in the analysis. This study showed that the causal relationship between stock market development & economic growth is sensitive to the proxy used for measuring the stock market development. The findings of this study are consistent with the conventional supply leading response in which the financial sector is expected to precede & induce the real sector development.

Ahmad et al (2012) have presented an article Stock Market Development & Economic Growth with the objective to examine the relationship between Stock Market Development & Economic Growth of two Asian developing countries i.e. Pakistan

&Bangladesh. Use dependent variable GDP & independent variables Market Capitalization, Total Value of Stock Traded & Stock Turnover Ratio using Ordinary Least Square (OLS). The result showed that both Stock Market Development & Economic Growth in each country has significant positive relationship. It is found that Stock Market Development leads to Economic Growth. However, market capitalization is found to have stronger influence in Pakistan where as Bangladesh stock market is found more liquid & small in size to influence the economic growth.

Vazakidis & Adamopoulas (2010) have presented an article entitled "Stock Market Development & Economic Growth" with the objective to examined the causal relationship between stock market development & economic growth of France for the period 1965- 2007, using a VECM. The estimated coefficient of error correction term found statistically significant with negative sign, which conformed that the economic growth caused stock market development in France. This study concluded that economic growth has positive effect on stock market development while interest rate has negative effect on stock Market development.

Bernard & Austin (2012) have presented an article entitled The Role of Stock Market Development on Economic Growth in Nigeria with the objective to measure the relationship between Stock Market Development indices & Economic Growth. The method of analysis used is Ordinary Least Square (OLS) technique. Using the variables Stock Market Capitalization Ratio, Value Traded Ratio, Turnover Ratio & Growth variable used Gross Domestic Product. This empirical results indicates that Market Capitalization & Value Traded Ratio have very weak negative correlation with economic growth. Also, Stock Market Capitalization has a strong positive correlation with Stock Turnover Ratio. This result implies that liquidity has propensity to spur economic growth in Nigeria & that market capitalization influences market liquidity.

Kolapo & Adaramola (2012) investigated the capital market on economic growth relationship in Nigeria from 1990 to 2012 using time series analysis. They used to measure the capital market variables namely, Market Capitalization (MCAP), Total New Issue (TNI), Value of Transactions (VLT), Total Listed equities (TLE), & Government Stocks (LEGS). The Economic Growth proxied by Gross Domestic product (GDP). They used the Johansen co-integration & Granger Causality Tests in

the analysis. The result showed that the Nigerian capital market & economic growth are co-integrated. This finding also showed that positive impact; the capital market plays on the economic growth of the country.

Bayar etal (2014) have presented an article entitled Effects of Stock Market Development & economic Growth with objective to examine the relationship between Stock Market Development & Economic Growth in Turkey during the period 1999-2013, by using Johansen Juselius Co integration Test & Granger Causality Test. They used to measure the Growth variable namely, Real Gross Domestic Product (RGDP) & Stock Market Development variables namely, Stock Market Capitalization, Total value of Stock Traded & Turnover Ratio. These empirical results indicate that there is a long run relationship between economic growth & stock market capitalization, total value of stock traded, turnover ratio of stocks traded & also there is unidirectional causality from stock market capitalization, total value of stocks traded & turnover ratio of stock traded to Economic Growth.

2.3.2 Review of National Empirical Studies

Paneru (2003) has presented thesis on stock market & economic growth with the objective to examine the role of stock market in economic growth of the nation of secondary data, correlation, multiple regression & econometric model has describe that stock market works as the medium of canalize the saving resources towards the productive uses in the form of investment. Whereas the secondary market does it by the perception of investment & firms about the economic activities & prospect. The primary market plays the vital role directly in increasing the investment level & thus capital stock of firms through mobilizing the saving of individual investors as well as institutional bodies. From different findings, he has concluded that size of the primary as well as secondary market has the positive influence on the overall size of the economy. Saving behaviors of the firm as well as individual our affected by the way prices are moved in secondary stock market. Increasing issue of equity by the firms indicate that the investors are willing to take part in investment process & thus derive the economic process. & also booming market helps the government to collect revenue from capital gain taxes.

Shrestha (2005) has presented an article entitled “Growth of stock market in Nepal” with the objective to trace out the current situation of primary market from the year 1994/95 to 2004/05. The researcher used st&ard deviation, percentage, multiple bar diagram to trace out the picture of stock market in Nepal. Her study was based on secondary data with the large samples of listed companies from different sectors. The researcher applied historical data & statistical tools in her study. Thus she concluded that there is significant development in various stock market indicators.

G.C & Neupane (2006) have presented an article entitled “Stock Market & Economic Development: a Causality Test.” To examine the existence of causality relationship between stock market & economic growth in Nepal based on the time series data for the year 1988 to 2005, employing Granger causality test & using equally weighted single indicator of three stock markets development indicators, the average ratios of market capitalization to GDP, annul turn over to GDP & the annul turn over to market capitalization. The study found that stock market growth & economic growth have long run stable & causal relationship. This finding also showed that stock market impacts positively on economic growth.

Lamsal (2007) has presented thesis entitled "Financial Liberalization & Stock Market Growth in Nepal" with an objective to examine a systematic investigation of financial liberalization policies & stock market growth using secondary data & multiple regression has applied. Although stock market liberalization is often blamed as causing crises it is concluded that the effects of liberalization on stock market growth is positive. However, there is no professional consensus on the net benefits of financial liberalization. Various measures of stock market development & various statistical analyses indicate that Nepalese stock market is in developing stage. Low market capitalization & lower number of listed companies shows the smaller size of stock market while higher deviation on NEPSE index shows more ricks in investment. Apart from this, regression analysis shows that only market capitalization has significant impact on growth of domestic product (GDP).

K.C (2010) has presented an article entitled “Stock Market Development in Nepal: Issues & Challenges for Reform.” The objective of this study was to highlight the issues & challenges of Stock Market Development in Nepal by using various measures of stock market development indicate that the stock market in Nepal is

undeveloped & has failed to show significant impact on the overall national economy of the country. Small market size has made it vulnerable to manipulation & price rigging, low turnover ratio & value traded ratio to volatility & high concentration ratio indicates that stock market in Nepal is highly illiquid & risky. Investors tend to avoid stock market because they cannot invest in securities according to the year risk- return preference.

Joshi (2010) has presented an article entitled "stock market development & economic growth: a case of Nepal." To examines the relationship between stock market development & economic growth in Nepal for period of mid-July 1994 to mid-July 2008. The study used Market size & liquidity. Market size denotes Market Capitalization Ratio (MCR), MCR is the MC divided by GDP, Market liquidity which includes total value traded ratio & turnover ratio. Total value traded ratio is the total value of share traded in stock exchange by GDP & turnover ratio is the total value of share traded in stock exchange divided by market capitalization & real per capita GDP to measure economic growth. It used the Karl Pearson correlation in this analysis. The whole study divided into two parts the first stage & second stage. The results first stage part showed the relationship between stock market development & economic growth in Nepal. In the first stage of stock market development, the results are to be statistically insignificant. In second stage both measure of stock market development, market size & liquidity are positively related with economic growth. The finding indicates that stock market activities have positive effect on economic growth in Nepal.

Regmi (2012) has presented an article entitled "Stock Market Development & Economic Growth: Empirical Evidence from Nepal" in order to examine causal relationship between stock market development & economic growth in Nepal for the period 1994–2011, using unit root test, co-integration, & vector error correction models. The result shows that the error correction terms in the economic growth equation is statistically significant with correct negative sign, indicating that stock market development has significantly strengthened economic growth in Nepal. These findings suggest that stock market development has significantly contributed to the economic growth in Nepal.

2.4 Conclusion

The theoretical literature on stock market development & economic growth focused specifically on the review of the relationship between stock market development & economic growth, the role of stock market development on economic growth, the determinants of stock market development. The review of the relationship between stock market development & economic revealed that there are two main opposing theories, "supply-leading & dem& following" hypotheses, underpinning the causal relationship between financial development in general stock market development in particular & economic growth. The bulk of the theoretical literature maintains that stock market development plays a key role in economic growth. It is clear that both of them are mutually dependent in the process of economic growth.

The review also showed that economic growth influences the dem& for & supply of shares of listed companies on stock markets. It therefore drives stock market development in an economy. Moreover, the literature review indicated that stock markets induce economic growth through the provision of financial functions such as savings mobilization, liquidity, risk diversification, information acquisition about firm's corporate control.

Furthermore, it has been established that efficient stock market development thrives on the quality & enforcement of the legal & regulatory framework, sound macroeconomic, fiscal & institutional factors. The theoretical literature does not provide any unique measures of stock market Development.

