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STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH: EVIDENCE FROM MAURITIUS.

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ABSTRACT

With the ever-growing importance of stock markets around the world, an overwhelming number of studies have been carried out worldwide to investigate the links which might exist between stock market development and economic growth. However, most of these studies have focused solely on developed countries. As such, since studies analyzing this link in the African region are rather scant, this paper endeavors to scrutinize the relationship between equity market development and economic growth in Mauritius. To this end, this paper analyzes the relationship between stock market development, banking development and economic growth in a unified framework using semi-annual data for the period 1988-2011, through a dynamic Vector Error Correction Model (VECM). The results suggest that stock market development does play an important role in generating gains in terms of economic growth in the long run in the island. Moreover, Granger-causality results indicate the presence of a bi-directional causality between stock market development and economic growth.

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INTRODUCTION

One of the most enticing and long lasting debates in economics revolves around the relationship between financial development and economic growth. Its root can be traced back to as early as Schumpeter (1912), who vehemently argued that financial services are of paramount importance for enhancing economic growth. The financial sector can in fact be roughly split into two systems: the bank-based system and the market-based system. Historically, research has been confined solely to the role of banking sector on economic growth. Indeed, Bagehot (1873) and Schumpeter (1912) lay emphasis on the importance of the banking system in promoting economic growth. They illustrate that by identifying and funding productive investments, banks can dynamically lead to innovation and economic growth. On the contrary, Lucas, (1988) argues that economists tend to badly "over-stress" the role of financial development. Empirically many studies (King and Levine,1993 a b c, 1994; Rousseau and Wachtel, 1998; Levine and Zervos, 1998; Arestis, Demetriades, and Luintel, 2001; Beck and Levine, 2002) demonstrate that financial systems actually do accelerate the long run economic growth.

In the recent past, however, with the phenomenal growth of equity markets, a burgeoning number of policy makers and researchers began to query about the possible impact that equity market development might have on economic growth. Indeed, the ever growing importance of stock markets around the world has strengthened the view that they play a key role in fueling a powerful and resilient economy. In the past few decades, the world stock markets have surged. Though they depended traditionally on the banking system only, Mauritius, as well as other African countries were not spared: stock markets have rapidly sprouted in the region and gained a prominent role, and those countries which do not possess any yet, are seriously considering launching one. The unparalleled speed and extent of stock market development worldwide, and its possible impact on growth have aroused the curiosity of many economists, thereby duly shifting the focus towards the link between stock market development and economic development. Although research about the specific contributions of stock markets to economic development is increasing extensively, arguments and evidence, both theoretical and empirical, have been diverse.

Researches revolve around two interesting questions: is there any relationship between equity market development and economic expansion? And is there is one, then, what are the nature and the direction of this relationship? Analysts share different views regarding these questions. On one hand, some believe that stock market development is highly positively correlated to economic growth (see Pagano, 1993; Atje and Jovanovich, 1993;

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Demirgüç-Kunt and Levine, 1996; Levine and Zervos, 1996, 1998, Rousseau and Wachel, 2000; Beck and Levine, 2003), while on the other hand, some claim that stock market development affects the economy adversely (Stiglitz, 1985; Bencivenga and Smith, 1991; Naceur and Ghazouani, 2007; Devereux and Smith, 1994). Moreover, traditional growth theorists strongly believed that no such link exists between equity market development and economic expansion, so much so that some even viewed the stock market as an instrument that can damage economic development due to their volatile nature (Stiglitz, 1985; Bencivenga and Smith, 1991; Naceur and Ghazouani, 2007; Devereux and Smith, 1994).

Theoretically, researchers who are in favour of positive relationships between stock market development and economic growth hinged their arguments on the fact that the stock markets promote economic development mainly through the specific direct or indirect services they perform, namely, mobilization and allocation of savings, liquidity, risk diversification and management, facilitating the exchange of goods and services, and ensuring good corporate governance and control, and, improved dissemination and acquisition of information (Levine, 2004). However, these perceived benefits have been often criticized, to the extent that they are even believed to cause damage to the economy (see Tullio and Pagano, 1994; Devereux and Smith, 1994).

Having generated strong controversy, the debate concerning the link between financial development and economic growth is still difficult to solve and causality hard to pin down. Some growth analysts advocate the "supply leading" hypothesis, which argues that economic growth appears as a consequence of stock market development (McKinnon, 1973; Shaw, 1973; Patrick, 1966 and Fry, 1973; Levine and Zervos, 1996, 1998; Demirguc-Kunt and Levine, 1996a; Atje and Jovanovic, 1993; King and Levine, 1993; Levine and Zervos, 1998; Demirgüç-Kunt and Maksimovic, 1996; Agrwalla and Tuteji, 2007), while others postulate the inverse, that is, the "demand following" approach, which claims that the development in the economic sector precedes financial development since an increase in real income enables the growth of costly and increasingly sophisticated financial services (Robinson, 1952). Yet another view argues that stock market development and economic growth simultaneously influence each other, thus favoring a bi-directional causal relationship between them (Arestis and Demetriades, 1993; Arestis, Demetriades and Luintel, 2001, Demetriades and Hussein, 1996, Luintel and Khan, 1999). So far, the exact direction of causality between stock market development and economic growth remains rather controversial.

Overall, it is by now widely recognized that a well functioning financial system is crucial to economic growth. Indeed, new theoretical and empirical research works provide support to the growing assertion that stock markets, being part of the financial system, play important roles as well in economic growth. However, causality direction between them has generated a lot of controversy, while dynamics and endogeneity issues have been tackled obliquely. Yet another weakness of previous empirical works is the failure to scrutinize the individual contribution of banking and stock market development on economic growth in a single framework. Besides, despite the rapidly escalating interest in the role and importance of stock market development on economic growth, literature on equity markets abounds mostly for developed countries only, while analysis of the link relatively scant in developing regions, more specifically, African countries.

Since it is unclear whether African countries respond similarly, the study will analyze the impact of stock market development on economic growth in a selected set of countries in the African region. stock markets in the African region are still comparatively smaller than other emerging markets. In terms of stock market size, the Johannesburg stock exchange in South Africa dominates the region. The Cairo and Alexandria Stock Exchange is however rapidly expanding as well. Despite being fairly new, the Stock Exchange of Mauritius has also seen considerable development since its establishment. Indeed, The size of the market has grown from a market capitalisation to GDP ratio of less than 4% in 1989 to a current market capitalisation/GDP ratio exceeding 80% (the highest in Sub Saharan Africa excluding South Africa), in an economy that has witnessed a 5% average growth rate during the last 25 years. Taking into account the relatively fast upsurge in stock market development in the African region, an analysis of its possible relation with economic growth becomes urgently crucial. Since most of the previous empirical studies focused on examining the link in developed countries, it would be worth investigating whether Small Island Developing States like Mauritius respond similarly to stock market development and to find out the exact direction of causality between equity market development and economic growth in these a developing island, given their particular uniqueness and weaknesses. This paper therefore aims to determine the relationship between stock market development and economic development in Mauritius.

