

Testing the contribution of the stock market towards economic growth: The case of Mauritius

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This paper attempts to test the relationship between stock market development and economic growth since the inception of the stock exchange of Mauritius. Using data from 1976 to 2008, the study finds that there is no statistically significant relationship between stock market and economic growth, while controlling for several macro-economic variables. The plausible explanation for this situation results in the structure of the Mauritian financial system which is mainly banking oriented.

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1.0 Introduction

Throughout history the proper functioning of any economy, developed or developing, has always been reliant upon its financial system, which encompasses a multitude of financial institutions both of a formal and informal nature. The process of economic development brings about changes to a nation's formal financial sector that comprises of stock exchanges, the Central Bank, commercial banks and offshore companies amongst others. The past few decades have witnessed the incredible upsurge of the stock markets, which nowadays constitute a key element of any country's financial system.

The mounting salience of stock markets in spurring economic growth resulted in the World Bank collaborating with its associate, the IFC, in granting technical assistance to countries with a view to further fuel stock market development across the world. The prerequisites for stock market development consist of adequate funding, renowned industrial firms, robust regulatory and accounting infrastructure as well as well-established financial institutions.

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After the first phase of industrialization and modernization in the late 1980s, Mauritius experienced the need for a well-structured financial system. In the process of transforming the financial sector into the fourth pillar of the Mauritian economy, the Stock Exchange of Mauritius Ltd (SEM) was incepted in 1989. SEM revitalized the Mauritian capital market by enabling firms to raise huge sums using competitive terms. In addition, SEM allows local companies to go public, hence helping them to generate finance fairly more quickly and easily by issuing shares on the stock market. It also reduces companies' reliance on bank financing, thereby improving their gearing. SEM also spurred economic growth by encouraging domestic savings and instilling a culture of investment.

This paper seeks to investigate the correlation between stock market development and economic growth in Mauritius for the period 1976-2008.

2.0 Literature review

The continuously increasing number of stock markets across the world propelled academics to explore the link between financial development and economic growth, laying particular emphasis on the effects of stock market development. In literature, the link between stock market development and economic growth has received much attention but there still exist considerable debates regarding this issue. In analysing the relationship between stock market development and economic growth both financial and economic factors need to be considered.

2.1 Financial factors affecting economic growth

Levine and Zervos (1996) underlined that the development of stock market is far more valuable than that of a banking system as the former offers a wider range of services compared to banks, thereby differently influencing the pattern of investment and growth. It is obvious that a healthy and dynamic stock market plays an elementary role in spurring economic growth and to demonstrate this correlation five factors, namely liquidity, risk diversification, information acquisition about firms, corporate control and savings mobilisation, have been considered.

Levine (1991) and Bencivenga, Smith and Starr (1996) propounded that "stock markets may arise to provide liquidity: savers have liquid assets - like equities - while firms have permanent use of the capital raised by issuing equities". High-return investment projects usually entail the need for capital throughout their entire lifetime, but normally investors are reluctant to lose control over their savings for such a long period. A liquid equity market addresses this mismatch by enabling investors to sell their stakes in the company or modify their portfolio when they are in need of their savings and at the same time ensures a continuous flow of capital to companies through equity issues. By facilitating the undertaking of profitable, risky investment projects, liquid stock markets

ensure a better allocation of capital as well as enhance the likelihood for sustained economic growth.

Another way in which stock markets contribute towards spurring economic growth is through global risk diversification. As pointed out by Saint-Paul (1992), Devereux and Smith (1994), and Obstfeld (1994), “stock markets provide a vehicle for diversifying risk. These models also show that greater risk diversification can influence growth by shifting investment into high-return projects”. Savers are usually risk-averse and refrain from investing in risky investment projects yielding lucrative returns. However, by offering global risk diversification opportunities stock markets trigger a shift towards the undertaking of high-risk-high-return investment projects, hence, entailing a more efficient allocation of savings together with prospects for economic growth.

In an efficient stock market, stock prices instantaneously reflect all relevant publicly available information. Investors refer to these stock prices which reveal firm-specific information to make better investment decisions. Hence, resulting in a better allocation of funds among firms as well as ensuring economic growth.

Stock markets also play a key role in minimising agency problems and thus, foster economic growth. Stock prices reflect the economic performance of firms, implying that managers will work towards maximising shareholders’ value with a view to increase the firm’s share price. In case management fails to do so, the threat of a takeover may materialise.

Stock markets also enable the pooling of capital from various investors for investment purposes. This in turn expands the range of investment projects that could be undertaken as well as enable individual investors to hold stakes in well-diversified portfolios. Ultimately, savings mobilisation fosters efficient resource allocation and leads to technological development and economic growth.