The national literature on the stock market growth makes a few things clear. First, there has been a considerable lapse of time in the empirical study of stock market growth. Secondly, the available literatures are based on statistical methods of estimation except GC & Neupane (2006) & Regmi (2012) which utilize econometrics method. The reviews of studies at national levels are relevant to address the variable relationship of stock market variables with GDP & other findings from the present study with the ones from previous ones.

The empirical studies at international level reviewed in section 2.3.1 imply that have all followed time series methodology as this allows the researcher to examine the

variation between the variables over time. These studies have however, used different techniques, their choice of technique guided by their research questions. The results are interested in investigating the existence of relationship between the stock market & economic growth. Bayar (2014), Kolapo & Adaramola (2012), Odhiambo (2010), Shrestha (2005), G.C & Neupane (2006) have used their econometric method, this method like unit root test, co-integration analysis, mainly the Johansen Co-integration & VECM etc. Similarly, many other authors have used econometric techniques in order to investigate the direction of causality between stock market variables & economic growth. The result of these empirical studies confirms that the stock market has a positive impact on economic Growth.

Table 2.1: Summary of the Empirical Literature

Author	**Methods**	**Main Findings**
Levine & Zervos (1996)	Least square Regression & Correlation	Stock Market Liquidity had robustly correlated with economic growth, capital productivity growth stock returns volatility reduce private saving rate.
Paneru (2003)	Multiple Regression & Correlation	Size of the primary as well as secondary market has the positive influence on the overall size of economy.
G.C. & neupane(2006)	Granger Causality Test	Stock Market Growth & Economic have long run stable & causal relationship Stock Market impact positively on economic growth.
Lamsal (2007)	Multiple regression	Only Market Capitalization has significant impact on GDP.
Singh & Athpathu (2008)	Johnson's Integration Test	There was a bidirectional causalities from stock market indicator to economic growth.
Regmi (2012)	VECM Approach	Stock market development indicators had significantly contributed to the economic growth.

CHAPTER – III

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the specific Methodology of the three research questions is discussed. Section 3.2 presents the sample model used in the stock market growth, Section 3.3 provides a discussion on the selection of appropriate variables, Section 3.4 presents the estimation methodology that includes the subsections as 3.4.1 stationary test 3.4.2 Augmented Dickey Fuller(ADF) Test, 3.4.3 OLS Regression 3.4.4 Johansen co-integration test 3.4.5 Granger causality test & 3.4.6 discussion of weighted mean 3.5 discusses the nature, source & presentation of data, finally section 3.6 presents summary of the variables.

3.2 The Sample Model

In this study, a time series growth regression is used for an empirical evaluation of whether the stock market indicators are computed to economic growth. This empirical analysis is performed over the period 1988 to 2013.

The sample model & variables used are based on economic theory & proposed by theoretical & empirical studies such as Demirgue-Kunt & Levine (1996), Levine & Zervos (1998a), G.C. & Neupane (2006), K.C.(2010), Joshi (2010), Mishra (2010), & Regmi (2012). This study has used the economic growth (proxied by RGDP) as a dependent variable & stock market indicators Market Capitalization Ratio (MCR), Total Value Traded Ratio (TVTR), Turnover Ratio (TOR), & Concentration Ratio (CR) are used as an independent variables. Incorporating with the above indicators, the equation form is specified as:

RGDP=f (MCR, TVTR, TOR, CR)…… (1.1)

Where, *RGDP P* =Real Gross Domestic Product (proxy by economic Growth) which also called

Endogenous variable

f = Functional notation

MCR=Market Capitalization Ratio

TVTR=Total Value Traded Ratio

TOR=Turnover Ratio

CR=Concentration Ratio

The estimated form of the sample as given below:

RGDP=β_0+β_1MCR+β_2TVTR+β_3TOR+β_4CR+U……. (1.2)

Where,

β_0=intercept term

β_1 To β_4 are the coefficients of the exogenous variables

U is the stochastic error term

3.3 Definition of Variables

i) Gross Domestic Product (GDP)

Economic growth can also be refers to as the increase of per capital gross domestic product (GDP) or other measures of aggregate income, typically reported as the annual rate of change in the real GDP (Wikipedia, 2010). Economic growth means an increase in the capacity of an economy to produce goods & services, compared from one period of time to another. The one of the most widely used measures of economic growth is the rate of growth in a country's total output of goods & services gauged by the gross domestic product.

ii) Market Capitalization Ratio (MCR)

Market Capitalization Ratio measures the size of the stock market. The idea behind the selection of this variable is that provides a measure of the amount of finance the market is capable of providing a well as the market's ability to mobilize capital, diversify risk & allocate resources. The Market Capitalization Ratio can be calculated as:

MC Ratio = Market Capitalization / GDP

Market Capitalization on the other h& equals the total value of all listed shares

MC=Number of share of listed companies multiplied by market price

iii) Total Value traded Ratio (TVTR)

Stock market activity can be measured by total value traded to RGDP ratio, namely TVTR which Measures trading volume in the relation to the size of the economy. As the product of market Price & the number of shares traded, it comprises elements of both liquidity & size (Beck & Levine, (2002). Total Value Traded Ratio calculated as:

TVTR=AT/RGDP

IV) Turn-Over Ratio (TOR)

The one of the most widely used complementary measures of stock market size is market turnover ratio (TOR). The TOR shows the trading volume of the stock market on relation to its size & measures stock market liquidity. An increase in liquidity is a positive sign in emerging markets as it shows the significance & the credibility of the available information. In addition, it shows low transactions costs, which facilitate fund transfers & increase the number of companies & traded shares, thus promoting growth (Rousseau & Wachtl, 2000). It can be calculated as follows:

TOR =Annual Turnover/ Market Capitalization

V) Market Concentration Ratio (CR)

Concentration on a stock Market is measured by computing the share of ten largest stocks to total market value of shares. The Market Concentration ratio calculated on the basis of Market Capitalization in the stock market in Nepal (K.C., 2004). Concentration Ratio calculated as:

CR=Total Market Capitalization of ten largest companies/Total Market Capitalization

3.4 Estimation Methodology

This section outlines the methodology used to investigate two objectives using a similar data set, with a view to analyze the relationship between the stock market & economic growth in Nepal & other is to find if there is any co-integration between the stock market indicators & economic growth in Nepal. This present research objective study undertakes the most appropriate method of doing this is an

econometric framework, especially time series analysis, such as stationary & unit roots (ADF) test, Ordinary Least Square (OLS) regression analysis, Johansen co-integration test & Granger causality test.

There are several methods available for conducting the co-integration test. Commonly used methods included the residual based approach proposed by Engle & Granger (1987) & maximum likelihood-based approach proposed by Johansen (1988), Johansen & Juselius (1990); & Gregory & Hanson (1996) show that for certain group of non- stationary variables a linear combination of these variables may be stationary. The basic idea behind this is that where two or more series move closely together in the long run, the difference between the series is constant, even if the series are trended then it may be said that the variables exhibit the existence of a co- integration relationship.

If the time series data tend to be non-stationary, determining the order of integration or co- integration of the variables becomes important. The order of integration of time series implies the number of times a time series must be differenced to make it stationary. Many economic time series appear to be integrated of order one [I (1)] needing to be differenced once to make them stationary. There is need to conduct the unit root test. However, it may be the case that equilibrium conditions imply that particular combinations of the variables under consideration are stationary. If this is the case, the variables are said to be co-integrated. If the order of integration is same for the entire variables then it is quite possible that study can find out the long run dynamic behavior of the variables by employing Johansen co-integration test. One of the reasons for employing the integrated technique of Johansen & Juselious is that the estimation of the long-run equilibrium relationship involves a simple OLS regression on levels or differenced of the variables (Hendry et al, 1986). Co-integration testing provides evidence in support of the existence of a linear relationship, connecting the variables under consideration that is steady state in the long-run. The existence of relationship which attain equilibrium in the long- run have important implications for the short-run behavior of the underlying variables given that there must be a mechanism that drives the variables to their long-run relationship.

3.4.1 Stationary Test

A time series is said to be stationary if its mean, variance & auto- covariance remain same no matter at what point they are measured i.e. they are time invariant. Such a time series will tend to return to its mean & fluctuations around this mean will have broadly constant amplitude (Gujarati, 2007).

A stationary time series is also called a time series integrated of order zero or [I (0)] process. If a time series is non- stationary at level but stationary at first difference it is said to be integrated of order one or [I (1)] process. In general, if a time series has to be differenced d times to get a stationary series, it is said to be integrated or order d or an [I (d)] process. Most econometric time series are generally I (1), that is they generally become stationary only after taking their first difference (Granger, 1986).