In order to examine this relationship, stock market development, banking development and economic growth are analysed in a unified framework using semi-annual data covering the time sample of 1989-2011, through a dynamic Vector Error Correction Model (VECM). This study is believed to depart from and contribute to the existing research in several ways. Firstly, innovative dynamic econometric analysis is employed for this investigation over a period of 23 years. Indeed, the VECM is used extensively to determine the link between stock

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market development and economic growth while simultaneously allowing identification of any bi-directional and/or uni-directional causality between the variables of interest. Moreover, this particular model divulges both the direct and the indirect impacts, if any, which stock market development might have on economic growth. Possible determinants of stock market development and the effect of stock market development on the control variables can also be analyzed through the VECM. Additionally, this study considers stock market development, economic growth as well as banking development in a unified framework to enable the determination of whether banks and stock markets act as complements to each other or substitute each other. Thirdly, the use of extracted information is maximized by using several measures of stock market development instead of a composite measure, thus enabling us to better identify the potential links between the stock market and economic expansion. Moreover, some important control variables, such as measures of investment, trade openness and human capital, are also included in the system in an attempt to minimize the problem of omitted variables. Eventually, Granger-Causality tests will help to discern the exact direction of causality between the variables of interest.

LITERATURE REVIEW

Theoretical Evidence: Stock Market Development And Economic Growth.

Theoretical literature has revealed diverging views with regards to the link between stock market development and economic growth. Indeed, while a rapidly increasing number of theoretical literature support the view that well functioning stock markets can give a vital boost to economic expansion through the financial services they provide either directly or indirectly (facilitating liquidity, risk diversification, savings mobilization, aggregating and disseminating information about firms, and promoting corporate control), there are still other studies which stress out the harm that stock markets can cause to economic growth.

Liquidity is one of the channels through which stock markets can have an impact on economic growth. Liquid equity markets facilitate and increase long term and possibly more profitable investments by reducing the associated risk and improving profitability: assets can be easily and cheaply sold if savers want access to their savings or if they want to alter and diversify their portfolios, while firms still have permanent access to the capital invested by the initial investors. As a result, savers become more comfortable with long-term investments, which eventually become viewed as being more attractive and less risky. Thus, more liquid stock markets facilitate investments in long-term and potentially more lucrative projects, thereby enhancing prospects for long-term growth (Levine, 1991). Moreover, liquidity also increases investor incentive to acquire information on firms and improve corporate governance, thereby promoting growth (Holmstrom and Tirole, 1993).

Yet another important contribution of stock markets to economic growth is through the global risk diversification opportunities they offer. Stock markets serve as a tool for trading, pooling and diversifying risks. The ability of stock markets to provide risk diversification services may prompt long run growth via changes in savings rates and resource allocation (Levine, 2004; Gurley and Shaw, 1955; Patric, 1966; Greenewood and Jovanic, 1990; Greenewood and Smith, 1999; Saint-Paul, 1992; Devereux and Smith, 1994; Obsfelt, 1994). However, greater risk sharing and liquidity simultaneously have ambiguous theoretical impacts on saving rates. Indeed, they can cause saving rates can fall so low that they lead to slower economic growth (Devereux and Smith, 1994; Levine, 2004).

Mobilization of savings is also recognized as another channel of transmission between stock market development and economic growth. Acemoglu and Zilibotti (1997) demonstrate how savings mobilization can be linked to economic expansion. Financial intermediaries that mobilize savings from many investors and inject the resources in a diversified portfolio of risky projects enable a shift towards higher return activities, thus leading to an improvement in economic growth. Moreover, savings mobilization has a direct impact on capital accumulation and it can also enhance resource allocation and technological innovation (Levine 1997). Thus since stock markets help improve the effective mobilization of resources, they enable better technologies to be adopted, thereby encouraging growth (Greenwood and Smith, 1996; Sirri and Tufano, 1995)

Additionally, stock markets may also stimulate the acquisition and dissemination of information on firms, thereby accelerating economic growth. In fact high information costs may prevent investors from injecting capital in the most profitable firms. Fortunately, stock markets play an important role in overcoming information frictions as stressed by Boyd and Prescott (1986). They argue that financial intermediaries provide information about investment projects. This reduces the costs of collecting and analyzing information, thereby improving resource

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allocation (see Diamond, 1984 also). Had it not been for the financial intermediaries, each investor would have had to pay a large fixed cost for the evaluation (Levine, 2004).

Well functioning stock markets also foster corporate control. As the effectiveness of corporate governance increases, the firm's performance is improved, thereby promoting economic growth. For instance, Holmstrom and Tirole (1993) state that "it seems equally clear that the stock market today performs an important role as a monitor of management, both directly by assessing past contributions to value and indirectly as a market for corporate control". Moreover, Dow and Gorton (1997) also argue that to improve investment decisions, stock prices can be used to evaluate previous management decisions, thus ensuring that stock markets provide greater incentives for better corporate control. Knight (1998),further states that this improves the efficiency of the global allocation of savings and investment, which in turn enhances economic growth.

In contradiction to the above, theoretical disagreements concede that the services provided by the stock markets can also influence economic growth negatively (Sing, 1997; Sing &Weiss, 1998). Despite the positive impact that stock market liquidity is believed to have on economic growth, it can also deter growth as pointed out by Demirgüç-Kunt and Levine (1996): Firstly, despite fostering an increased return on investment, it simultaneously reduces saving rates through income and substitution effects (Devereux & Smith, 1994), thus hindering economic growth. Secondly, economists claim that the ambiguous effect which the reduced investment risk causes on saving rates may curb economic expansion. Lastly, economic development is also thwarted when dissatisfied participants find it easy and quick to sell in a liquid equity market.

The risk diversification advantage of stock markets can also hinder growth. Indeed, theoretically, greater risk sharing and more efficient capital allocation have ambiguous effects on savings rates. Levine (2004) maintains that if the savings rates fall enough so that, when coupled with an externality-based or linear growth model, greater risk diversification can cause the overall economic growth to fall as well. This is also discussed by Devereux and Smith (1994).

The ability of stock markets to boost growth through enhance corporate control has also been questioned. In 2008, Singh and Deakin vehemently argued that contrary to conventional wisdom, "an active stock market for corporate control is not an essential ingredient of either company law reform or financial and economic development". They observe that despite the previous lack of an active market for corporate control in some countries like Japan, Germany, and France, their long term economic record have been relatively superior. Transaction costs were avoided and managers were still disciplined. They explain that hostile takeovers may actually be harmful to growth prospects due to the economic and social costs linked to restructuring.

Empirical Evidence: Stock Market Development And Economic Growth.

Following the works of Schumpeter (1911), Robison (1952), Goldsmith (1969), McKinnon (1973) and Shaw (1973), the relationship between financial development and growth has been extensively investigated empirically. Although most of these studies used bank based measures of financial development, the recent past has seen a shift towards examining the impact of stock market development on economic growth as well. This has resulted in quite a substantial amount of empirical literature. Be it on a country specific basis, or panels of countries, or even a regional block, results have been mixed. Most, however, concede to a positive relation between stock market development and economic growth as mentioned hereunder:

On the empirical front, Atje and Jovanovic (1993) test the hypothesis that stock markets have a positive link with economic growth. They present a cross-country study of 40 countries over the period 1980-1988 and find a significant correlation between growth and the stock market trading relative to GDP using an OLS regression. King and Levine (1993) also carried out a cross sectional analysis for 77 countries over the period 1960-1989 and documented a robust relationship between initial financial development and subsequent economic growth. Moreover, Levine and Zervos (1996) used pooled cross country time series regression of 41 countries from 1979-1993 and carried out a similar study, but, focused mainly on the role of stock market development. Findings of the study indicated a strong correlation between the stock market development and long run economic growth. Rajan and Zingales (1996) also employ cross-country regressions during the period 1980-1990 on a large sample of countries to examine whether financial development facilitates economic growth. Their results suggest that financial development has an impact on the rate of economic growth. Results from yet another study by Levine and Zervos (1998) across 48 countries, for the period 1976-1993 again suggested a strong statistically significant relationship between initial stock market development, banking development and subsequent economic growth. The study also indicated that both are good predictors of growth. Furthermore, Levine (2002) employs a broad, cross-

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country examination across 48 countries over the period of 1980-1995 and find that the overall financial development is closely linked to economic growth.