2.2 Economic factors affecting economic growth

In assessing the link between stock market development and economic growth the following economic factors will be considered in turn: government spending, education, inflation, population growth and international trade.

Government spending is crucial for the proper functioning of an economy but excessive spending negatively impacts on the long-run economic growth rate, reducing employees’ participation, raising level of unemployment and decreasing productivity. Barro (1990) carried out a research using Saudi Arabian data to uncover the relationship between the share of government spending in GDP and the growth rate of per capita real GDP. But failed to come up with credible facts substantiating that changes in government spending impact on per capita real output growth.

Economists have acknowledged the role of education in fostering economic development. In fact, results from various cross-country studies on factors affecting economic growth largely support this view. Landau (1993), Barro (1991), and Mankiw,

Romer and Weil (1992) even asserted that some educational indicators tend to have positive effects on output levels.

The link between inflation and economic growth is quite blurry. According to Tun Wai (1959), previous studies have failed to substantiate the relationship between inflation and economic growth. A more recent study carried out by Paul, Kearney and Chowdhury (1997) pointed out that in some cases the relationship was positive while in others it tends to be negative.

According to David Bloom, David Canning and Jaypee Sevilla (2002), economic growth could be enhanced by lowering fertility rates and endorsing policies aimed at improving health, education and job opportunities. Following the changing demographic trends in the developing countries, the association between population change and economic growth has received much attention lately. Developing nations are currently experiencing a fall in mortality as well as fertility rates, thereby creating avenues for them to transform their demographic transitions into economic gains.

International trade exerts a significant influence on a nation's economic growth. Fixed models assuming no market imperfections asserted that trade restrictions would reduce the level of real GDP at world prices. On the other hand, standard models with exogenous technological change and diminishing returns to reproducible factors of production, underlined that trade restriction is not likely to impact on the long-run economic growth rate, regardless of the presence of market imperfections.

2.3 Empirical evidence of the role of stock market on economic growth

Over the years, numerous studies have been carried out with a view to shed light on whether there exists a correlation between stock market development and economic growth and it has been found that there is no room for doubt regarding this statement. Among the various researchers, Atje and Jovanovich (1993) through their study of 40 countries in the period 1979-1988 revealed that the level of financial development is strongly and positively linked to stock market development and economic growth. After observing a sample of 47 countries from 1976 to 1993, Levine and Zervos (1998) also arrived at the same conclusion that stock market liquidity is positively and strongly correlated to economic growth rate. They even found out that the level of banking development (ratio of bank loans to the private sector to the GDP), is positively linked with the level of economic growth.

We can now consider the case of Belgium, a developed country, in illustrating the above-mentioned link. King and Levine's (1993) study of 80 countries for the period 1960-1990 revealed that there exists a strong correlation between financial development and economic growth. Financial development was measured using the ratio of M1 or M2 to GDP, the ratio of central bank credit to domestic credit and the ration of credit allocated to private enterprises to GDP. As for growth it was measured using the growth rate of real per capita GDP, the growth rate of the real per capita

capital stock and productivity growth. To reveal the causality between the two variables, financial development data from the year 1960 had been utilised to measure the resulting effect of financial development on economic growth. The outcome illustrated that primary levels of financial intermediation actually enhances economic growth.

3.0 Overview of the stock exchange of Mauritius

Established on 30th March 1989 the Stock Exchange of Mauritius Ltd (SEM), a privately owned enterprise, is one of the most fundamental financial institutions within the Mauritian financial system and aims at becoming a top-notch stock exchange. SEM comprises of two markets, namely the Official Market and the Development & Enterprise Market (DEM).

Starting operations in 1989 with five listed companies and a market capitalisation of around USD 92 million, the Official Market as at 31st August 2007 consisted of 40 listed companies with a market capitalisation amounting to USD 4,334.30 million. On the other hand, DEM was incepted on 4th August 2006 and as at 31st August 2007 consisted of 50 listed companies with a market capitalisation of around USD 1,500.40 million. DEM bypasses the stringent requirements of the Official Market and adopts a more flexible approach of admission. In addition, it was set up mainly for Small and Medium-sized Enterprises (SMEs).

Following the lifting of exchange control in 1994 SEM was opened to foreign investors, implying that they no longer need to seek approval to trade shares unless the investment relates to some type of legal or management control of a Mauritian company or for the holding of more than 15% in a sugar company.

In 1997, the implementation of the Central Depository System (CDS) made the clearing and settlement of trades much more efficient by minimising the likelihood of natural risks involved in the process as well as speeding up the whole procedure. With the Bank of Mauritius (BOM), acting as a payment bank, the CDS guarantees delivery against payment on a T+3 rolling basis.