A series is said to be stationary if

a) It has finite variance which does not depend on time.
b) The effect of a particular r&om innovation is transitory.
c) It tends to fluctuation around it mean &
d) Autocorrelation that decline rapidly as the lag increases (Engle & granger, 1987)

3.4.2 Augmented Dickey Fuller (ADF) Test

The Augmented Dickey Fuller (ADF) test is used to confirm whether or not a set of time series samples is stationary or not. It essentially tests for a unit root in the data & it is an improved version of the Dickey- Fuller test. The Augmented Dickey –Fuller test is more suitable than other tests. It fits an autoregressive AR (K) process. The ADF approach controls for higher order correlation by adding lagged difference terms of the dependent variable Δy_t (Dickey & Fuller, 1979). The ADF test is based on the estimate of the following regression model:

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \alpha_1 \Delta Y_{t-1} + \alpha_2 \Delta Y_{t-2} + \cdots + \alpha_K \Delta Y_{t-k} + U_t + \ldots\ldots\ldots (1.3)$$

$$Or, \Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta Y_{t-i} + U_t$$

Where,

y_t, is our variable of interest= Real Gross Domestic Product (RGDP) $_{t\ \&}$ stock market indicators are [$(MCR)_t$, $(TVTR)_t$, $(TOR)_t$, $(CR)_t$] t is the time trend, β_1 is the intercept term, δ is the coefficient of interest in the unit root test α_i(i=1,2,3,…..,k) is the parameter of the augmented lagged first difference of y_t to represent the k^{th} order autoregressive process & U_t is the white noise error term y_{t-1} is a one period lag of the series, $\Delta y_{t-1}= (y_{t-1}-y_{t-2})$, $\Delta y_{t-2} =(y_{t-2}-y_{t-3})$ etc.

In carrying out the unit root test, we seek to test the following hypothesis:

H_0: δ= 0 (y_t has unit root i.e. y_t non stationary)
H_1: δ ≠ 0 (y_t has not unit root i.e. y_t is stationary)

If the null hypothesis is rejected this means that the time series data is stationary. The decision criteria involve comparing the computed tau values with the Mackinnon critical values for the rejection of a hypothesis for a unit root. If the computed tau (ADF) statistic is less negative (i.e. lies to the right of the Mackinnon critical values) relative to the critical values, we do not reject the null hypothesis of non stationary in time series variables (Mackinnon, 1996).

3.4.3 The Johansen Co- integration Test

This section outlines the methodology used to answer the second research question, "Is there any co-integration between the stock market indicators & economic growth?" Several methods are available for conducing co-integration test commonly used methods included the residual based Engle-Granger (1987) test, Johansen (1988), Juselius (1990) Gregory & Hanson (1996).

Johansen (1988) co-integration approach allows for the estimation of multiple co-integration vectors when the test involves more than two variables. This test was used to determine whether there is long–run relationship between RGDP & stock market indicators. Johansen (1988) co- integration test utilizes the Eigen value of parameter in order to test whether the series is co- integrated with another series.

The two steps Engle & Granger procedure use the residual generated in the first step to form a new regression model in the second step. Any errors introduced in the first step are carried in to the second step (Enders, 2004). Hendry et al (1986), the omission of dynamics can generate substantial bias in finite same & this severely undermines the performance of the estimators. Also, endogeneity bias can affect small estimates, even though endogeneity has negligible effects asymptotically. Therefore, the Johansen co-integration approach has been favored approach in recent years.

One of the reasons for employing the Johansen co-integration methodology is that it can estimate the number of co-integrating vectors in the system. Further it yields the estimation of multiple co-integration vectors when the test involves more than two variables (Cizen & John, 2012).

Considering the Johansen's multivariate co- integration test involved testing the relationships between the variables can be presented in the following Vector Auto regression (VAR) form:

$$\Delta y_t = \sum_{j=1}^{p} \Gamma_i y_{t-1} + \Pi y_{t-1} + BX_{t-1} + U_t \quad \text{.....(1.4)}$$

Where, $\Gamma_i = -\sum_{j=1}^{p} A_j \;\&\; \Pi \sum_{j=1}^{p} A_j - l_m$

Where, y_t represent (n×1) matrix of n potentially endogenous variables & each of the Γ_i & A_i are (n×n) matrix of coefficients to be tested. B denotes (n×h) matrix & X_t denoted (h×i) vector of I (0) variables. *Π* denotes the rank of the matrix & U_t is deterministic term. The long run relationship is captured in the coefficient matrix denoted by r is between 0 & n.

The long run relationship is captured in the coefficient matrix denoted by r is between 0 & n.

Johansen developed two test statistics:

A) The trace statistic &

B) The maximum Eigen value test.

The trace statistic tests the null hypothesis of r co-integration vector against the alternative

Hypothesis of n co- integrating vectors. The test statistic is given by

$$J_{trace}\ r = -T\sum_{i=r+1}^{n} -l_n\left(1-\hat{\lambda}_1\right)$$

Where, T is the number of observation

On the other h&, the null hypothesis of r co-integrating vector against the alternative

Hypothesis (r+1) co-integrating vector can be presented as:

$$J_{max}(r, r+1) = -T\ (1-\widehat{\lambda_{r+1}})$$

Thus, in Johansen approach two steps testing procedure has been implemented. In the first step, the null hypothesis of no co-integration is tested against the alternative that the variables are co-integrated. If the null hypothesis is rejected second step test is implemented with co-integration maintained under both null & alternative.

3.4.4 Granger Causality Test

Granger (1969) causality test has been commonly used to test for the causal relationship between variables. Therefore, this test was considered suitable to test the long –term relationship between stock market indicators & economic growth. The granger causality test has been chosen because it consists the more powerful & simple way of testing causal relationship. According to this test a variable Y, say Real gross Domestic Product (RGDP) is cause by X, say stock market indicators, if Y (RGDP) can be predicted better from past values of Y (RGDP) & X (stock market indicators) than from past values of Y (RGDP) alone. The causality test helps to ascertain whether a unidirectional or bidirectional (feedback) or independence relationship exists between economic growth say RGDP & stock market indicators. To achieve this we employed following regressions form the basis of the test:

$$RGDP_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i}\, RGDP_{t-i} + \sum_{j=1}^{m} \beta_{1j}\, SMI_{t-j} + U_{1t} \dots\dots\dots (1.6)$$

$$SMI_t = \alpha_0 + \sum_{i=1}^{m} \beta_{2j} SMI_{t-j} + \sum_{j=1}^{m} \alpha_{2j} RGDP_{t-j} + U_{2t} \dots \dots \dots (1.7)$$

Where, $RGDP_t$ is the endogenous variable SMI is the stock market indicators (proxied by market Capitalization ratio, turnover ratio, total value traded ratio, & concentration ratio) in equation (1.5). SMI_t is the endogenous variable which is the stock market indicators & $RGDP_t$ is the Explanatory variable (proxied by economic growth) in equation (1.6). Both variables denotes in to Logarithm form. U1*t* & U2*t are* mutually uncorrelated error terms, t denotes the time trend, I & j are the number of lags. According to Granger's definition of causal relationships:

$RGDP_t$ Does not Granger cause SMI_t if $\{\alpha_{1,1} = \alpha_{1,2} = \dots = \alpha_{1,m} = 0\}$ … (a)

SMI_t Does not Granger cause $RGDP_t$ if $\{\alpha_{2,1} = \alpha_{2,2} = \dots = \alpha_{2,m} = 0\}$ … (b)

Based on the estimates OLS coefficients for the relationship (a) & (b) four different hypotheses Expressed as follows:

(1) (a) Holds, (b) does not hold: SMI_t cause $RGDP_t$ (SMIt $\rightarrow RGDP_t$) i.e. unidirectional causality

From $RGDP_t$ to SMI_t.

(2) (a) Does not hold, (b) hold: $RGDP_t$ cause SMI_t ($RGDP_t \rightarrow$ SMIt) i.e. unidirectional causality

From $RGDP_t$ to SMI_t.

(3) Both (a) & (b) hold: bidirectional (feedback) between SMI_t & $RGDP_t$ ($SMI_t \leftrightarrow RGDP_t$).

(4) Neither (a) nor (b) holds: SMI_t & $RGDP_t$ are independence.

Hence by obtaining one of these results it seems possible to detect the causality relationship between stock market indicators (SMI) & the economic growth (proxied by RGDP) in Nepal.

To test the hypothesis the Wald F-statistic can be applied as:

$$F=\frac{RSS_R - RSS_{UR\backslash m}}{RSS_{UR\backslash (T-2m-I)}}$$

Where, m is the number of lagged terms & T is the sample size RSS *R* & RSS*UR* are residual Sum of squares of restricted & unrestricted equation respectively. If the F-value exceeds the Critical F- value at the chosen level of significance we reject the null hypothesis in which case the lagged $RGDP_t$ terms belong in the regression. This is another way of saying that $RGDP_t$ causes SMI_t (Perron, 2006).