Ultimately, country specific studies and pure time series methodologies emerged and became more prevalent. Rousseau and Wachtel (1998) present evidence from the historical experiences of five industrializing countries (the US, UK, Canada, Norway and Sweden) that implies critical roles for both financial intermediaries and financial markets in the early phases of economic development. Arestis, Demetriades, and Luintel (2001) re-examines the relationship between stock markets and economic growth using individual time series model in five developed economies, namely Germany, USA, Japan, UK and France. They also control for the effect of the banking system stock market volatility. Carrying out the empirical investigation in a vector autoregressive framework, their results support the view that both hanks and stock markets may be able to boost up long-term economic growth. However, they find that the effects of the former are more powerful. On the other hand, with data spanning over 1790-1850, Rousseau and Sylla (2005) employ a multivariate time series model, more specifically a VAR framework, to investigate the link between measures of banking, equity market activity, and, economic growth in the U.S. Their VAR estimate results support the view that financial development plays a key role in accounting for changes in the performance of economic growth.

Moreover, Hondroyiannis, Lolos, and Papapetrou (2005) also empirically assess the relationship between the development of the banking system and the stock market, and, economic performance for the case of Greece. The results indicate that there exists a bi-directional causality between finance and growth in the long run. Moreover, to analyze the relationship between stock market development and economic growth in India, Agrawalla and Tuteja (2007) resort to a VECM using monthly time series data during 1990-2002. The findings reveal that stock market development acts as a stimulus to the Indian economic growth, especially in the long run. Also opting for a VECM, Hou and Cheng (2010) investigate the finance-growth nexus in Taiwan. In the long run, the contribution of stock market capitalization to economic growth is found to be substantially larger than that of banking, thus highlighting the importance of stock market in Taiwan. On the other hand, in the short run, a bi-directional causal relation between banking development and economic growth is observed. Demirhan, Aydemir and Inkaya (2011) also use a VECM framework to analyze the causality relationship between financial development and economic growth in Turkey from 1987-2006 and their results indicate that stock market and banking sector development both contribute to economic growth in the long-run, the effect of banking sector being larger than that of the stock market.

In the African region, only a few studies have been carried out to analyse the relationship between stock market development and economic growth. Adjasi and Biekpe (2006) use a dynamic panel data modeling setting to study the effect of stock market development on economic growth in 14 African countries. The results indicate a positive relationship between stock market development and economic growth in the group of African countries. Naceur and Ghazouani (2007) make use of an unbalanced, dynamic panel model with GMM estimators across 11 MENA region countries and their empirical results suggest that there is no significant relationship between banking and stock market development, and economic growth. Furthermore, the link between stock market development and economic growth in Nigeria during 1981-2007 is also analyzed by Nurudeen (2009). The results indicate that while market capitalization ratio has a positive and significant impact on growth, the turnover ratio has a negative and significant impact on the latter. As for Augustine and Pius (2010), they resort to Ordinary Least Squares regression during 1986-2006 to empirically analyze the impact of stock market development on long run growth in Nigeria. Results indicate a positive but insignificant relation between stock market size and growth, a negative link between liquidity and growth, and a positive link between turnover ratio and economic growth. Moreover, Seetanah, Sawkut, and Seetanah (2010) focus on a panel set of 27 developing countries (including Mauritius and several other African countries) with the purpose of simultaneously examining banking sector development, stock market development, and economic growth in a unified framework. Results indicate that stock market development plays a crucial role in growth. However, the magnitude of the impact is lower than that which banking development exerts on growth.

METHODOLOGY AND DATA ANALYSIS

In order to analyze the relationship between stock market development and economic growth in Mauritius, time series semi annual data spanning over a period of 23 years (1989-2011) are used. This section describes the model adopted and the empirical indicators of stock market development, banking development, and, other control variables used in the model.

ISBN 978-0-9925622-1-2

The basic specification of the model is adopted from growth models developed by earlier studies carried out by King and Levine (1993), Levine and Zervos (1998), Levine, Loayza, and Beck (2000), Bekaert, Harvey and Lundblad (2001), Wachtel (2001), Tang (2006), and Seetanah, (2008) and takes the following functional form:

$$Y = f(MCR, TR, TVTSR, DCTPS, GFCF, FDI, OPNS, TER) \quad (1)$$

where,

Y: gross domestic product (GDP)
MCR: market capitalization ratio - value of listed shares in the stock exchange divided by GDP (stock market development proxy).
TR: turnover ratio - value of total traded shares expressed as a percentage of total market capitalization (stock market development proxy).
TVTSR: total value traded shares ratio - total value of shares traded on a country's stock exchanges expressed as a percentage of GDP (stock market development proxy).
DCTPS: domestic credit to private sector - value of credits by financial intermediaries to the private sector divided by GDP (banking development proxy).
OPNS: trade openness - the sum of exports and imports divided by GDP.
GFCF: country's gross fixed capital formation divided by its GDP (investment proxy).
FDI: the foreign direct investment expressed as the percentage of GDP (investment proxy).
TER: tertiary enrolment ratio (human capital measure).

The main source of our time series data is the World Development Indicator database from the World Bank except for the foreign direct investment time series which is extracted from the Bank of Mauritius database. All the data are extracted as annual time series data and are subsequently converted into semi annual data by the cubic spline method.

The specification used in this model is a double log linear one. Taking logs on both sides of the equation (1) above results in the following:

$$y_t = \beta_0 + \beta_1 mcr_t + \beta_2 tr_t + \beta_3 tvtsr_t + \beta_4 dctps_t + \beta_5 gfcf_t + \beta_6 fdi_t + \beta_7 opns_t + \beta_8 ter_t + \varepsilon_t \quad (2)$$

where t denotes the time dimension (From here onwards, the small letters denote the natural logarithm of the variables).

Unit Root Tests

Before proceeding with the estimation of the model to investigate the statistical relationship between stock market development and economic growth, a few preliminary tests are essential. First, it is important to determine whether the time series under investigation are stationary. A series is said to be stationary if it satisfies 3 criteria: firstly, it must exhibit mean reversion by fluctuating around a constant mean; secondly, it must have a finite variance that is time invariant; and thirdly, the autocovariance of the time series is also finite and time invariant. Usually, financial and economic time series data such as the ones used in this study tend to inherently exhibit either a deterministic and/or stochastic time trend given their dynamic nature, and might therefore be non stationary. The series are said to have a unit root and are non stationary at levels. If the series are non stationary, a process called differencing is used to transform the non-stationary data to a stationary one. Usually, the differencing of non-stationary series one or more times usually leads to stationarity. Thus, to determine whether the different time series under consideration are stationary or not, we make use of Augmented Dickey Fuller unit root tests (ADF) and find their order of integration. The test is applied to the level variables as well as to their first differences in logarithm terms. The results of the ADF tests indicate that the unit root tests reject stationarity in favor of a unit root for all the variables. This implies that the variables are integrated of order one, that is, they are non stationary in levels but achieve stationarity after being differenced once.