Another important aspect of SEM is SEM's Automated Trading System (SEMATS), a high-tech electronic trading system built on third generation technology, which was pioneered on 29th June 2001. SEMATS modernized the trading of securities, which is now carried out through committed trading workstations located at middle dealers and connected by communication lines to the SEM trading engine.

With a view to develop a vibrant secondary market, the trading of treasury bills was started in December 2003. Another important landmark in the history of SEM has been the achievement of membership status of the World Federation of Exchange (WFE) in November 2005. Becoming a member of WFE compels SEM to adhere to set business standards, which are accepted by users of exchanges as well as regulatory bodies.

SEM has drastically evolved ever since its inception in 1989 and will be undergoing a series of reforms aimed at further enhancing the operational and regulatory efficiency of

the domestic market. In the years to come, SEM intends to strengthen its position so as to further contribute towards the development of the Mauritian economy as well as its capital market.

4.0 METHODOLOGY

With a view to unveil the relationship between the development of a robust stock market and economic growth in Mauritius, time series regression will be utilised whereby the growth rate of real GDP will be regressed on a range of variables and an assessment of stock market development for the period 1976-2008 will be performed. The end result will elucidate whether or not there exists a link between stock market development and economic growth.

The secondary data for the study has been extracted mainly from the Central Statistical Office (CSO) and SEM Factbook 2008.

4.1 MODEL SPECIFICATION

The following regression models are used to assess the relationship between economic growth and stock market development.

$$EG_t = B_0 + B_1 INF_t + B_2 LIT_t + B_3 UMEP_t + B_4 GOVT_t + B_5 TRADEOPEN_t + B_6 DUMSTOCK_t + e_t \quad \text{- equation (1)}$$

The sample used for regression model ranges from 1976 to 2008 while the list of variables used is defined below in the table 1.

TABLE 1

Variables	Description
EG	The real growth rate of the real GDP
INF	Inflation
LIT	Literary Rate
UNEMP	Unemployment
GOVT	Government Spending
TRADEOPEN	Trade Openness
DUMSTOCK	Dummy variable; 1 after the stock exchange of Mauritius was set; 0 otherwise

4.2 IMPACT OF STOCK MARKET DEVELOPMENT INDEX ON ECONOMIC GROWTH

For the study a measure of stock market development will be required, whereby particular emphasis will be laid on the size of market capitalization and stock volume.

4.2.1 Size of market capitalization

Market capitalisation ratio is indicative of the size of the stock market and is given the ratio of market capitalisation (share price multiplied by the number of outstanding shares for all stocks traded on the main exchanges of Mauritius) to GDP.

4.2.2 Stock Volume

Stock volume also referred to as market turnover relates to the number of shares traded on a stock exchange over a specified period of time. For technical traders, the stock volume acts as an indicator as to whether or not the closing price is acutely reflecting the market sentiment. Usually, the higher the volume the more reliable is the closing price.

4.3 CONTROL VARIABLES

4.3.1 Inflation

Inflation refers to the persistent rise in the general price level of goods and services in an economy over a certain period of time. Entailing a fall in the value of money, inflation also reduces real income, which in turn engenders a fall in consumption level. As a consequence the standard of living deteriorates and reduces the prospects for high growth rates. Given the inverse relationship between inflation and economic growth, the coefficient of inflation will be a negative sign.

4.3.2 Literary rate

Over the years, the Mauritian governments have stressed the importance of education and outlined its significance in transforming Mauritius into a resilient multi-pillar economy, better equipped to face upcoming challenges. For the development of human capital massive investments have been undertaken in the education sector. The link between education and economic growth is a positive one.

4.3.3 Unemployment

Mauritius has witnessed a rise in its unemployment level despite a strong economic growth rate. Between the early 1980s and early 1990s, unemployment fell by a drastic 17 percent (from 21 percent to 4 percent) but thereafter this trend was reversed with unemployment rate increasing up to 10 percent by the end of 2002. This could mainly

be explained by the mismatch in skills required on the labour market and those available. Further investments in the education sector as well as a restructuring of pay-setting institutions could help remedy the situation.

4.3.4 Government Spending

As stipulated in the manual on Government Finance Statistics (1986) of the International Monetary Fund (IMF), government spending encompasses revenue, grants, expenditure, lending minus repayments, financing and debt relating to the general government sector.

4.3.5 Trade Openness

Trade openness could be measured using the trade volumes, which is the ratio of imports and exports to GDP. An alternative approach is to use import access ratios and export shares in GDP.