3.4.5 Methodology for Third Research Question

First of all I prepared a questionnaire consisting of ten statements regarding a problem of stock market. I Xeroxed it & made sixty two sets then after I visited people who are involved in the sector of stock market they ticked options whichever the felt is best. After collecting their options of people I calculate weighted value & weighted mean. For the calculation of weighted value I multiplied each sector's with rank wise number of responses. There after I calculated weighted mean. For this purpose I divided weighted value with total responses. In the overall rank the least weighted mean is considered as 1 & greatest weighted mean is taken as 10.

3.5 Nature, Source & Presentation of Data

To fulfill the defined objectives, this study is mainly based on the annual time series data. This study considers primary as well as secondary sources of data. The sources of data consist of books, journals, newspapers, reports & field survey. The major sources of primary & secondary data are can be outlined as:

a. Different publications of securities Board of Nepal (SEBON) & Nepal Stock Exchange (NEPSE).
b. Various publications of Ministry of Finance (MOF).
c. Different publications of Quarterly Economic Bulletins published by NRB. d) Various publications of central Bureau of statistics (CBS).
d. Different publications of World Bank (WB) & International monetary fund (IMF) for real GDP.

e. Articles published on different Journals & Magazines.
f. Previous research studies, dissertation & relevant articles on the subject matter.
g. Internet sources.

3.6 Summary of the Variables

The summary of the variables used in the study, proxies, the expected signs used by the researchers can be outlined in the Table 3.1 as follows:

Table 3.1: Description of the Variables & Expected Signs

Symbol	Variable	What it proxies	Expected sign	Author(s)
GDP	Growth rate of per capita GDP	Economic Growth	Not Available (NA)	Joshi(2010) &Odhiambo(2010)
MCR	Market Capitalization to GDP	Size of Stock Market	+	Bahadur & Neupane (2006)
TVTR	Total Value of Annually Traded share to GDP	Liquidity of the Stock Market relative to the whole economy	+	Regmi (2012) &Bahadur & Neupane(2006)
TOR	Annual Turnover to MC	Liquidity of the Stock Market relative to the stock market size	+	Regmi (2012) & Bahadur & Neupane (2006)
CR	Total Market Capitalization of ten largest companies to MC	The share of ten largest stocks to total market value of shares	+	Regmi (2012) & Bijay(2004)

CHAPTER – IV

EMPIRICAL ANALYSIS

4.1 Introduction

As the literature review chapter demonstrates that there are many studies empirically examining the relationship between the developments of stock market & economic growth. However, this study is considered to examine the relationship between stock market indicators & economic growth in the case of Nepal.

In conducting the empirical analysis, time series analysis is considered to be the appropriate method. In the first part of the empirical analysis, the data is tested for the detection of unit root. Second, following the adjustments after the unit root test, a series of Ordinary Least Square (OLS) regression result is presented. Third, this result is further examined by Johansen co- integration analysis & finally the dependent & independent variables are controlled for causal relations among themselves in pairs within Granger causality test are conducted. As the theoretical backgrounds of these methodologies have been discussed in the previous chapter in detail, this chapter presented only the results of the empirical analysis.

4.2 Trends of Stock Market Indicators & Real GDP in Nepal

The Table 4.1 shows that the MCR is only 0.04 during the period 1994 which very low compared to RGDP. It has been increasing from 1994 to 1995, declining from 1996 to 2004, & then it is increasing from 2005 to 2013. Lower MCR indicates that lower contribution to the economic growth of the country. The next indicator of the stock market is TVTR. Its ratio is also low which indicates illiquid market in Nepal & so such trading is more costly & difficult. The trend of TOR is increasing sometimes & decreasing other times. A low turnover ratio may indicate high transaction cost & relative difficulty in buying & selling of shares. The country can grow fast by increasing turnover ratio even though the market capitalization is very low. The market capitalization, value of shares traded to gross domestic product & turnover indicate that the stock market in Nepal is very small relative to its economy & highly illiquid & stock market in Nepal is yet to make its presence felt in the

national economy (KC, 2010). The highly concentration ratio indicates that the stock market in Nepal is dominated by 10 largest companies in terms either market capitalization or turnover.

Table 4.1: Trend of Stock Market Indicators & Real GDP in Nepal

Rs. In Millions

Year	RGDP	MCR	TOR	TVTR	CR
1994	319220	0.0434559	0.0318339	0.0013834	0.72
1995	330290	0.0392473	0.0813315	0.003192	0.71
1996	347920	0.0353386	0.0175356	0.0006197	0.73
1997	366220	0.0346731	0.0327768	0.0011365	0.68
1998	377000	0.0379019	0.0141787	0.0005374	0.66
1999	393900	0.0596801	0.0638081	0.0038081	0.65
2000	417990	0.1031683	0.02683	0.002768	0.679999
2001	441520	0.1049769	0.0505767	0.0053094	0.7606472
2002	442050	0.078507	0.0443926	0.0034851	0.58
2003	459490	0.0766937	0.0163394	0.0012531	0.6
2004	481000	0.0861227	0.0517634	0.004458	0.6600017
2005	497740	0.1232873	0.0734572	0.0090563	0.610009
2006	514490	0.1884643	0.035595	0.0067084	0.6686231
2007	532040	0.3501641	0.0448741	0.0157133	0.6700007
2008	564520	0.648777	0.0623097	0.0404251	2.9773547
2009	589420	0.8702438	0.0422682	0.0367836	0.4884128
2010	*616260*	0.6115461	0.0605542	0.0370317	*0.5099989*
2011	*637730*	*0.5072433*	*0.0670245*	*0.0339977*	*0.4399997*
2012	*664700*	*0.5540275*	*0.0320081*	*0.0177334*	*0.4199998*
2013	*689800*	*0.7458569*	*0.0129552*	*0.0096627*	*0.387531*

Sources: Appendix I

4.3 Discussion of the Results of the Unit Root Test

Augmented Dickey- Fuller (ADF) unit root tests are applied to test for the stationary of the macroeconomic series at first difference of each series. This test is based on the assumption that the time series data are stationary. Again, the test statistics may often

show a significant relationship between variables in the regression model even though no such relationship exists between them. This type of regression is known as 'Spurious regression' (Pearson, 2000). The case of spurious regression is frequently encountered while dealing with the time series data. Spurious regression occurs mainly because of the non-stationary in time series. To solve such a problem of spurious regression, the stationary of the time series is examined by conducting unit root test (G.C. & Neupane, 2006).

The Augmented Dickey- Fuller (ADF) t- statistic tests the null hypothesis that the variable has a unit root. The tests are conducted using the econometric software Eviews 7.2 & summary of the result is presented in the following (Full results are attached in the appendix III).

Table 4.2: ADF Unit Root Test Result at Levels

Variables	**ADF test statistics**	**Critical t-statistics at 1%**	**Critical t-statistics at 5%**	**Meaning**
RGDP	2.6725	-3.8315	-3.0299	Not stationary
MCR	-0.042	-3.8867	-3.0521	Not stationary
TVTR	-1.3164	-3.8315	-3.0299	Not stationary
TOR	-4.9595	-3.8315	-3.0299	Stationary
CR	-4.3172	-3.8351	-3.0299	Stationary

The hypothesis tested in the unit root test is as follows

HO: The series does have a unit root

The Table 4.2 shows that the ADF test statistic for three variables are less than the critical values at 5 % level of significance. As results the null hypothesis is accepted for these three variables Namely RGDP, TVTR & MCR & hence the variables are not stationary. However, two Variables namely TOR & CR are stationary at level. It is necessary to conduct the tests using the first difference in the hope that they would now be stationary. Thus, the ADF test for Stationary can be presented in the Table 4.3 as follows:

H_0: The series does have a unit root. Table 4.3 shows that all the variables are greater than the Critical value at 5 % level of significance. Hence the null hypothesis (H_0) is rejected & the variables are stationary.

Table 4.3: ADF Unit Root Test Results at First Difference

Variables	ADF tests statistic	Critical t-statistic at 1%	Critical t-statistic at 5%	Meaning
RGDP	-3.937226	-3.857386	-3.040391	stationary
MCR	-3.968440	-3.886751	-3.052169	stationary
TVTR	-3.964823	-3.857386	-3.040391	stationary
TOR	-4.459054	-3.886751	-3.052169	stationary
CR	-6.956772	-3.857386	-3.040391	Stationar

The ADF test indicates that the variables are integrated of order 1 expressed as I (1). Since the data set is found to be stationary at first difference. The study therefore has the sufficient evidence to estimate OLS regression. As the discussed in the previous topic despite the fact that the data are not stationary at levels it is possible to carry out further analysis. Based on the order of integration of the variables it is possible to apply the Johansen co-integration Methodology.