Cointegration Testing

ISBN 978-0-9925622-1-2

Having determined that all the variables are integrated of order 1, an interesting question arises: Is there a long run equilibrium relationship among the underlying variables. In other words, although non stationary variables may deviate from each other in the short run, economic forces may act in response to the deviations from equilibrium, thus bringing back their association in the long run. This implies that even though each variable is integrated, there exists a linear combination of the variables which is stationary. Series that are cointegrated move together in the long run at the same rate, that is, they obey an equilibrium relationship in the long run. However this can only be achieved provided that these economic variables are co-integrated. As such, the next step is to investigate the matter through cointegration tests. The results indicate the presence of a cointegrating relationship among the variables. Thus, having established the presence of a long run relationship, the study opts for a panel vector error correction model, and proceeds with its estimation.

Estimation: Vector Error Correction Model (VECM)

Having determined that the logarithms of all the variables under consideration are cointegrated, the use of a Vector Error Correction Model (VECM) is called for to estimate the parameters. The VECM is an econometric model which caters for the dynamic nature of the data under consideration. In addition to treating all the variables as endogenous and accommodating for the non stationary features of the data to offer a convenient way to parameterize and specify any co-integration present, it also allows for the detection of any indirect effects which might be present among the variables. Interestingly, the VECM specification forces the long run behavior of the endogenous variables to converge to their co-integrated relationships, while simultaneously accommodating for the short run dynamics as well. Moreover, given the possibility of endogeneity and causality issues, the VECM proves to be also particularly helpful in scrutinizing the link between stock market development and economic growth. The p^{th} order VECM is specified as follows:

$$\Delta \boldsymbol{y}_t = \Pi \boldsymbol{y}_{t-1} + \Gamma_{\mathbf{1}} \Delta \mathbf{y}_{t-1} + \cdots + \Gamma_{\mathrm{p}-1} \Delta \mathbf{y}_{t-p+1} + \boldsymbol{u}_t \qquad (3)$$

where y_t is a vector comprising of 8 variables used in the model as defined above (GDPG, mcr, tr, tvtsr, dctps, opns, invs, fdi, ter), and t denotes the time dimension, and u_t is a standard white noise process. Π is defined as the product of two matrices, α and β', mathematically represented as: $\Pi = \alpha \beta'$, where β corresponds to the cointegrating vectors ("long run parameters") defining the equilibrium relation while α gives the amount of each cointegrating vectors known as the adjustment parameters which quantify the speed at which deviation from equilibrium is corrected.

The VECM is then estimated using, the results of which are reported in below.

TABLE 1. THE LONG RUN EQUATION

	Coefficients	P>|z|
Gdp	1	
Mcr	0.6174008	0.000
Tr	0.7418168	0.000
Tvtsr	-0.6260955	0.000
Dctps	0.7915564	0.000
Gfcf	1.012445	0.000
Fdi	-0.0328103	0.000
Opns	0.5034965	0.000
Ter	0.0633008	0.004

The long run equation yields very interesting results. All variables in the model have a significant impact on economic growth in the island. Regrettably though, total value traded share ratio and foreign direct investment seem to hamper long run growth rather than boosting it, as indicated by their negative coefficients.

Of prime importance to this study, we first focus on the impact of stock market development indicators on economic growth. Although all the stock market development indicators are found to be significantly influencing

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economic growth, only market capitalization ratio (mcr) and turnover ratio (tr) are seen to generate a positive impact on it. Indeed, this is clearly indicated by their positive and significant coefficients of 0.6174008 and 0.7418168. Since a double log-linear model specification has been used, this implies that a 1% increase in market capitalization ratio generates a 0.6174008% increase in economic growth, while a 1% increase in turnover ratio causes a 0.7418168% increase in growth. Coupled together, they account for a rather weighty enhancement in economic development. On the other hand, the other stock market development proxy, total value traded share ratio ($tvtsr$) appears to significantly, but negatively influence long run economic growth, as revealed by the negative and significant coefficient of -0.6260955. A likely explanation for the negative impact of $tvtsr$ on gdp is that the series $tvtsr$ and gdp are diverging- this implies that while gdp is an increasing function, $tvtsr$ fluctuates a lot periodically, thus possibly causing the negative link of $tvtsr$ on gdp. Thus, $tvtsr$ may not be an effective measure of stock market liquidity as pointed out by Levine and Zervos (1998) and Rousseau and Wachtel (2000). A probable cause lies in the fact that Mauritius, being a developing countries, has a rather volatile stock market, which makes $tvtsr$ a misleading indicator of liquidity. This negative impact of total value traded share ratio on growth has also been detected in some previous studies, such as that of Mohtadi and Agarwal (2004) and Augustine and Pius (2010). Nevertheless, when taken as a whole, the total influence of stock market development on economic growth in the long run is argued to be positive and significant. Indeed, the negative influence of total value traded share ratio is completely obscured by the positive boost brought forward by both market capitalization ratio and turnover ratio. This positive impact is in line with previous studies such as that of Levine and Zervos (1998), Arestis, Demetriades, and Luintel (2001), Rousseau and Sylla (2005), Buelens, and Cuyvers (2005), Caporale, Howells, and Soliman (2005), Hondroyiannis, Lolos, and Papapetrou (2005), Agrawalla and Tuteja (2007), Shahbaz, Ahmed and Ali (2008), Hou and Cheng (2010), Adamopoulos (2010), Athanasios and Antonios (2010), Hossain and Kamal (2010), Demirhan, Aydemir and Inkaya (2011).

Shifting our focus on the banking development indicator, domestic credit to private sector ($dctps$), it is seen to have a significantly beneficial effect on the economic growth of the island as well. The result is in line with Arestis, Demetriades, and Luintel (2001), Nieuwerburgh, Buelens, and Cuyvers (2005), Hondroyiannis, Lolos, and Papapetrou (2005), Agrawalla and Tuteja (2007), and Hou and Cheng (2010). From the table above, the positive and significant coefficient of 0.7915564 indicates that banking development propels economic growth in the long run. As such, 1% boost in $dctps$ leads to a 0.7915564% upsurge in long run economic growth. Since both stock market development and banking development play important roles in generating gains in terms of economic development, they are said to complement each other in the long run. A more in depth comparison of the impact of stock market development and banking development reveals an even more captivating result: The impact of stock market development on the long run economic growth in Mauritius is lower than that of banking development. This is contrary to the study of Tang (2006) and Adamopoulos (2010) but Arestis, Demetriades, and Luintel (2001) and Hondroyiannis, Lolos, and Papapetrou (2005) report similar results. In this study, it can indeed be seen that a 1% increase in domestic credit to private sector (the indicator banking development) causes a higher increase in economic growth of more than 0.0497396% as opposed to what a 1% rise in turnover ratio (an indicator of stock market development) would generate. , when the market capitalization (mcr) proxy of stock market development is considered, the impact of banking development on growth exceeds that of stock market development on growth by even more: to be more specific, a 1% rise in $dctps$ yields a higher impact of 0.1741556% on economic growth than if mcr was increased by 1%.

