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# Financial Market Structure and its Impact on Economic Growth

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## Abstract

*The process of economic growth is complex and depends on various factors. Macroeconomics places an important role on capital formation, i.e. physical investments. The process also involves progress in human capital, technology and knowledge. It also requires a stable regulatory and financial system in the country. The financial system acts as the main catalyst in the process of channelling of funds from surplus to deficit units. The fact that there is a relationship between financial development and growth is very highly debated. The broad consensus is that finance acts as a crucial channel in the process. An area of inquiry lies in the question of whether the structure of the financial system has any effect on the overall economic growth process. This involves the mix of banks and stock markets in the economy. Therefore, the basic question that this paper will attempt to answer is: does having a bank-based or market-based financial system matter for economic growth? The approach will involve basic causality tests using time-series data for the Indian economy.*

**Keywords:** Financial development, Financial structure, Economic growth.

## 1. Introduction

For any country the process of economic growth is complex and multidimensional. The role of capital formation is considered quite important and it involves progress in human capital, technology and knowledge. Natural resources are also an equally important part of the process. Ultimately, it also depends on how the researchers measure economic growth. The most common approach is measuring changes in national income.

For GDP to increase in a country, the important aspect is a stable regulatory and financial system. The financial system acts as the main catalyst in the process of channelling of funds from surplus to deficit units. There have been theoretical models which showed that monetary variables and real variables are separate. Yet, money does play a crucial role in facilitating transactions and speeding up economic activity. The fact that there is a relationship between financial development and growth is very highly debated. The broad consensus is that finance acts as a crucial channel in the process. There are three main hypotheses in this relationship, which focus on unidirectional, bidirectional and no causality.

Another debate in the same inquiry asks whether the structure of the financial system has any effect on the overall economic growth process. The structure refers to what the financial markets in a country consist of. This involves the mix of banks and stock markets in the economy. For instance, developing and underdeveloped countries may require an initial intervention and support from the banking sector. But after a stage of development, capital markets are required to have more vibrancy in the economy. In most underdeveloped and developing countries, the banking sector has a major role to play in the overall development of the economy. It may be required to provide loans and advances to priority sectors, such as agriculture, in an effort to strengthen the economy. More so, public banks play a vital role in this aspect. These activities may not interest participants in capital markets, who are primarily looking for returns on their investment.

Hence, the mix of banks and stock markets are quite important, especially while studying the finance-growth relationship. Thus, this paper attempts to study the dynamics for the Indian economy.

## 2. Literature Review

Current reviews suggest that the study by Bagehot (1873) is one of the earliest works that link financial development and economic growth. His study gave illustrations of how money market developments in England aided the flow of capital towards productive industries. The study also articulated the relation between finance, trade and growth. Further, Schumpeter (1912) described how financial intermediation is the centre of economic development. Several other prominent economists have studied this relation and made immense theoretical and empirical contributions [Patrick (1966), Goldsmith (1969), McKinnon (1973) and Shaw (1973)].

In the earliest studies, only descriptive and narrative analyses were made. However, these early studies form the basis of much of current understanding. Great economists like Bagehot, Schumpeter, McKinnon, Shaw, among others, have written on the role of finance in growth. The topic is too important to be taken lightly. The exact mechanism of understanding the process requires an understanding of growth theory. There has been a gradual transition from believers of classical schools of thought and the newer theories of growth.

Over the years, new theories of economic growth were developed. The most recent theory of endogenous growth very appropriately blends the concept of financial development with economic growth. The prominent initial contributions in this area were by Greenwood and Jovanovic (1990), Pagano (1993) and King and Levine (1993). Their research shows that financial development does have a positive impact on economic growth through investment, saving, productivity of capital and effective management of information.

Further, there is no particular differentiation needed between the proportion of banks or stock markets in the economy. Although this argument still goes on, it is believed that both banks and stock markets behave as complementary, rather than rivals in the finance-growth nexus. This is shown by Boyd and Prescott (1986), Boyd and Smith (1998) and Blackburn and Capasso (2005).

The techniques used for econometric analysis have also evolved over the years. From basic descriptive analyses, to cross sectional studies, the focus has now gradually shifted to multivariate models. In recent years, researchers have used techniques of time-series analysis.