4.4 OLS Regression Results

Table 4.4: Regression Results

Variables	coefficients	Std. Error	t- statistic	Probability
C	8.356327	0.460634	8.838870	0.0000
MCR	0.134491	0.173785	3.109658	0.0083
TVTR	-0.128144	0.661662	-0.048128	0.9623
TOR	0.758144	0.872775	0.080614	0.9370
CR	-0.006910	0.960562	-0.775008	0.4522

R- Squared 0.803117

Adjusted R- squared 0.727393

F- Statistic 10.60581

Durbin-Watson statistic 1.090615

After conducting the unit root test the regression reported in the Table 4.4 has based on the estimation at the first difference in order to fulfill the criteria of OLS regression methodology. The dependent variable employed Real Gross Domestic Product (RGDP) for the purpose of first research question. This OLS result is obtained by using the econometric software Eviews 7.2 & summary of the results presented in Table 4.4 (Full result is attached in the Appendix IV).

The regression results show that the explanatory variables account 80.31 percentage changes in the real economic growth. The Durbin-Watson statistic (1.09) indicates the absence of serial correlation. Besides, the F-statistic (10.60) illustrates that the explanatory variables are jointly significant & capable of explaining changes in economic growth. The results also show that the MCR & TOR have expected signs but TVTR & CR have not obtained the expected signs. The variable MCR is statistically significance at 1 percent level. Other three variables are not statistically significance due to limited sample size considered in the study. In economic sense, one percent increase in the MCR results to an increase in the real GDP by approximately 0.14 percentages. Therefore, there statistically & economically direct & positive relationship between real GDP & MCR. This is consistent with the findings by Bahadur & Neupane (2006), Lamsal (2007), Regmi (2012) etc. The implication is that the economy responds favorably to measure the aggregate market value of the listed shares of company. If the aggregate market value of the listed shares of company increases it helps to increase stock market size that results to increase of MCR which increases then the stock market development by increasing RGDP. Unfortunately, the developing countries like Nepal have the MCR ratio less than 1. Low MCR in Nepal low contribution in RGDP (K.C., 2004). Increase total value of annually traded share this leads to increase total market capitalization of ten largest companies & it help to increase RGDP in Nepal. The other variables such as TOR have insignificantly positive relationship with real GDP & TVTR & CR have statistically insignificant negative relationship with the real economic growth.

4.5 Results Analysis of Johansen Co-integration Test

This study has been determined the unit root tests that the variables were integrated of order 1 or [I (1)], then the co integration test is performed. The co-integration test is

carried out using the Johansen framework. The co–integration test is therefore used to investigate the long run relationship between the stock market indicators & economic growth. For this, VAR lag order selection tests were performed to choose the optional lag length for the period under consideration in this study. The order of the VAR using the Akaike information criterion (AIC), analysis was carried out using a lag length of 1 in this study. The next step in the analysis is to estimate the equation & find the number of co-integration vectors. The co-integration method conducted using the econometric software Eviews 7.2. The result of regression obtained for the co-integration estimation for trace statistic & maximum eigenvalue summarized in Table 4.5 below (Full result attached in the Appendix V).

Table 4.5 Unrestricted Co- integration Rank Test

Null hypothesis(H_0)	**Alternative hypothesis (H_1)**	**Trace statistic**	**Critical value at 5%**	**Maximum Eigen value**	**Critical value at 5%**
R≤0	R≥1	159.4784	69.8188	78.1210	33.8768
R≤1	R≥2	81.3573	47.8561	48.0592	27.5843
R≤2	R≥3	33.2980	29.7970	22.4188	21.1316
R≤3	R≥4	10.6792	15.4947	6.1296	14.2646
R≤4	R≥5	4.7495	3.8414	4.7495	3.8414

The results of the Johansen co integration test as shown in the above table (4.5) shows two test statistic namely the trace statistic & the Maximum Eigen value proposed byJohansen (1988). Firstly, the trace statistic test the null hypothesis that the number of characteristic roots (i.e. the testing hypothesis) is less than or equal to r (where, r = 0,1,2,3 & 4) against the alternative hypothesis from the table the value of trace statistic is greater than the critical value at 5 percent significance level. On the other h&, the test of maximum Eigen value, in this test the null hypothesis that the r=0 is tested against the alternative hypothesis that R≥1, R≥2, R≥3, R≥4, R≥5, this hypothesis indicates the maximum Eigen-value is greater than the critical value at 5 percent significance level.

The co-integration results suggest the existence of one co-integrating vector as the trace statistic rejected the null hypothesis of no co-integrating vector as 5 percent significant level & accept the alternative hypothesis of more than zero co-integrating vectors. Similarly, the maximum Eigen-value rejects the null hypothesis r=0, co-integrating vector at 5 percent significant level & accept the alternative hypothesis of one co-integrating vector. Therefore, since both test statistics suggest the presence of one co-integrating vector, it is concluded that the variables are co integrated & follow long-run equilibrium relationship.

4.6 Discussion of the Result of the Granger Causality Test

The procedure used in the study for testing statistical causality between the stock market indicators & the economic growth is the Granger causality test (Granger, 1969). The Granger causality test determines the predictive content of one variable beyond that inherent in the explanatory variable itself. The analysis of the time series equation to study the variables that are stationary at the first difference & the OLS regression analysis is done to demonstrate the sensitivity of the dependent variable to the change in the independent variables & finally controlling for series of co-integrating relations, the final stage of the analysis is the investigation of the casual relationship between the exogenous & endogenous variables representing the macroeconomic & stock market indicators. In order to investigate these causal relationships the Granger causality test is applied in regression equation. A summary of the result of the Granger causality test is displayed in Table 4.6 with stock market indicators & Real Gross Domestic Product (RGDP) (Full result attached in the Appendix VI).

Table 4.6 Result of Pair Wise Granger Causality Test

Null hypothesis	F- statistic(Probability)	Relation
MCR does not Granger cause RGDP, RGDP does not Granger cause MCR	1.0135(0.3290) 3.8237(0.0682)*	Unidirectional
CR does not Granger cause MCR, MCR does not Granger cause CR	1.0135(0.3290)* 0.0363(0.8512)	Unidirectional
TVTR does not Granger cause MCR, MCR does not Granger cause TVTR	0.2679(0.7691) 6.2560(0.0125)**	Unidirectional
TVTR does not Granger cause MCR, MCR does not Granger cause TVTR	0.8754(0.0025)*** 3.4046(0.0614)*	Bidirectional

Table 4.6 signifies that the Granger causality test results an annually time series data. The estimations are carried out on the stationary variables & appropriate lag length criterion (AIC). The causality test result an annually series indicates that the null hypothesis of RGDP does not Granger cause MCR is rejected at 10 percent level of significance. This indicates that there is unidirectional relationship between RGDP & MCR. However, there is no reverse direction from MCR to RGD.

Similarly, CR does not Granger cause MCR is rejected at 10 percent level of significance. This indicates that there is unidirectional relationship between CR & MCR. There is CR cause MCR (CR→MCR). MCR does not Granger cause TVTR is rejected at 5 percent level of significance. This indicates that there is MCR cause TVTR (MCR→TVTR). This implies that change in MCR can affect TVTR but change in TVTR does not affect the MCR.

The causality test results also suggest that there is unidirectional causality between TV & CR, MCR & CR implying there is no reverse causation between the variables. On the other h& TVTR & MCR have bidirectional causal relationship. There is reverse causation between these variables. Furthermore, there is interdependency between RGDP, MCR, TVTR, TOR & CR. This is clear indication of the relative positive impact the stock market played on the economic growth of the country.

4.7 Analysis of the Stock Market Problem in Nepal

The problem of Nepalese stock market has been analyzed on the basis of the centralized stock Exchange locked in Kathm&u, legal rules & regulations are not sufficient, Accounting & auditing st&ards, high transaction cost, poor disclosure practices, mutual fund, restriction of foreign investment about stock market to investors, donor funding & orientation towards development of stock market, measurement base statement & their mean weight have presented in the Table 4.7 as follows:

Table 4.7 Response on the Problems of Stock Market in Nepal

Options	Sectors	Weighted Value	Weighted Mean	Over all Rank
A	SEBON	323	5.20	9
B	Brokers 1	262	4.2	2
C	Brokers 2	316	5.09	8
D	Brokers 3	238	3.83	1
E	Brokers 4	278	4.48	4
F	Brokers 5	288	4.64	6
G	Brokers 6	292	4.70	7
H	Brokers 7	272	4.38	3
1	Brokers 8	284	4.58	5
J	Brokers 9	333	5.37	10

Source: AppendixIIA_1

As regarding with the stock market is greatly influenced by high transaction cost, weighted mean score is 3.83 which is nearest to 4. It means that less of respondents have rank 1. Particularly, 'D' is the serious problem of Nepalese stock market. Similarly, respondents are asked to rank the statement i.e. legal rules & regulations are not sufficient the weighted mean score 4.22. It is ranked indicated by 2 which is the second problem of Nepalese stock market. Regarding with the lack of donors' funding & orientation towards development of the stock market, weighted mean score is 5.37 which is nearest to 6. It means that most of the respondents have rank 10.