Moving on to the investment proxies, we find evidence that only the gross fixed capital formation proxy ($gfcf$) has a highly significant and positive role to play in generating gains in terms of economic growth. This can be clearly detected from the significant and positive coefficient of the variable in the long run equation (1.012445), which implies that a 1% increase in gross fixed capital formation causes economic growth to go up by 1.012445%. On the other hand, rather disappointing results are obtained when the impact of foreign direct investment (fdi), another investment proxy, on the economic growth of Mauritius is considered. Surprisingly, it is found to negatively and yet significantly influence long run growth, as indicated by its coefficient of -0.0328103 in the long run equation. Nonetheless, this negative influence emitted from foreign direct investment is relatively negligible compared to the highly positive boost that is brought forward by the other investment proxy, gross fixed capital formation, thus suggesting the overall impact of investment on long run economic growth is positive. Buckley et al. (2002) argue that the extent to which foreign direct investment contributes to growth depends on the economic and social condition of the recipient country. These are linked to not only the rate of savings, but also the degree of openness and the level of technological development in the host country. The higher these factors, the greater are the benefits that can be reaped from an increase in foreign direct investment in terms of economic growth. Although the negative impact of foreign direct investment which has been detected on growth may appear counter intuitive, there are quite a handful of reasons which can be put forward to explain it. Indeed, foreign direct investment may

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prove to be detrimental to the recipient economy if they give rise to a substantial reverse flows in the form of remittances of profits, and dividends and/or if the transnational corporations obtain substantial or other concessions from the host country. Moreover, multinational corporations may operate in imperfectly competitive environments having high barriers to entry and high concentration. This might cause the crowding out domestic savings and investment, which subsequently decreases the growth generating prospects of foreign direct investment. Besides, foreign direct investment may have a negative impact on the external balance as well. This is mainly due to the fact that profit repatriation will tend to affect the capital account negatively. What's more is that foreign direct investment is also often linked with enclave investment, sweatshop employment, income inequality and high external dependency (Details of the possible detrimental impacts of foreign direct investment can be found in Ramirez, 2000). Nevertheless, this suggests that in Mauritius, the role of gross fixed capital formation as a means of investment in the country has a much more important role than foreign direct investment in generating economic growth.

Zooming in on the remaining two control variables in the model, namely trade openness and human capital, it is seen that both fuel long run economic growth in the island. Indeed, their positive and significant coefficients of 0.5034965 and 0.0633008 do indeed indicate that both positively and significantly stimulate economic development. In fact, a 1% rise in trade openness and a 1% increase in the human capital proxy, that is tertiary enrolment ratio, induce a 0.5034965% and a 0.0633008% rise in the economic development of Mauritius respectively.

TABLE 2. THE SHORT RUN ESTIMATES OF THE VECM

	Dgdp	*Dmcr*	*Dtr*	*Dtvtsr*	*Ddctps*	*Dgfcf*	*Dfdi*	*Dopns*	*Dter*
ce1	-0.0290	**1.53959**	**1.6508**	**2.0861**	-0.0299	0.2770	-2.7465	0.0343	0.0077
	(0.171)	(0.000) ***	(0.000) ***	(0.000) ***	(0.723)	(0.019)	(0.525)	(0.577)	(0.972)
Dgdp	**0.6132**	**3.44753**	**8.7454**	**11.083**	-0.5968	1.1722	-2.9189	-0.1283	1.5287
	(0.000) ***	(0.091) *	(0.000) ***	(0.000) ***	(0.262)	(0.115)	(0.915)	(0.741)	(0.261)
Dmcr	0.0086	**0.63979**	-0.1136	0.1883	**0.0955**	**0.1755**	-1.0918	**0.0927**	0.0011
	(0.515)	(0.001) ***	(0.629)	(0.440)	(0.069) *	(0.017) **	(0.684)	(0.015) **	(0.994)
Dtr	0.0287	-1.3358	-0.9827	-1.7741	0.1128	0.1573	-1.5158	0.0310	0.3186
	(0.356)	(0.005) ***	(0.078) *	(0.002) ***	(0.364)	(0.364)	(0.812)	(0.732)	(0.315)
Dtvtsr	-0.0266	**1.14034**	**1.3735**	**2.0815**	-0.0798	-0.1812	0.1435	-0.0252	-0.3003
	(0.348)	(0.008) ***	(0.007) ***	(0.000) ***	(0.481)	(0.251)	(0.980)	(0.760)	(0.298)
Ddctps	**0.0671**	0.64926	**-1.5525**	**-1.3385**	**0.5649**	0.3357	-8.5204	-0.0093	-0.0815
	(0.094) *	(0.288)	(0.030) **	(0.072) *	(0.000) ***	(0.132)	(0.297)	(0.937)	(0.842)
Dgfcf	0.0397	**1.96002**	**1.7161**	**2.5582**	-0.0885	**0.6658**	3.2848	**-0.3257**	-0.2113
	(0.279)	(0.000) ***	(0.009) ***	(0.000) ***	(0.545)	(0.001) ***	(0.660)	(0.002) ***	(0.571)
Dfdi	**0.0017**	**-0.0386**	0.0224	0.0156	0.0053	-0.0077	-0.206	0.0020	0.0005
	(0.068) *	(0.006) ***	(0.172)	(0.360)	(0.147)	(0.132)	(0.270)	(0.455)	(0.956)
Dopns	-0.021	-0.6107	-0.780	-0.643	-0.214	**0.6705**	-10.268	**0.6724**	0.1353
	(0.640)	(0.369)	(0.328)	(0.436)	(0.228)	(0.007) ***	(0.259)	(0.000) ***	(0.765)
Dter	0.0210	0.22873	-0.1235	-0.0119	-0.0432	-0.1405	-3.0021	0.0237	0.1077
	(0.283)	(0.443)	(0.724)	(0.974)	(0.579)	(0.197)	(0.451)	(0.676)	(0.588)
const	0.0020	**0.10087**	0.0601	0.0644	0.0191	0.016	0.1432	0.0041	0.0194
	(0.538)	(0.037)	(0.289)	(0.273)	(0.130)	(0.353)	(0.825)	(0.660)	(0.548)

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*Note: *** indicates significance at 1% level, ** at 5% and *** at 10% respectively. The small letters denotes variables in natural logarithmic and p-values are in parentheses; D denotes the lag of the variables.*

This table shows the estimates of the short run parameters along with their p-values in brackets. It is a composite table, where each column can be viewed and analyzed as an independent function, that is, each column in the table corresponds to an equation in the VECM. The variable named in the first cell of each column is viewed as the dependent variable while the ones listed in the right hand side rows are regarded as the explanatory ones. The estimated coefficient and p-values of the explanatory variables are reported in the cells.