## 3. Methodology

To address the issue of structure of the financial system, this study uses data from the World Bank development indicators. The time period chosen is from the year 1989 to 2012. The three main variables used are: Stocks traded, total value (% of GDP), Domestic credit provided by banking sector (% of GDP) and GDP Per Capita growth.

The variables are defined as follows:

Stocks traded: The total value of shares traded during the period, as a ratio of GDP.

Domestic credit provided by the banking sector: Includes all credit to various sectors. The banking sector includes monetary authorities and deposit money banks, as well as other banking institutions.

Annual percentage growth rate of GDP per capita: GDP per capita is gross domestic product divided by midyear population.

The econometric tests used are basic tests of stationarity followed by cointegration test, linear regression and the granger causality test. Many current studies have employed cointegration and granger causality tests. Time-series analysis of data requires various diagnostic checks. For non time-series data, the researcher can directly proceed to the data analysis technique. However, for time-series data, the very first check is that of stationarity. The main objective behind this is to test whether the basic properties of the data, such as mean and variance, are constant over time.

The Augmented Dickey-Fuller test is employed here (see table1). The test estimates the following three equations:

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \text{--- (1)}$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \text{--- (2)}$$

$$\Delta Y_t = \beta_1 + \beta_2 t + (\delta) Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \text{--- (3)}$$

The null hypothesis for the ADF test is that  $\delta = 0$  (or  $\rho = 1$ ) which means that the series has a unit root (non-stationary). The alternative hypothesis, that  $\delta < 0$  indicates that the series is stationary. This leads to rejection of the null hypothesis.

The test is conducted assuming a time series with an intercept, and a times series with an intercept and trend component. It is done at both level and first differences of the time series.

The Granger Causality Test is used to investigate the direction of causality between two variables. The test involves the following bi-variate regression model:

$$Y_t = \alpha_0 + \sum_{i=1}^m \alpha_i Y_{t-i} + \sum_{j=1}^n \beta_j X_{t-1} + \varepsilon_{1t} \quad \text{--- (4)}$$

$$X_t = \omega_0 + \sum_{i=1}^m \gamma_i Y_{t-i} + \sum_{j=1}^n \theta_j X_{t-1} + \varepsilon_{2t} \quad \text{--- (5)}$$

where it is assumed that the error terms are uncorrelated. If all the coefficients of  $X$  in the first regression equation are significant, then the null hypothesis that  $X$  does not cause  $Y$  will be rejected. If all the coefficients of  $Y$  in the second regression equation are significant, then the null hypothesis that  $Y$  does not cause  $X$  will be rejected.

Thus, this test is a simple way to check for long term predictive power that one time series variable shares with another. It is basically an OLS technique, applied to time series data, after having fulfilled the basic condition of stationarity.

#### 4. Results and Discussion

The first test applied was that of stationarity using the Augmented Dickey Fuller method. Results of the test are included in table 1 below.

**Table 1 : Tests of stationarity**

Variable	ADF stat			
	Levels		First difference	
	C	C&T	C	C & T
G	-3.27***	-4.58**	-	-
ST	-1.81	-2.06	-4.22***	-4.22***
DC	-1.63	-1.59	-3.53**	-4.96***

\*\*\*, \*\*, \* indicates test value is significant at 1%, 5% and 10% level of significance respectively; For ADF constant model, critical values at 1%, 5% and 10% level of significance are, -3.77, -3.04 and -2.64 respectively; For ADF constant and trend model, critical values at 1%, 5% and 10% level of significance are -4.44, -3.63 and -3.25 respectively; C refers to constant, C&T refers to constant and trend.

For the sake of brevity, GDP Growth is abbreviated as G, Stocks Traded ratio as ST and Domestic Credit as DC throughout the remaining of the text. It is observed here that G is stationary at levels, while the other two variables are stationary at first differences. This is expected, as these variables progress with time. To remove the time component, first order differencing may be required.

**Table 2: Statistics to check for cointegration**

Null	Alternate	Trace Statistic	Max-eigen Value Statistic
r=0	r=1	53.83 (29.79)**	40.85 (21.13)***
r<=1	r=2	12.99 (15.49)	11.95 (14.26)

Figure in parenthesis is critical value; \*\*\* denotes rejection of hypothesis at 0.01 level, \*\* denotes rejection at 0.05 level.