Hence J is the less serious problem for the Nepalese stock market. However, the Nepalese stock market is the characteristics of rumor based market; the respondents are indicated & asked above options one by one.

CHAPTER – V

SUMMARY, CONCLUSION & RECOMMENDATIONS

5.1 Summary of the Findings

The research study investigated the link between the stock market indicators & economic growth in Nepal using time series data. The study has applied the OLS Regression, Johansen co- integration test & Granger causality test to evaluate the short-run as well as long-run relationship between the stock market indicators & economic growth in Nepal.

To allow for robustness the study utilized four measures of stock market indicators: Market Capitalization Ratio (MCR), Total value Traded Ratio (TVTR), Turnover Ratio (TOR), & Concentration Ratio (CR). The results obtained for all four measures of stock market are used in this research study. The results of stationary test show that the TOR & CR are stationary at level but while all variables were stationary at the first difference.

The findings from the OLS Regression two variables MCR & TOR were positively signed. This proves to have positive impact on the growth of the economy. Other variables, TVTR & CR were negatively signed implying negative effects & statistically insignificant impact on the growth of the economy. However, the findings align with Demirgue-Kunt (1996) Mainali (2011) & K.C (2010) Regmi (2012). Secondly, the co-integration test illustrates that the variables are co-integrated & implying that a long run relationship between concerned the variables. The Granger causality test implies that there is a bi-directional causation between CR & MCR, TVTR & MCR also interdependency between them. Again a unidirectional causation between the variables RGDP & MCR, CR & TVTR are obtained in the results. There is no reverse causation between them. This is clear that the stock market has played positive role in pace of economic growth of Nepal.

The main problem of Nepalese stock market is the high transaction cost. Its mean 3.83 & overall rank is 1. The legal rules & regulations are not sufficient which weighted mean score 4.22 & its rank is indicated by 2. The lack of donors' funding &

orientation towards development of the stock market, weighted mean score is 5.37 which is nearest to 6. In this issue, most of the respondents have rank 10.

5.2 Conclusion

From the above summary of findings, it is concluded that the study reveals that the stock market & economic growth via Market Capitalization ratio (MCR), Total Value Traded Ratio (TVTR), Turnover Ratio (TOR), & Concentration Ratio (CR) are important of stock market variables that are capable of influencing economic growth in Nepal. Hence, the stock market remains one of the mainstreams of each & every economy. It has the power to influence economic growth therefore the organized private sector is to invest in it. In my research analysis the TVTR & CR have not impact significantly on the RGDP while MCR & TOR have significant impact on RGDP.

5.3 Recommendations

Based on the discussion of findings of the study, the following recommendations are made:

I. It ought to be improved the declining total value traded ratio & concentration ratio by encouraging more private limited liability companies, informal sectors operators & more foreign investors to participate in the market, maintain state of the art technology like automated trading & settlement practice ,electronic fund clearance & eliminate physical transfer of shares.
II. In Nepal there is only one secondary market; that is Nepal Stock Exchange which is the centralized in Kathm&u. Thous&s of investors outside the valley are suffering due to not having an easy excess to secondary market. All investors outside the valley who want to invest in securities transaction must come to the physical capital. There is no another way for them to participate in the secondary market. It is costly as well as risky also. Therefore secondary market should be exp&ed at least in each development regions to exp& its services.
III. Trading obstacles such as high transaction costs should be reviewed to encourage more active trading in stocks.

IV. The laws related to mutual fund should be established so that the small investors can be participated in stock market investment, the scatters savings will be collected & stock market will be strong.

V. Nepalese stock market is suffered from inadequate information, lack of donor funding & orientation, for this many programs should be launched by concerned authority.

VI. Finally, there should be strict legal rules & regulations related to stock market.

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APPENDIX I

Macroeconomic & Stock Market Indicators: 1994-2013

Rs. In millions

Fiscal year	MC	Real GDP	MCR	AT	TOR	TVTR	TMCTL	CR
Mid-july199	13872	319220	0.04	441.6	0.0318	0.00138	9987.84	0.72
Mid-july199	12963	330290	0.0392	1054.3	0.08133	0.0031	9203.73	0.71
Mid-july199	12295	347920	0.0353	215.6	0.0175	0.0006	8975.35	0.73
Mid-july199	12698	366220	0.0346	416.2	0.0327	0.0011	8634.64	0.68
Mid-july199	14289	377000	0.0379	202.6	0.0141	0.0005	9430.74	0.66
Mid-july199	23508	393900	0.0596	1500	0.0638	0.0038	15280.2	0.65
Mid-july200	43123.	417990	0.1031	1157	0.0268	0.0027	29323.8	0.6799
Mid-july200	46349.	441520	0.1049	2344.2	0.0505	0.0053	35255.5	0.7606
Mid-july2OO	34704	442050	0.0785	1540.6	0.0443	0.0034	20128.3	0.58
Mid-july200	35240	459490	0.0766	575.8	0.0163	0.00125	21144	0.6
Mid-july200	41425	481000	0.0861	2144.3	0.0517	0.0044	27340.5	0.6600
Mid-july200	61365	497740	0.1232	4507.7	0.0734	0.0090	37433.2	0.6100
Mid-july200	96963	514490	0.1884	3451.4	0.0355	0.0067	64831.7	0.6686
Mid-july200	186301	532040	0.3501	8360.1	0.0448	0.01571	124822	0.6700
Mid-july200	366247	564520	0.6487	22820.	0.06231	0.0404	109044	2.9773
Mid-july200	512939	589420	0.8702	21681	0.0422	0.0367	250526	0.4884
Mid-july20 1	376871	616260	0.6115	22821.	0.0605	0.0370	192204	0.5099
Mid-july201	323484	637730	0.5072	21681.	0.0670	0.0339	142333	0.44
Mid-july201	368262	664700	0.5540	11787.3	0.0320	0.01773	154670	0.42
Mid-july201	514492	689800	0.7458	6665.33	0.0129	0.00966	199381.	0.3875

Sources: Various Issues of Annual Trading Report, Economic Survey, Quarterly Economic Bulletin & World Economic Output (WEO) Data, IMF

APPENDIX II

Which are the major Statements Of the problems of Nepalese stock Market please rank these 1 to10 (1 for very important problem 10 for the less important problem)

S.N.	Statements	Rank
1.	The stock market is that the centralized stock Exchange locked in	
2.	Kathm&u	
3.	Legal rules & regulations are not sufficient	
4.	Lack of Accounting & Auditing st&ards	
5.	Stock market is greatly influenced by high transaction cost	
6.	In the stock market, there is high poor Disclosure practices	
7.	Lack of mutual fund in the stock market	
8.	In the stock market, there is restriction of foreign portfolio	
9.	investment	
10.	There is lack of institutional investors in the stock market	
	Insufficient knowledge of investors about the stock market	
	Lack of donor funding ad orientation towards development of the stock market	

APPENDIX II A1

Option	Sectors	Rank wise number of Responses										Total responses	Weighted Value	Weighted mean	Over all rank
		1	2	3	4	5	6	7	8	9	10				
A	SEBON	1	10	4	15	3	7	5	8	6	2	62	323	5.20	9
B	Broker1	2	19	3	9	1	14	5	9	0	0	62	262	4.2	2
C	Broker2	0	11	16	3	5	8	2	7	9	1	62	316	5.08	8
D	Broker3	2	13	17	18	0	7	0	0	5	0	62	238	3.83	1
E	Broker4	13	15	4	7	0	3	1	5	10	4	62	278	4.48	4
F	Broker5	0	12	9	17	4	7	2	6	5	0	62	288	4.64	6
G	Broker6	2	9	13	16	0	5	6	3	7	1	62	292	4.70	7
H	Broker7	6	19	3	7	9	1	4	5	8	0	62	272	4.38	5
I	Broker8	5	17	6	8	3	6	1	9	5	2	62	284	4.58	5
J	Broker9	0	15	4	7	4	13	9	5	4	1	62	333	5.37	10

Source: Questionnaire Survey, 2013

APPENDIX III

Result at level

Null Hypothesis: RGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		2.672592	0.9999
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RG)
Method: Least Squares
Date: 08/16/14 Time: 03:50
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RG(-1)	0.036650	0.013713	2.672592	0.0161
C	2156.117	6644.756	0.324484	0.7495