Impact Of Stock Market Development And Other Control Variables On Growth

Examining the short run estimates of the equation having gdp as the dependent variable (the first column), only gdp, banking development, and foreign direct investment are seen to influence growth in the short term. Indeed, an analysis of the table shows that banking development has a positive and significant coefficient of 0.0671. It can therefore be deduced that a 1% rise in banking development generates a 0.0671% upsurge in the short run economic growth of the island. Recall that banking development was also seen to have an impact on the long run growth of the island as well. Indeed, the long run estimates indicated that a 1% rise in banking development leads to a 0.7915564% increase in the long run economic growth. It is thus worth noting that the role of banking development is much higher in the long run than in the short run, thus suggesting that banking development does have an immediate effect on growth, although its full impact takes more time to be registered. As far as the foreign direct investment proxy of investment is concerned, the table shows that it undeniably has a small but nonetheless significant short run impact on growth. This is clearly depicted from its positive and significant coefficient of 0.0017, which implies that a 1% increase in foreign direct investment will be followed by a 0.0017% increase in economic growth in the short run. Interestingly, we observe that unlike in the long run, stock market development does not have any significant impact on the economic growth of the island in the short run, thus entailing that it takes time to perceive the economic benefits of stock market development in Mauritius.

Possible Determinants Of Stock Market Development

Interestingly, the results indicate that both economic growth and investment foster stock market development in the short run. Indeed, in the short run, it is undoubtedly clear from the highly positive and significant coefficients of the lag of gdp in the 2nd, 3rd, and 4th columns of the table above that the latter brings a favorable boost to stock market development in the short run, through all of its three indicators. To be more specific, the table provides evidence that a 1% increase in gdp yields increases of magnitude of 3.44753%, 8.7454%, and 11.083% in market capitalization ratio, turnover ratio, and total value traded share ratio respectively. This result reveals that our study is in line with the demand following hypothesis, that is, it is the economy that catalyses development in the stock market, at least in the short run. Next, if the investment proxies are considered, we can discern that gross fixed capital formation greatly helps in promoting stock market development in Mauritius. This evident from the highly positive and highly significant coefficients of the lag of gross fixed capital formation in the 2nd, 3rd, and 4th columns of the table. In fact, these coefficients indicate that an increase of 1% in this investment proxy causes the market capitalization ratio, turnover ratio and total value traded share ratio proxies of stock market development to rise by 1.96002%, 1.7161%, and 2.5582% respectively.

Yet another attention-grabbing result is that banking development proves to be rather injurious to the development of stock market development in the short run. Indeed, the table detects negatively significant coefficients of the lag of banking development in the 3rd and 4th columns. These coefficients help us discern that a 1% increase in banking development causes the level of turnover ratio and total value traded share ratio to both drop by 1.5525% and 1.3385% each. Such a damaging impact of banking development on stock market development in the short run might mean that the services of the banking sector tend to initially curb and conceal those of the stock markets in Mauritius.

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Impact Of Stock Market Development On Other Control Variables

Amazingly, out of all the proxies of stock market development, only market capitalization ratio (mcr) has any impact on control variables in the short run. In fact, the short run estimates of the table divulge that market capitalization ratio is conducive to banking development, investment, and, trade openness.

Focusing on the 5th column of the table which has banking development as the independent variable, it can be observed that market capitalization ratio enhances banking development in the short run. Indeed, the lag of mcr has a positive and significant coefficient of 0.0955. This entails that a 1% increase in mcr causes banking development to go up by 0.0955%, thus suggesting that initially, stock market development does not substitute banking development in Mauritius, but quite on the contrary, the former tends to complement the latter, at least in the short run. Furthermore, a more thorough scrutiny of the links between stock market development, baking development and economic growth points towards another impressive result: The indirect effect of the stock market development on gdp. Recall that a 1% increase in market capitalization ratio was just seen to result in a 0.0955% upsurge in banking development if the equation having banking development as header is considered. On the other hand, as previously described, when the gdp equation was considered, it was found that a percentage increase in banking development generates a 0.0671% rise in economic growth. Coupled together, these two impacts give rise to an indirect impact of 0.0955×0.0671 percentage point increase in the short run economic growth. This is actually the indirect effect of stock market development on short run economic growth through banking development. Therefore, a captivating conclusion can be deduced: although stock market development does not directly influence economic growth in the short run, it does have an indirect and positive impact on short run economic development in Mauritius, through banking development. This indirect impact is triggered by the market capitalization ratio proxy of stock market development.

Yet another fascinating result that the table depicts is that market capitalization ratio also plays a rather crucial role in improving investment, through gross fixed capital formation. Indeed, if the 6th column of the table is considered, the coefficient of the lag of market capitalization ratio is found to be positive and significant (0.1755), thus hinting that if stock market development is increased by 1% through market capitalization ratio, the resulting impact would cause gross fixed capital formation to shoot up by 0.1755%. Additionally, the table also provides evidence of the valuable influence of stock market development on trade openness. The coefficient of the lag of market capitalization ratio is positive and significant in the 8th column of the table, which has trade openness as the header. The result implies that a 0.0927% rise will be induced in trade openness if market capitalization ratio is increased by 1%.

Hence, the regression results confirm the existence of a positive and significant relationship between stock market development and economic growth, both in the short run and in the long run. Indeed, the results provide evidence of stock market development playing an important role in fostering long run and short run economic growth. However, in the short run, stock market development only has an indirect impact on growth through banking development. Additionally**,** the short run results reveal that our study is also in line with the demand following hypothesis. We proceed with the identification and analysis of any Granger causality present among the underlying variables.

GRANGER CAUSALITY

To investigate whether any causal relationship exists between economic growth and stock market development, the well-known Granger-Causality test is adopted. The approach adopted by Granger (1969) to the question of whether variable x causes variable y was to first find out how much of the current value of y can be explained by past values of y. The next step would be to see whether adding lagged values of x can improve the explanation. Then, y is said to be Granger-caused by x if x has a role to play in the prediction of y, or equivalently if the coefficients on the lagged x's are statistically significant. Thus the variable y can be predicted more efficiently using the information in the variable x. The hypothesis tested is:

H_0: variable x does not Granger-Cause variable y

H_a: variable x Granger-Causes variable y

ISBN 978-0-9925622-1-2

TABLE 3. PAIRWISE GRANGER-CAUSALITY WALD TESTS

Null Hypothesis:	Chi square	Prob.	Direction of causality
mcr does not Granger Cause gdp	45.18	0.000***	mcr ↔ gdp
gdp does not granger cause mcr	12.497	0.002***	
tr does not Granger Cause gdp	56.326	0.000***	tr ↔ gdp
gdp does not granger cause tr	119.24	0.000***	
tvtsr does not granger cause gdp	53.038	0.000***	tvtsr ↔ gdp
gdp does not granger cause tvtsr	96.239	0.000***	
dctps does not granger cause gdp	109.78	0.000***	dctps → gdp
gdp does not granger cause dctps	3.3491	0.187	
fdi does not granger cause gdp	3.9172	0.141	
gdp does not granger cause fdi	.71316	0.700	
gfcf does not granger cause gdp	114.12	0.000***	gfcf ↔ gdp
gdp does not granger cause gfcf	11.609	0.003***	
opns does not granger cause gdp	18.677	0.000***	opns → gdp
gdp does not granger cause opns	2.7591	0.252	
ter does not granger cause gdp	31.604	0.000***	ter → gdp
gdp does not granger cause ter	2.7591	0.252	
tr does not granger cause mcr	51.599	0.000***	tr ↔ mcr
mcr does not granger cause tr	45.808	0.000***	
tvtsr does not granger cause mcr	55.671	0.000***	tvtsr ↔ mcr
mcr does not granger cause tvtsr	27.573	0.000***	
dctps does not granger cause mcr	4.0211	0.134	mcr → dctps
mcr does not granger cause dctps	4.8621	0.088*	
fdi does not granger cause mcr	3.5348	0.171	
mcr does not granger cause fdi	.99503	0.608	
gfcf does not granger cause mcr	14.844	0.001***	gfcf → mcr
mcr does not granger cause gfcf	.03536	0.982	
opns does not granger cause mcr	12.066	0.002***	opns ↔ mcr
mcr does not granger cause opns	18.446	0.000***	
ter does not granger cause mcr	10.827	0.004***	ter ↔ mcr
mcr does not granger cause ter	18.446	0.000***	
tvtsr does not granger cause tr	50.67	0.000***	tvtsr ↔ tr
tr does not granger cause tvtsr	41.836	0.000***	
dctps does not granger cause tr	114.83	0.000***	dctps → tr
tr does not granger cause dctps	3.8201	0.148	
fdi does not granger cause tr	61.543	0.000***	fdi ↔ tr
tr does not granger cause fdi	11.154	0.004***	
gfcf does not granger cause tr	70.472	0.000***	gfcf → tr
tr does not granger cause gfcf	.10855	0.947	
opns does not granger cause tr	23.542	0.000***	opns ↔ tr
tr does not granger cause opns	9.6093	0.008***	

ISBN 978-0-9925622-1-2

ter does not granger cause tr	21.952	0.000***	ter ↔ tr
tr does not granger cause ter	9.6093	0.008***	
dctps does not granger cause tvtsr	111.29	0.000***	dctps → tvtsr
tvtsr does not granger cause dctps	2.4391	0.295	
fdi does not granger cause tvtsr	57.664	0.000***	fdi ↔ tvtsr
tvtsr does not granger cause fdi	5.8323	0.054*	
gfcf does not granger cause tvtsr	74.327	0.000***	gfcf → tvtsr
tvtsr does not granger cause gfcf	.16649	0.920	
opns does not granger cause tvtsr	14.79	0.001***	opns ↔ tvtsr
tvtsr does not granger cause opns	7.093	0.029**	
ter does not granger cause tvtsr	9.2643	0.000***	ter ↔ tvtsr
tvtsr does not granger cause ter	7.093	0.029**	
fdi does not granger cause dctps	7.5353	0.023**	fdi → dctps
dctps does not granger cause fdi	.12348	0.940	
gfcf does not granger cause dctps	.87787	0.645	
dctps does not granger cause gfcf	1.8289	0.401	
opns does not granger cause dctps	1.4262	0.490	
dctps does not granger cause opns	1.5706	0.456	
ter does not granger cause dctps	3.8854	0.143	
dctps does not granger cause ter	1.5706	0.456	
gfcf does not granger cause fdi	10.269	0.006***	gfcf → fdi
fdi does not granger cause gfcf	.34639	0.841	
opns does not granger cause fdi	2.5945	0.273	
opns does not granger cause gfcf	.26671	0.875	
ter does not granger cause fdi	8.9121	0.012**	ter → fdi
ter does not granger cause gfcf	3.6234	0.163	
fdi does not granger cause opns	1.8519	0.396	
fdi does not granger cause ter	1.8519	0.396	
gfcf does not granger cause opns	17.596	0.000***	gfcf ↔ opns
gfcf does not granger cause ter	17.596	0.000***	
ter does not granger cause opns	.49656	0.780	
opns does not granger cause ter	.49656	0.780	

Note: X→Y implies X Granger-Causes Y and ↔ indicates bi-directional causality

The first test is a Wald test that the coefficients on the two lags of mcr that appear in the equation for gdp are jointly zero. Failure to reject this is equivalent to failing to reject null hypothesis that mcr does not Granger-cause gdp. If the null hypothesis is rejected, then, gdp is said to be Granger-caused by mcr. This implies that mcr has a role to play in the prediction of gdp, or equivalently that the coefficients on the lagged values of mcr are statistically significant. Thus the variable gdp can be predicted more efficiently using the information in the variable mcr. The first row of the table shows that the null hypothesis that mcr does not Granger-cause gdp is rejected based on the p-value. Below is a detailed interpretation of the table.

The Granger-causality table unearths interesting results. Focusing on the heart of the thesis objective, the Granger-causality results provide solid evidence of a bi-directional causality between stock market development and economic growth. Indeed, a bi-directional relationship is visibly depicted between each of the stock market development proxies, namely market capitalization ratio (mcr), turnover ratio (tr), total value traded shares ratio ($tvtsr$), and economic growth. This implies that stock market development fosters economic growth, which in turn simultaneously promotes stock market development as well. This strengthens the idea that the link between stock market development and economic growth is a positive one. As for banking development ($dctps$), it is seen to share

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a uni-directional causality with economic growth, with the causality direction running from the former to the latter. Yet another interesting finding is the Granger-causality detected between the investment proxy, gross fixed capital formation, and economic growth. However, although gross fixed capital formation ($gfcf$) is seen to be Granger-causing economic growth, there is no evidence of foreign direct investment (fdi), the other proxy of investment, sharing any Granger-causality relationship with economic growth. Additionally, a uni-directional causality is also detected between the other remaining two control variables and economic growth. More specifically, openness ($opns$) and the human capital proxy (ter) are each seen to be Granger-causing economic growth.

We next shift our focus on the Granger-causality between stock market development and banking development. The results from the table above divulge the existence of a uni-directional causality between each of the stock market development indicators and banking development ($dctps$). Intriguingly however, the direction of causality differs depending on the stock market development indicator being considered. While the causality direction runs from market capitalization ratio (mcr) to banking development, the other two proxies of stock market development witness a Granger-causality running in the reverse direction with banking development. In other words, the results indicate that it is banking development which Granger-causes the other two stock market development proxies, namely turnover ratio (tr) and total value traded share ratio ($tvtsr$). This result consolidates the notion that stock market development and banking development both tend to complement each other. Additionally, it is worth pointing out that the results also highlight the beneficial role of investment on banking development: they indicate the presence of a uni-directional causality running from the investment proxy, foreign direct investment (fdi) to banking development.

Furthermore, the table also helps to infer about the Granger-causality between other control variables and stock market development in the long run. When we zoom in on the investment proxies, we find the presence of Granger-causality between both investment proxies and the stock market development indicators. Indeed, the presence of a uni-directional causality is detected between the gross fixed capital formation ($gfcf$) proxy of investment and each indicator of stock market development (market capitalization ratio, namely turnover ratio and total value traded share ratio), with the causality direction running from the former to the latter. On the other hand, when foreign direct investment (fdi) is considered, Granger-causality is detected with the turnover ratio (tr) and the total value traded share ratio ($tvtsr$) proxies of stock market development only. Actually, the table provides evidence in support of bi-directional Granger-causality between fdi and tr, and, between fdi and $tvtsr$. Moving on to trade openness ($opns$), a bi-directional Granger-causality is also detected between the latter and each of the three stock market development proxies ($mcr, tr, tvtsr$). Similarly, the results of the table also show that there exists a bi-directional Granger-causality between the human capital proxy and each of the three stock market development proxies as well. Overall, these results imply that investment, trade openness, and human capital all help enhance stock market development, while the latter simultaneously also plays a role in propelling investment, trade openness, and human capital.