5.0 ANALYSIS & INTERPRETATION

5.1 DESCRIPTIVE ANALYSIS

5.1.1 Macroeconomic factors

Table 2

	Economic Growth	Inflation	Unemployment	Literary rate		Government Spending	Trade Openness
				Primary	Secondary		
Mean	5.1	8.8	8.7	60.4	62.4	28.2	-11.2
Minimum	-10.1	0.6	2.7	50.5	37.4	24.6	-20.2
Maximum	16.2	42.0	20.6	68.5	79.4	39.0	1.1
Median	5.2	7.0	8.5	62	63.5	26.4	-11.8
Variance	14.8	47.2	21.4	35.7	168.5	18.0	19
Standard	3.9	6.9	4.6	6.0	13.0	4.2	4.4

Table 2 above illustrates the mean, minimum, maximum, median, variance and standard deviation of the macroeconomic factors. Table 2 shows that throughout the period 1976-2008, inflation rate was at its lowest in 1987 (0.6%) and at its highest in 1980 (42.0%). From Table 2, it can be seen that minimum and maximum rate of pass in CPE was 50.5% in 1981 and 68.5% in 2006 respectively. As for HSC, the minimum rate of pass was of 37.4% in 1980 and 79.4% in 2006. As from 1980 the ever-increasing literary rate at both primary and secondary levels accounted for the rising economic

growth rate, hence implying a positive correlation between literary rate and economic growth.

The relationship between government spending and economic growth is a highly debatable one. Numerous academics pointed out that government spending can either be growth-enhancing or growth-retarding. As per the Mauritian figures, in 1978, the government spending was at its maximum (39.0%) and witnessed a minimum rate of 24.6% in 1994. During 1978-1994, declining government spending was accompanied by a rising economic growth rate, hence implying that the correlation between the two variables is negative. However, as from 1994 onwards the contrary was proved, whereby rising government spending proved to be growth-enhancing rather than growth retarding. Thus, in Mauritius government spending can be said to be both positively and negatively linked to economic growth. Also, trade openness was on the rise during the period 1976-1986, economic growth was declining. Reaching a maximum of 1.1% in 1986, trade openness started declining thereafter and was accompanied by a falling economic growth rate. As such the relationship between trade openness and economic growth is a blurry one, as it proved to be both positive and negative using Mauritian data.

5.1.2 Stock Market Development Factors

Various researchers propounded that there exists a positive relationship between market capitalisation and economic growth, implying that a rise in market capitalisation entails an increase in economic growth. In Mauritius, during 1989-2008, the market capitalisation ratio has been more or less on the rise (rising from a minimum of 4.32% in 1989 and reaching a maximum of 74.93% in 2007) as well as economic growth, thereby indicating that these two variables are positively linked. As far as the turnover to GDP ratio is concerned it has been unstable over the years but seems to be positively correlated to economic growth.

5.2 Regression Analysis

Using data from 1976 to 2008, the results from equation one (as defined the research methodology section) are reported as follows;

TABLE 3

EGt = B0 + B1 INFt + B2 LITt + B3 UMEPt + B4 GOVTt + B5 TRADEOPENT + B6 DUMSTOCKT+ B7 EGt-1			
Variable	Coefficients	T-Statistics	P-Value
Constant	10.27416	0.827006	0.4164
INFt	-0.402673	-4.870593	0.0001
LITt	0.067294	0.373722	0.7119
UMEPt	-0.264600	-1.447910	0.1606
GOVTt	-0.039487	-0.202377	0.8413
TRADEOPENT	-0.031735	-0.252131	0.8031
DUMSTOCKT	-3.283142	-1.686251	0.1047
EGt-1	-0.177517	-1.127139	0.2708
R-squared	0.548019		
DW Statistics	2.020383		
F-Statistics (P-value)	0.000268		

From the above table, the overall results suggest that there is no relationship among all macro-economic variables except for inflation with regards to economic growth. It is observed that lower inflation is accompanied by higher economic growth. The lack of relationship between most control variables and economic growth can be explained by the limited sample size and the different timing regimes the data is subject to. In fact, it may be suggested that policies to stimulate economic growth in the 1980's are not the same as those in 1990's or 2000's. As such, there may be phases where some macro-economic variables turn out be insignificant. With regards to the dummy on stock market development, there relationship is negative but statistically insignificant. This suggests that there is no relationship between stock market development and economic growth in Mauritius. This result can be explained by the fact that the Mauritian economy is mainly banking oriented such that the contribution of the stock market is relatively insignificant towards GDP.

6.0 Conclusion

This paper attempts to explore the link between economic growth and stock market development in Mauritius. The regression results reveal that the relationship between economic growth and stock market development is insignificant. However, it is found that there is a negative relationship between inflation and economic growth. The insignificant relationship between economic growth and stock market development is explained by the fact the Mauritian economy is heavily geared towards banking institutions and that the stock market of Mauritius is relatively small.

7.0 References

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