R-squared	0.295855	Mean dependent var	19504.21
Adjusted R-squared	0.254434	S.D. dependent var	7171.680
S.E. of regression	6192.469	Akaike info criterion	20.39936
Sum squared resid	6.52E+08	Schwarz criterion	20.49877
Log likelihood	-191.7939	Hannan-Quinn criter.	20.41618
F-statistic	7.142747	Durbin-Watson stat	2.199138
Prob(F-statistic)	0.016067		

Null Hypothesis: RG has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		2.672592	0.9999
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RG)
Method: Least Squares

Date: 08/16/14 Time: 03:52
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RG(-1)	0.036650	0.013713	2.672592	0.0161
C	2156.117	6644.756	0.324484	0.7495

R-squared	0.295855	Mean dependent var	19504.21
Adjusted R-squared	0.254434	S.D. dependent var	7171.680
S.E. of regression	6192.469	Akaike info criterion	20.39936
Sum squared resid	6.52E+08	Schwarz criterion	20.49877
Log likelihood	-191.7939	Hannan-Quinn criter.	20.41618
F-statistic	7.142747	Durbin-Watson stat	2.199138
Prob(F-statistic)	0.016067		

Null Hypothesis: RG has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		2.672592	0.9999
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP)
Method: Least Squares
Date: 08/16/14 Time: 03:53
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RG(-1)	0.036650	0.013713	2.672592	0.0161
C	2156.117	6644.756	0.324484	0.7495

R-squared	0.295855	Mean dependent var	19504.21
Adjusted R-squared	0.254434	S.D. dependent var	7171.680
S.E. of regression	6192.469	Akaike info criterion	20.39936
Sum squared resid	6.52E+08	Schwarz criterion	20.49877
Log likelihood	-191.7939	Hannan-Quinn criter.	20.41618
F-statistic	7.142747	Durbin-Watson stat	2.199138
Prob(F-statistic)	0.016067		

Null Hypothesis: RGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		2.672592	0.9999
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP)
Method: Least Squares
Date: 08/16/14 Time: 03:54
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RG(-1)	0.036650	0.013713	2.672592	0.0161
C	2156.117	6644.756	0.324484	0.7495

R-squared	0.295855	Mean dependent var	19504.21
Adjusted R-squared	0.254434	S.D. dependent var	7171.680
S.E. of regression	6192.469	Akaike info criterion	20.39936
Sum squared resid	6.52E+08	Schwarz criterion	20.49877
Log likelihood	-191.7939	Hannan-Quinn criter.	20.41618
F-statistic	7.142747	Durbin-Watson stat	2.199138
Prob(F-statistic)	0.016067		

Null Hypothesis: MCR has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.042081	0.9415
Test critical values:	1% level	-3.886751	
	5% level	-3.052169	
	10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MCR)
Method: Least Squares
Date: 08/16/14 Time: 03:55
Sample (adjusted): 1997 2013
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MCR(-1)	-0.004941	0.117416	-0.042081	0.9671
D(MCR(-1))	0.530589	0.249162	2.129500	0.0529
D(MCR(-2))	-0.555462	0.264628	-2.099028	0.0559
C	0.042182	0.039383	1.071073	0.3036

R-squared	0.361173	Mean dependent var	0.041795
Adjusted R-squared	0.213752	S.D. dependent var	0.127558
S.E. of regression	0.113106	Akaike info criterion	-1.318655
Sum squared resid	0.166309	Schwarz criterion	-1.122605
Log likelihood	15.20857	Hannan-Quinn criter.	-1.299167
F-statistic	2.449935	Durbin-Watson stat	2.163726
Prob(F-statistic)	0.109948		

Null Hypothesis: TVTR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.316448	0.5997
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TVTR)
Method: Least Squares
Date: 08/16/14 Time: 03:56
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TV(-1)	-0.168595	0.128068	-1.316448	0.2055
C	0.002436	0.002332	1.044443	0.3109

R-squared	0.092512	Mean dependent var	0.000436
Adjusted R-squared	0.039131	S.D. dependent var	0.007868
S.E. of regression	0.007713	Akaike info criterion	-6.792618
Sum squared resid	0.001011	Schwarz criterion	-6.693204
Log likelihood	66.52987	Hannan-Quinn criter.	-6.775793
F-statistic	1.733036	Durbin-Watson stat	1.374228
Prob(F-statistic)	0.205497		

Null Hypothesis: TOR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.950574	0.0010
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TOR)
Method: Least Squares
Date: 08/16/14 Time: 03:57
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOR(-1)	-1.236850	0.249840	-4.950574	0.0001
C	0.054308	0.012160	4.466011	0.0003

R-squared	0.590442	Mean dependent var	-0.000994
Adjusted R-squared	0.566351	S.D. dependent var	0.031805
S.E. of regression	0.020944	Akaike info criterion	-4.794606
Sum squared resid	0.007457	Schwarz criterion	-4.695191
Log likelihood	47.54875	Hannan-Quinn criter.	-4.777781
F-statistic	24.50818	Durbin-Watson stat	1.652105
Prob(F-statistic)	0.000122		

Null Hypothesis: CR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.317234	0.0036
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CR)
Method: Least Squares
Date: 08/16/14 Time: 03:57
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR(-1)	-1.057257	0.244892	-4.317234	0.0005
C	0.773575	0.225094	3.436679	0.0031

R-squared	0.522988	Mean dependent var	-0.017498
Adjusted R-squared	0.494928	S.D. dependent var	0.801850
S.E. of regression	0.569862	Akaike info criterion	1.812456
Sum squared resid	5.520630	Schwarz criterion	1.911871
Log likelihood	-15.21834	Hannan-Quinn criter.	1.829281
F-statistic	18.63851	Durbin-Watson stat	1.983634
Prob(F-statistic)	0.000467		

Result of first Difference

Null Hypothesis: D(RGDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.937226	0.0283
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RG,2)
Method: Least Squares
Date: 08/16/14 Time: 04:05
Sample (adjusted): 1996 2013
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RG(-1))	-0.796542	0.238684	-3.337226	0.0042
C	16067.74	4879.789	3.292711	0.0046

R-squared	0.410401	Mean dependent var	779.4444
Adjusted R-squared	0.373551	S.D. dependent var	9010.373
S.E. of regression	7131.579	Akaike info criterion	20.68689
Sum squared resid	8.14E+08	Schwarz criterion	20.78582
Log likelihood	-184.1820	Hannan-Quinn criter.	20.70053
F-statistic	11.13708	Durbin-Watson stat	1.977005
Prob(F-statistic)	0.004178		

Null Hypothesis: D(MCR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-3.968440	0.0126
Test critical values:	1% level	-3.886751	
	5% level	-3.052169	
	10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MCR,2)
Method: Least Squares
Date: 08/16/14 Time: 04:06
Sample (adjusted): 1997 2013
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCR(-1))	-1.030608	0.273484	-3.768440	0.0021
D(MCR(-1),2)	0.559587	0.236884	2.362279	0.0332
C	0.041044	0.027590	1.487648	0.1590

R-squared	0.504537	Mean dependent var	0.011514
Adjusted R-squared	0.433757	S.D. dependent var	0.144851
S.E. of regression	0.108999	Akaike info criterion	-1.436166
Sum squared resid	0.166332	Schwarz criterion	-1.289128
Log likelihood	15.20741	Hannan-Quinn criter.	-1.421550
F-statistic	7.128201	Durbin-Watson stat	2.171383
Prob(F-statistic)	0.007330		

Null Hypothesis: D(TVTR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.964823	0.0576
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TVTR,2)
Method: Least Squares
Date: 08/16/14 Time: 04:06
Sample (adjusted): 1996 2013
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TV(-1))	-0.743353	0.250724	-2.964823	0.0091
C	0.000126	0.001917	0.065899	0.9483

R-squared	0.354583	Mean dependent var	-0.000549
Adjusted R-squared	0.314244	S.D. dependent var	0.009754
S.E. of regression	0.008078	Akaike info criterion	-6.695000
Sum squared resid	0.001044	Schwarz criterion	-6.596069
Log likelihood	62.25500	Hannan-Quinn criter.	-6.681358
F-statistic	8.790173	Durbin-Watson stat	1.932062
Prob(F-statistic)	0.009125		

Null Hypothesis: D(TOR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.459054	0.0032
Test critical values:	1% level	-3.886751	
	5% level	-3.052169	
	10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TOR,2)
Method: Least Squares
Date: 08/16/14 Time: 04:07
Sample (adjusted): 1997 2013
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TOR(-1))	-1.960919	0.439761	-4.459054	0.0005
D(TOR(-1),2)	0.332921	0.238792	1.394191	0.1850
C	-0.001402	0.005832	-0.240455	0.8135