CONCLUSION

Based on the VECM method, this empirical study investigates whether any links exist between stock market development and economic growth in Mauritius for the years 1989-2011. The study simultaneously takes into account banking development along with stock market development in a unified framework. The equity market is found to be a major contributor of economic growth, as depicted by the presence of significant positive links between the two in the long-run. In the short run however, stock market development fails to significantly boost economic growth in Mauritius. Nevertheless, the VECM framework reveals an interesting finding: stock market development indirect stimulates economic growth in the short run, through banking development. Interestingly, banking development is seen to have a positive impact on economic growth, both in the short run and in the long run. This indicates that banking development and stock market development both complement each other. As for Granger-causality tests, solid evidence of a bi-directional causality between stock market development and economic growth is seen. Indeed, a bi-directional relationship is visibly depicted between each of the stock market development proxies, namely market capitalization ratio, turnover ratio, total value traded shares ratio, and economic growth. This not only confirms the result obtained in the VECM framework that stock market development fosters economic growth, but it also implies that economic growth in turn

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simultaneously promotes stock market development. As for banking development, it is seen to share a uni-directional causality with economic growth, with the causality direction running from the former to the latter.

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REFERENCES

Arestis, P. and Demetriades, P. (1997) Financial development and economic growth: assessing the evidence, The Economic Journal , pp.107, 783- 99.
Atje, Raymond and Boyan Jovanovic, 1993. Stock markets and Development. European Economic Review, 1993, pp.632-640.
Baltagi, B.H., 2005. Econometric Analysis of Panel Data. 3rd ed. England: John Wiley & Sons, Ltd.
Beck T and Levine T., 2004. Stock markets, banks, and growth: Panel evidence. Journal of Banking and Finance. Vol. 28 (3), pp. 423-442.
Bencivenga, Valerie and Smith, 1991. Financial intermediation and endogenous growth.
Bencivenga, V. R., Smith, B. D. and Starr R. M. (1996) Liquidity of secondary capital markets: allocative effciency and the maturity composition of capital stock, Economic Theory, 7, pp.10-50.
Boyd, J. and Smith, B. (1996) The coevolution of the real and financial sectors in the growth process, The World Bank Economic Review, 10, pp.371- 96.
Caporale, G.M. Howells, P.G.A. Soliman, A.M., 2004. Stock market Development and Economic Growth: The Causal Linkage. Journal of Economic Development, [Online].
Christopoulos and Tsionas, 2004. Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests. Journal of Development Economics.
Deb, S.G. Mukherjee., 2008. Does Stock Market Development Cause Economic Growth? A Time Series Analysis of The Indian Economy. International research journal of Finance and Economics, [Online]. Avalable at: http://www.eurojournals.com/irjfe_21_12.pdf
Demirgüç-Kunt A and Maksimovic V (1996). Stock market development and financing choices of firms, World Bank Economic Review, 10: pp.341-369.
Diamond D (1984) 'Financial intermediation and delegated monitoring', Review of Economic Studies, 51, pp.393-414.
Fry, M. J. (1997) In favour of Financial liberalization, The Economic Journal, 107, pp. 754- 70
Greenwood, J. and Jovanovic, B. (1990) Financial development, growth, and the distribution of income, Journal of Political Economy, 98, 1076- 107.
Holmstrom B and Tirole J (1993) Market liquidity and performance monitoring,Journal of Political Economy, 101, pp.678-709.
King, R. and Levine, R., 1993. Finance and Growth: Schumper Might Be Right. Quaterly Journal of Economics, 108(3), pp. 717-737
Levine R and Renelt D (1992). A sensitivity analysis of cross-country growth regressions, American Economic Review, 82, pp.942-963.
Levine, R. and Zervos, S. (1996) Stock market development and long-run growth, World Bank Economic Review, 10, 323- 39.
Levine, R. and Zervos A., 1998. Stock Markets, Banks and Economic Growth. American economic Review, 88(3), pp.537-558
Levine, R., Loayza, N., and Beck, T., 2000. Financial Intermediation and Growth: Causality and Causes. Journal of Monetary Economics, 46, 31-77
Levine, R. Zervos, S., 2008. Stock markets, Banks, and Economic Growth. The American Economic Review, [Online]. 88 (3). Available at: http://links.jstor.org/sici?sici=00028282%28199806%2988%3A3%3C537%3ASMBAEG%3E2.0.CO%3B2-9
Luintel, K., & Khan, M. (1999). A Quantitative Reassessment of Finance-Growth Nexus: Evidence from a Multivariate VAR. Journal of Development Economics, 60, pp. 381-405.
Mazur and Alexander, W. (2001). Financial sector development and economic growth in New Zealand. Applied Economics Letters, 2001, 8, pp.545-549
McKinnon, P. (1973) Money and Capital in Economic Development, Washington, DC. Brookings Institution.

ISBN 978-0-9925622-1-2

McKinnon J G (1998) Numerical distribution functions for unit root and cointegration tests, Journal of Applied Econometrics, 11,pp. 601–618.
Mohtadi, H. Agarwal, S., 2004. Stock Market Development And Economic Growth: Evidence From Developing Countries, [Online]. Available at: http://faculty.apec.umn.edu/mohta001/PA1-4-01.pdf
Pagano, M. (1993) Financial markets and growth: an overview, European Economic Review, 37, 613- 22.
Rajan, R. G., & Zingales, L. (1998). Financial Dependence and Growth. American Economic Review, 88,pp. 559-586.
Rousseau, peter, and Paul Wachtel, 2000. Financial Intermediation and Economic Performance: Historical Evidence from five Industrialised Countries. Journal of Banking and Finance, 2000, pp.1933-1957.
Rousseau, P. L., & Sylla R. (2001). Financial System, Economic Growth and Globalization. NBER Working Paper No. 8323.
Schumpeter, R. (1912). Theorie der Wirtschaftlichen Entwicklung, Liepzig, Dunker and Humblot (The Theory of Economic Development). Harvard University Press, 1934.
Seetanah, B. Ramessur, S.T., 2009. Financial Development and Economic Growth: New evidence from a sample of economies. Journal of Economic Studies, 36 (2), pp.124-134.
Seetanah, B. Sawkut, R. Sannasee, V., 2010. Stock Market Development and Economic Growth in Developing countries: Evidence from Panel VAR framework. [Online] Centre for the Study of African Economies. Available at: http://www.csae.ox.ac.uk/conferences/2010-EDiA/papers/041-Seetanah.pdf
Shaw, E. S. (1973) Financial Deepening in Economic Development, New York, Oxford University Press.
Singh, A. (1997) Financial liberalization of stock markets and economic development, The Economic Journal, 107, 771- 82.
Stiglitz, J. E. (1994) The role of the state in Financial markets, in Proceedings of the World Bank Annual Bank Conference on Developing Economies (eds) M. Bruno and B. Pleskovich, World Bank, Washington, DC. pp. 19-52.
Obstfeld M (1994). Risk-Taking, Global Diversification, and Growth, American Economic Review, 84, pp.1310-132