The effect of credit on growth appears to be very negligible, while the effect of stocks traded appears to be negative. To verify this, a simple linear regression test is applied.

The test of cointegration reveals that there is one cointegrating equation. The null hypothesis that there is no relationship between the three variables is rejected. It is accepted that there indeed is a long run relationship between the three variables.

The dependent variable in this regression is growth. The independent variables are stocks traded ratio and domestic credit ratio. It must be noted here that there are many more variables that affect growth. This fact is not denied, but those other variables are not taken into consideration here to isolate the effects of these two variables. Table 3 below presents the results of regression analysis.

Based on the above cointegrating relationship, the vector that is generated is:

Normalized ECM:  $G = 0.001 DC - 0.31 ST$

**Table 3 : Regression Analysis**

Independent Variables	Dependent Variable: Growth	
	Coefficient (std. error)	T-statistic
C	-2.54 (3.72)	-0.68
DC	0.14* (0.07)	1.73
ST	-0.00 (0.02)	-0.00
R-Squared: 0.21 ; F-statistic: 2.57*		

The effect of domestic credit on growth appears to be significant at the 10% level. The effect of stocks traded is insignificant and negative. The R-squared and F-statistic values for the model are satisfactory, though they could be improved by including more variables that

actually explain growth. Next, the granger causality test is applied.

It appears that domestic credit may have an impact on economic growth.

#### **Table 4 : Granger Causality Test**

\*\*\* denotes rejection of hypothesis at 0.01 level, \*\* denotes rejection at 0.05 level

It is observed that there is bidirectional causality between growth and domestic credit, which complements the earlier finding. There is unidirectional causality from growth to stocks traded. There is also unidirectional causality from stocks traded to domestic credit.

When there is economic growth, there is an increase in economic activity. Consumption, investments (by businesses), government expenditures and net exports, all rise simultaneously, though not always in the same ratio. This is a stimulus and it requires more funds with economic agents. They once again look to sources of raising funds. Traditionally, banks have been the most common avenue for any business to raise finance (ignoring the effects of the unorganised sector which cannot be quantified). Off late, the stock market has achieved significance. The findings above clearly show that the stock market is still not large and liquid enough to affect the economic activities, though it does act as a channelling and stimulating agent.

Further, the finding that there is unidirectional causality from growth to stocks traded implies that as the economy grows and money is borrowed from banks, this money will be channelized towards productive uses. The surplus may be parked in stock markets and other exchanges. This is done with a view to maximize earnings.

Here, an important point to remember is that during periods of economic growth, most industries are looking to expand operations, for which they borrow money. During periods of slow economic growth, if banks and other financial institutions provide funds at attractive rates, it is bound to act as a catalyst to raise economic growth. Similarly, once adequate growth is achieved, it will lead to further expansion of the banking sector itself, and lead to a greater availability of industrial credit. There will also be a more diverse range of financial instruments and arrangements that crop up to meet the increased demand

for credit. There are many businesses that are not publicly listed. These are in fact a major part of our economy, especially the MSME sector. They still rely heavily on banks and other financial institutions.

#### **5. Conclusion**

In a growing economy, the need for bank credit rises. Businesses are looking to expand and consumers also borrow money for their purchases. Access to liquidity, which is reliable and available, makes the whole process much easier. This stimulates more economic activity. Further, when the economy grows and per capita incomes rise, individuals tend to transact more on capital markets as well, which is shown from the unidirectional causality. When people transact on stock markets and make gains, they park their surplus funds in various avenues offered by the financial sector. They may invest back in the economy, borrow more funds and expand the scope of their economic activity. Hence in this case, it is seen that domestic credit provided by banks does have a relationship with growth, but stocks traded (representing capital market activity) may not necessarily directly be linked with economic growth.

The study can be further built upon by including variables such as interest rates and more indicators of finance. As mentioned earlier, the relationship is very complex. The model included in this study is quite simplistic, but it was designed to be so. A state-wise case study approach can also be used however data on stock markets is not uniformly available at the state level.

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