R-squared	0.797044	Mean dependent var	0.002632
Adjusted R-squared	0.768050	S.D. dependent var	0.049694
S.E. of regression	0.023933	Akaike info criterion	-4.468296
Sum squared resid	0.008019	Schwarz criterion	-4.321258
Log likelihood	40.98051	Hannan-Quinn criter.	-4.453680
F-statistic	27.49018	Durbin-Watson stat	2.138242
Prob(F-statistic)	0.000014		

Null Hypothesis: D(CR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.956772	0.0000
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities & critical values calculated for 20 observations
& may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CR,2)
Method: Least Squares
Date: 08/16/14 Time: 04:08
Sample (adjusted): 1996 2013
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CR(-1))	-1.503088	0.216061	-6.956772	0.0000
C	-0.026300	0.173284	-0.151772	0.8813

R-squared	0.751540	Mean dependent var	-0.001248
Adjusted R-squared	0.736011	S.D. dependent var	1.430570
S.E. of regression	0.735024	Akaike info criterion	2.326613
Sum squared resid	8.644171	Schwarz criterion	2.425543
Log likelihood	-18.93952	Hannan-Quinn criter.	2.340254
F-statistic	48.39668	Durbin-Watson stat	2.300547
Prob(F-statistic)	0.000003		

APPENDIX IV

Result of OLS Regression

Dependent Variable: RGDP
Method: Least Squares
Date: 08/16/14 Time: 05:04
Sample (adjusted): 1995 2013
Included observations: 19 after adjustments
RGDP=C(1)+C(2)*MCR+C(3)*TVTR+C(4)*TOR+C(5)*CR

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	8.356327	0.460634	8.838870	0.0000
C(2)	0.134491	0.173785	3.109658	0.0083
C(3)	-0.128132	0.661662	-0.048128	0.9623
C(4)	0.758144	0.872775	0.080614	0.9370
C(5)	-0.006910 0	0.960562	-0.775008	0.4522

R-squared	0.803117	Mean dependent var	14.24613
Adjusted R-squared	0.727393	S.D. dependent var	0.499246
S.E. of regression	0.576936	Akaike info criterion	0.231578
Sum squared resid	0.876530	Schwarz criterion	0.531402
Log likelihood	3.059839	Hannan-Quinn criter.	0.506625
F-statistic	10.60581	Durbin-Watson stat	1.090615
Prob(F-statistic)	0.000316		

APPENDIX V

Result of Johansen co-integration test

Date: 081/6/14 Time: 05:38
Sample (adjusted): 1996 2013
Included observations: 18 after adjustments
Trend assumption: Linear deterministic trend
Series: RG MCR TVTR TOR CR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.986964	159.4784	69.81889	0.0000
At most 1 *	0.930745	81.35735	47.85613	0.0000
At most 2 *	0.712201	33.29807	29.79707	0.0190
At most 3	0.288610	10.87922	15.49471	0.2190
At most 4 *	0.231924	4.749593	3.841466	0.0293

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.986964	78.12104	33.87687	0.0000
At most 1 *	0.930745	48.05928	27.58434	0.0000
At most 2 *	0.712201	22.41885	21.13162	0.0328
At most 3	0.288610	6.129626	14.26460	0.5966
At most 4 *	0.231924	4.749593	3.841466	0.0293

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

APPENDIX VI

Granger Causality test Result

Pairwise Granger Causality Tests
Date: 08/16/14 Time: 06:39
Sample: 1994 2013
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
MCR does not Granger Cause RGDP	19	1.01359	0.3290
RG does not Granger Cause MCR		3.82374	0.0682
TVTR does not Granger Cause RGDP	19	0.47982	0.4984
RG does not Granger Cause TVTR		0.02826	0.8686
TOR does not Granger Cause RGDP	19	0.04581	0.8332
RGDP does not Granger Cause TOR		0.09762	0.7587
CR does not Granger Cause RGDP	19	0.05030	0.8254
RGDP does not Granger Cause CR		0.02100	0.8866
TVTR does not Granger Cause MCR	19	0.07067	0.7938
MCR does not Granger Cause TVTR		0.98374	0.3360
TOR does not Granger Cause MCR	19	0.05393	0.8193
MCR does not Granger Cause TOR		0.51833	0.4819
CR does not Granger Cause MCR	19	3.15848	0.0945
MCR does not Granger Cause CR		0.03635	0.8512
TOR does not Granger Cause TVTR	19	0.79817	0.3849
TVTR does not Granger Cause TOR		0.96792	0.3398
CR does not Granger Cause TVTR	19	0.10560	0.7494
TVTR does not Granger Cause CR		0.09757	0.7588
CR does not Granger Cause TOR	19	0.05019	0.8256
TOR does not Granger Cause CR		0.01503	0.9040

Pairwise Granger Causality Tests
Date: 08/16/14 Time: 06:42
Sample: 1994 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MCR does not Granger Cause RGDP	18	1.30785	0.3037
RGDP does not Granger Cause MCR		4.65549	0.0299

TVTR does not Granger Cause RGDP	18	0.45002	0.6472
RGDP does not Granger Cause TVTR		0.65260	0.5369
TOR does not Granger Cause RGDP	18	0.18559	0.8328
RG DPdoes not Granger Cause TOR		1.26943	0.3136
CR does not Granger Cause RG	18	0.25137	0.7814
RG does not Granger Cause CR		0.14114	0.8697
TV does not Granger Cause MCR	18	0.26793	0.7691
MCR does not Granger Cause TV		6.25606	0.0125
TOR does not Granger Cause MCR	18	0.12406	0.8844
MCR does not Granger Cause TOR		1.09217	0.3644
CR does not Granger Cause MCR	18	82.6071	4.3208
MCR does not Granger Cause CR		2.97260	0.0865
TOR does not Granger Cause TV	18	1.13968	0.3499
TV does not Granger Cause TOR		1.94018	0.1831
CR does not Granger Cause TV	18	1.31242	0.3026
TV does not Granger Cause CR		2.94904	0.0879
CR does not Granger Cause TOR	18	0.43068	0.6590
TOR does not Granger Cause CR		0.19313	0.8267

Pairwise Granger Causality Tests
Date: 08/16/14 Time: 06:49
Sample: 1994 2013
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
MCR does not Granger Cause RG	17	2.44109	0.1246
RG does not Granger Cause MCR		1.92132	0.1901
TV does not Granger Cause RG	17	1.31953	0.3220
RG does not Granger Cause TV		0.43752	0.7311
TOR does not Granger Cause RG	17	0.46038	0.7161
RG does not Granger Cause TOR		0.77904	0.5321
CR does not Granger Cause RG	17	0.67329	0.5878
RG does not Granger Cause CR		0.17119	0.9134
TV does not Granger Cause MCR	17	9.87549	0.0025
MCR does not Granger Cause TV		3.40469	0.0614
TOR does not Granger Cause MCR	17	0.64524	0.6034

MCR does not Granger Cause TOR		1.43588	0.2899
CR does not Granger Cause MCR	17	33.3016	2.2305
MCR does not Granger Cause CR		3.52700	0.0565
TOR does not Granger Cause TV	17	1.30301	0.3268
TV does not Granger Cause TOR		0.84685	0.4992
CR does not Granger Cause TV	17	0.76159	0.5409
TV does not Granger Cause CR		2.36086	0.1328
CR does not Granger Cause TOR	17	1.05374	0.4112
TOR does not Granger Cause CR		0.45868	0.7172

Pairwise Granger Causality Tests
Date: 08/16/14 Time: 06:53
Sample: 1994 2013
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
MCR does not Granger Cause RG	16	1.69708	0.2539
RG does not Granger Cause MCR		1.05648	0.4437
TV does not Granger Cause RG	16	1.13751	0.4122
RG does not Granger Cause TV		1.37753	0.3331
TOR does not Granger Cause RG	16	0.28408	0.8794
RG does not Granger Cause TOR		0.50444	0.7348
CR does not Granger Cause RG	16	0.47209	0.7558
RG does not Granger Cause CR		0.22737	0.9146
TV does not Granger Cause MCR	16	5.55854	0.0246
MCR does not Granger Cause TV		4.87007	0.0340
TOR does not Granger Cause MCR	16	1.37201	0.3347
MCR does not Granger Cause TOR		1.00699	0.4642
CR does not Granger Cause MCR	16	24.5451	0.0003
MCR does not Granger Cause CR		6.80480	0.0147
TOR does not Granger Cause TV	16	0.91443	0.5054
TV does not Granger Cause TOR		1.06878	0.4388
CR does not Granger Cause TV	16	1.79434	0.2344
TV does not Granger Cause CR		3.83793	0.0585
CR does not Granger Cause TOR	16	0.56781	0.6947
TOR does not Granger Cause CR		0.49285	0.7423